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BULLETIN
of the
UNIVERSITY of WISCONSIN

GENERAL ANNOUNCEMENT OF COURSES
1952 - 1954
[CATALOG]

MADISON, WISCONSIN
JULY, 1953

Bulletin of the University of Wisconsin

Series No. 3237 General Series No. 3011 July, 1953

The Bulletin of the University of Wisconsin is issued monthly and is entered as second-class matter at the Post Office at Madison, Wisconsin, under the Act of Congress of August 12,1912.

GENERAL ANNOUNCEMENT OF COURSES

1952-54

(CATALOG)

MADISON, WISCONSIN

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SCHOOL OF EDUCATION

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UNIVERSITY CALENDAR

Academic Year 1952-53	Academic Year 1953-54	First Semester
Sept. 12	Sept. 11	Last day for entrance examinations
Sept. 15–20	Sept. 14–19	New Student Program and Registration
Sept. 22	Sept. 21	Instruction begins
Sept. 23	Sept. 22	Examinations for removal of conditions
Sept. 27	Sept. 26	Placement examinations for late entrants
Oct. 4	Oct. 3	Foreign language attainment examinations
Nov. 27, 28, 29	Nov. 26, 27, 28	Thanksgiving recess
Dec. 6	Dec. 5	Examinations for removal of conditions
Dec. 20–Jan. 5	Dec. 19–Jan. 4	Christmas recess
Jan. 17	Jan. 16	Foreign language attainment examinations
Jan. 22–31	Jan. 21–30	Final examinations
		Second Semester
Jan. 30	Jan. 29	Last day for entrance examinations
Feb. 4–7	Feb. 3–6	Registration days
Feb. 9	Feb. 8	Instruction begins
Feb. 14	Feb. 13	Placement examinations for late entrants
Feb. 28	Feb. 27	Examinations for removal of conditions
April 18–27	April 17–26	Spring recess
May 2	May 1	Examinations for removal of conditions
May 9	May 8	Foreign language attainment examinations
May 30	May 30, 31	Memorial Day: legal holiday (no classes)
June 6–15	June 5–14	Final examinations
June 19	June 18	Commencement Day
1953	1954	**Summer Session**
June 22	June 21	Law School classes begin
June 29	June 28	Eight-week classes begin
Aug. 21	Aug. 20	Eight-week classes end
Aug. 28	Aug. 27	Law School classes end

Part I -- General Information

STUDENT LIFE

A college education aims to provide the student with the opportunity to build a foundation on which to construct a satisfying and full life. To this end, the University of Wisconsin sponsors numerous events and organizations in which the student finds the opportunity to broaden his social and cultural development. These activities are described at length in the Student Handbook and are only briefly enumerated in this bulletin.

Much of the life and activity of students outside the classrooms is concentrated in the Memorial Union, "the living room of the campus." The Union provides facilities for dining, lounging, committee meetings, banquets, and dances; a library, art galleries, checkrooms, barbershop, two theaters, craft workshops, photography dark rooms, bowling alleys, billiard and table tennis rooms, lounges with kitchenettes, radio studios, and an outing headquarters.

Every student becomes a member of the Union automatically upon registration. The building is governed by a student-faculty-alumni board, and recreational programs are arranged by committees open to all students. Because most programs and services are free, student recreation expense at Wisconsin is comparatively low.

The Wisconsin Student Association, of which each student is automatically a member, performs the administrative and legislative functions of student self-government for the campus at large and is governed by a board of student members elected by the student body each spring. There are two administrative branches in the association, the Women's Self-Government Association and the Wisconsin Men's Association.

Many special-interest groups and societies offer a wide variety of activities in which students may participate. There are music groups—band, orchestra and chorus, literary and debating societies, athletic groups, Orchesis—the dance group, Wisconsin Players—a dramatic group, language clubs, religious organizations, and professional organizations in many special fields.

In addition, positions are available on the student publications which include the *Daily Cardinal,* a morning newspaper; the *Badger,* the school annual issued under the auspices of the senior class; *Octopus,* monthly humor magazine; the *Wisconsin Idea,* quarterly literary magazine; *Country Magazine* and the *Wisconsin Engineer,* monthly magazines edited by students of the Colleges of Agriculture and Engineering respectively; and the *Law Review,* a professional legal publication of students, faculty, and alumni of the Law School.

Facilities for athletic participation, both intramural and intercollegiate, are available to all students; and students may purchase coupon books for admission to home intercollegiate athletic events.

Group-living in dormitories, sororities, fraternities, or independent house organizations gives students an opportunity to develop leadership, responsibility, and co-operation, and provides valuable social, recreational, and cultural experiences.

For college regulations and policies governing student life, see the Student Handbook.

STUDENT PERSONNEL SERVICES

The University provides a great many special services for students. Among them are educational and vocational advising, job placement, reading and study aids, employment, personal and social counseling, and financial advice and assistance. Detailed information may be found in the Student Handbook.

Each student is assigned a faculty adviser when he enters the University. The adviser is expected to help the student in the choice of his courses, in the interpretation of course requirements, and in the election of a well-balanced program. A student should not expect nor permit advisers to make his choices for him. He should study the bulletins, take stock of his own interests and abilities, and discuss his plans with his adviser.

In addition to the regular advisory service, a special office is maintained, at present in Room 263 Bascom Hall, to assist in the counseling and orientation of foreign students.

A university speech clinic has facilities for helping students who have defective speech.

STUDENT HEALTH SERVICE

The University of Wisconsin at Madison maintains a well-equipped **Department of Preventive Medicine and Student Health** to provide medical attention for students who require it during enrollment. This includes the **Infirmary** for those who need hospital care, and the **Student Clinic** for office consultations. The staff consists of full-time physicians, men and women, all of whom are licensed by the State of Wisconsin. The Infirmary and Clinic building is connected to the Wisconsin General Hospital. The specialized facilities of this medical center are available to the physicians of the Department of Preventive Medicine and Student Health when requested by them.

The prevention as well as the treatment of illness or injury is an important objective, and the physicians of this department are prepared to consult with students regarding any health problem they may have. Students are urged to seek counsel when illness is first suspected. Protection of the student's health is an important objective. To this end periodic chest x-rays will be given to all. Members of the university community have a personal responsibility to the group as well as to themselves to report, when asked, for x-rays, or for other measures employed in the program. Entrance **physical examinations** are conducted during the first week of instruction of each spring and fall semester. This examination is required of every student entering the University at Madison for the first time, including those who transfer from another institution into both **Graduate and Undergraduate Divisions.** Participation in other university activities, such as Physical Education and Military Science, is dependent upon the result of this physical check-up, which is arranged by appointment at the time of registration. If a student is overlooked, he should call the Student Clinic before classes begin to obtain an appointment, and also, if possible, when late registration is anticipated.

With certain exceptions, which are infrequently encountered by the great majority of students the cost of the services of this department is covered by general university funds. When necessary, complete hospital care, including diagnostic procedures (x-rays, etc.) and treatment, is provided in the Infirmary for illness or injury which occurs during the period of enrollment. Except for medications prescribed in the Student Clinic, the services obtained in that section are without added charge. The professional fee of a consultant on the staff of the Wisconsin General Hospital who is called to give treatment, either for office patients or those in the Infirmary, becomes the private responsibility of the student. The surgeons' and anesthetic fees for an operation or the treatment of fractures or severe sprains are the most important examples. The staff of this department may, however, obtain consultation without added expense.

For an **appointment,** the **advice** of a physician, or an **emergency** CALL: **The Student Clinic,** 6–6811, Extension 422, or University 8–422.

For information concerning patients in the Infirmary CALL: **The Infirmary,** 6–6811, Extension 323, or University 8–323.

(Consult the Bulletin of the Department of Preventive Medicine and Student Health for details.)

OFFICE OF VETERAN AND MILITARY AFFAIRS

The University helps its students who have questions about military service and veteran benefits. Students who have special problems may come to 121 Bascom Hall.

Any student satisfactorily pursuing a full-time course who is ordered for induction will be deferred until the end of his academic year if he has never before been deferred as a college student. **The law provides that this deferment must be given if the student is enrolled**

and is actually attending classes provided he requests such a deferment and the University has certified his status. This will be granted only once and will terminate at the end of the student's academic year. He may, however, be considered for a subsequent student deferment on the basis of his academic record in the University.

Upon request, any student will be provided with a complete statement of facts concerning his university status and activities for submission to his selective service or armed service board.

Although the University believes that veterans in general have the same needs and interests as other students, it recognizes that their educational programs and objectives may be significantly affected by such experiences and training as they may have received in service, and by the element of time elapsed since they left high school or college to enter the armed forces.

In addition to all regular university services, certain special services are available to veterans. The Office of Veteran and Military Affairs will counsel in training matters and make referrals to the Wisconsin Department of Veterans Affairs located in the State Capitol. The Business Office for Veterans at 736 University Avenue handles business records and authorization of supplies for veteran students. An office is maintained by the United States Veterans Administration in room 408 at 105 Monona Avenue for assistance to all veterans.

The Federal Government has provided financial aid for World War II veterans' education under Public Laws 16 and 346. Veterans who are admitted to the University and who qualify with the Veterans Administration under these laws will receive a monthly subsistence allowance in addition to tuition, fees, books, and necessary supplies. The state is prepared to furnish Wisconsin students additional emergency financial aid if the need arises.

Students may apply for credit toward graduation for training which they may have received under AST, Navy V-12, and similar programs. University credit may also be given for specialized and technical training done under the auspices of the armed forces and for correspondence-study courses taken through the United States Armed Forces Institute. This training may be accepted by the University for credit only if it is at the collegiate level, if it is approved by the University, and if it is appropriate to the particular university course of study in which the student enrolls. (See Admission with Advanced Standing, page 9.) For service in the armed forces, the University will waive the non-academic credit requirements in physical education and military science.

Veterans who entered the armed forces, the American Field Service, or the armed forces of our allies prior to March 31, 1947 may, if they have not been granted assigned credit as per preceding paragraph, apply for a maximum of 15 credits which may be substituted for elective credits in the students' program. Such credits are not given to graduate, medical, or law students, and certain reservations are made in the case of engineering students. When students enter the University with deficiencies in entrance requirements, the total number of war elective credits to be granted is reduced by an amount equal to 4 credits per high-school unit of deficiency.

INSTRUCTIONAL ORGANIZATION

The University of Wisconsin is organized for instruction into a number of colleges and schools which are in turn divided into departments. The scheme of organization is as follows:

COLLEGE OF LETTERS AND SCIENCE

Art History and Criticism
Astronomy
Botany
Chemistry
Classics (General, Latin and Greek)
Comparative Literature
Comparative Philology & Linguistics
Economics
English
French and Italian
Geography
Geology
German
History
History of Science
Integrated Liberal Studies
Journalism
Library Science
Mathematics
Meteorology
Music
Philosophy
Physics
Political Science
Psychology
Scandinavian Languages
Slavic Languages
Social Work
Sociology and Anthropology
Spanish and Portuguese
Speech
Zoology

COLLEGE OF ENGINEERING

Chemical Engineering
Civil Engineering
Drawing and Descriptive Geometry
Electrical Engineering
Mechanical Engineering
Mechanics
Mining and Metallurgy

COLLEGE OF AGRICULTURE

Agricultural Economics
Agricultural Education
Agricultural Engineering
Agricultural Journalism
Agronomy
Animal Husbandry
Bacteriology
Biochemistry
Dairy Husbandry
Dairy and Food Industries
Entomology
Genetics
Horticulture
Plant Pathology
Poultry Husbandry
Rural Sociology
Soils
Veterinary Science
Wildlife Management

SCHOOL OF HOME ECONOMICS

Clothing and Textiles
Foods and Nutrition
Home Management and Family Living
Related Art

LAW SCHOOL

MEDICAL SCHOOL

Anatomy
History of Medicine
Hygiene
Medical Microbiology
Medicine
Neuropsychiatry
Obstetrics and Gynecology
Oncology
Pathology
Pharmacology and Toxicology
Physical Medicine
Physiological Chemistry
Physiology
Preventive Medicine and Student Health
Radiology
Surgery
Medical Technology

SCHOOL OF NURSING

Dietetics
Therapeutics
Medicine and Surgery
Nursing
Public Health Nursing
Ward Management
Ward Teaching

SCHOOL OF EDUCATION

Education
Art Education and Applied Art
Physical Education for Men
Physical Education for Women
Occupational Therapy

SCHOOL OF COMMERCE

SCHOOL OF PHARMACY

DEPARTMENT OF AIR SCIENCE

DEPARTMENT OF MILITARY SCIENCE

DEPARTMENT OF NAVAL SCIENCE

DEPARTMENT OF PHYSICAL EDUCATION

The University also maintains a graduate school, with advanced work leading to masters' and doctors' degrees, and a summer session offering regular academic and professional subjects for full credit toward all degrees. The University Extension Division offers courses by correspondence which may be taken for full credit; it also operates a branch at Milwaukee where regular class instruction is given, including the freshman and sophomore years in Letters and Science and in Engineering; and it conducts regular classes in freshman subjects, and in a few sophomore subjects, in many other cities of the state.

The University offers no curricula in dentistry, theology or architecture; however, the work of the freshman year in engineering is accepted by some colleges of architecture, and there is a limited amount of instruction given in certain phases of forestry by the staff of the U. S. Forest Products Laboratory, associated with the University.

DEGREES

TITLES

GRADUATE IN AGRICULTURE—Two-Year Course in Agriculture
GRADUATE NURSE—Five-Year Nursing Course
CERTIFICATE OF JUNIOR GRADUATE IN LIBERAL STUDIES—Two years in Liberal Studies

FIRST DEGREES

BACHELOR OF ARTS—Granted in General Course
BACHELOR OF ARTS (Humanities)
BACHELOR OF ARTS (Journalism)
BACHELOR OF ARTS (Medical Science)
BACHELOR OF BUSINESS ADMINISTRATION
BACHELOR OF LAWS
BACHELOR OF MUSIC
BACHELOR OF NAVAL SCIENCE
BACHELOR OF SCIENCE—Granted in General Course
BACHELOR OF SCIENCE (Applied Mathematics and Mechanics)
BACHELOR OF SCIENCE (Agriculture)
BACHELOR OF SCIENCE (Agriculture and Education)
BACHELOR OF SCIENCE (Agriculture and Naval Science)
BACHELOR OF SCIENCE (Applied Art)
BACHELOR OF SCIENCE (Art Education)
BACHELOR OF SCIENCE (Biochemical Engineering)
BACHELOR OF SCIENCE (Chemistry)
BACHELOR OF SCIENCE (Chemical Engineering)
BACHELOR OF SCIENCE (Civil Engineering)
BACHELOR OF SCIENCE (Education)
BACHELOR OF SCIENCE (Electrical Engineering)
BACHELOR OF SCIENCE (Home Economics)
BACHELOR OF SCIENCE (Home Economics and Education)
BACHELOR OF SCIENCE (Journalism)
BACHELOR OF SCIENCE (Light Building Industry)
BACHELOR OF SCIENCE (Mechanical Engineering)
BACHELOR OF SCIENCE (Medical Science)
BACHELOR OF SCIENCE (Medical Technology)
BACHELOR OF SCIENCE (Metallurgical Engineering)
BACHELOR OF SCIENCE (Mining Engineering)
BACHELOR OF SCIENCE (Naval Science)
BACHELOR OF SCIENCE (Nursing)
BACHELOR OF SCIENCE (Occupational Therapy)
BACHELOR OF SCIENCE (Pharmacy)
BACHELOR OF SCIENCE (Physical Education)
BACHELOR OF SCIENCE (Physical Medicine)

A graduate of any course may receive the baccalaureate degree of any other course by completing the additional studies required in that course. Two baccalaureate degrees cannot be taken in one year, and for a second bachelor's degree in the College of Letters and Science one year's additional study and a special thesis are required.

ADVANCED DEGREES IN THE GRADUATE AND PROFESSIONAL SCHOOLS

The University confers in course the following masters' degrees: Master of Arts, Master of Laws, Master of Music, Master of Business Administration, and Master of Science. Candi-

dates who have taken the Bachelor of Science degree in one of the engineering courses may also be granted the second degree of Civil Engineer, Mechanical Engineer, etc.

The University also confers in course the degrees of Doctor of Philosophy, Doctor of Medicine, and Doctor of Juridical Science.

GENERAL REGULATIONS

ATTENDANCE. Students are required to be present at the opening of the semester and to remain until the work of the semester is finished. It is expected that every student will be present at all of the classes at which he is due. If at any time a student is absent, he must satisfy his instructors that such absence is for good and sufficient cause.

EXAMINATIONS. Each subject terminates in a two-hour written final examination at the close of the semester; these final examinations are regularly scheduled, and the times set may not be changed without special faculty authorization. During the semester two or three one-hour written tests are ordinarily held in all but the most advanced courses. There are no exemptions from examinations because of high standings in class work.

CREDITS. The unit used in computing the amount of work required for graduation is the credit, which represents one hour of class work per week for one semester, or its equivalent in other forms of instruction, together with the necessary preparation. Two or sometimes three hours of laboratory work are considered as the equivalent of one hour of class work.

GRADES AND POINTS. Semester grades are reported by letter only, although they are commonly based on averages of numerical grades in final examinations and other written work. The characterization of letter grades by plus and minus signs is not authorized. For the sake of convenience in computing weighted averages, each letter grade carries a specified number of points per credit; thus a *B* in a three-credit subject would yield 6 points. The scale of grades and points follows:

Grade	Percentage Equivalent	Points Per Credit
A (Excellent)	93–100	3
B (Good)	85– 92	2
C (Fair)	77– 84	1
D (Poor)	70– 76	0
E (Condition)	60– 69	0 (—½)*
F (Failure)	Below 60	0 (— 1)*

POINT-CREDIT RATIO. The general quality of a student's work over a number of semesters is expressed in terms of a point-credit ratio, which is the result obtained by dividing the total number of points he has earned by the total number of credits earned. The highest possible quotient is 3.0, which represents a grade of *A* in every subject; the lowest possible quotient is zero.

The point-credit ratio must not be confused with a similar figure known as the grade-point average; this is computed at the close of each semester and is based solely on the number of points earned and credits elected during that semester, with deductions for deficiencies (see * above). The maximum average is 3.0; the minimum, —1.0.

Part II -- Admissions

METHODS OF ADMISSION

Students are admitted to undergraduate standing in the University by one of the following methods:

1. By certificate of graduation from an accredited high school with the recommendation of the principal thereof (see page 8).
2. By passing entrance examinations (see page 9).
3. By qualifying on the special basis of admission arranged for veterans of World War II (see page 10).
4. By qualifying as an adult special student (see page 10).
5. By submitting evidence of studies successfully pursued in another institution of higher learning (see Admission with Advanced Standing, page 10).

All applicants must submit credentials of all work taken in secondary schools of any type. Applicants who have taken work in colleges, regardless of the amount of such work, must submit complete credentials.

Applications and credentials should be submitted to the appropriate office listed below:

All New Freshmen..... Office of Admissions, 166 Bascom Hall
Advanced Standing Students
Agriculture.....Office of the Associate Dean, College of Agriculture, 108 Agricultural Hall
Engineering.....Assistant to the Dean, College of Engineering, 204 Mechanical Engineering Bldg.
Home Economics.....Associate Dean of Home Economics, 119 Home Economics Bldg.
Letters and Science, Commerce, Education, Pharmacy,
Nursing, and Law.....Office of Admissions, 166 Bascom Hall
Library School.....Director of the Library School, 205 Library School
Medical School.....Dean of the Medical School, 418 N. Randall Avenue

Applicants for the *Graduate School* should obtain the bulletin of the Graduate School and correspond with the Dean of the Graduate School, 150 Bascom Hall.

Applicants for the *Summer Session* who wish to become degree candidates at the University must file application and credentials with one of the admission offices listed above. This requirement also applies to all persons seeking admission to the Law School or the Graduate School, regardless of their intention of securing a degree.

All other Summer Session applicants who have not previously been degree candidates at the University of Wisconsin are required to furnish credentials in evidence of good standing. For a teacher, not a degree candidate, this will consist of a statement of his or her status in the school where employed, signed by a responsible official of such school; for a student at another institution, an official statement of good standing. A former student at the University of Wisconsin who has since attended another institution must file a statement of good standing. Application must be made in advance to the Office of Admissions, 166 Bascom Hall, so that necessary permits to register may be issued. Information concerning

the Summer Session may be obtained from the Director of the Summer Session, 111 Education Building.

Applications will be received after the following dates:

For the semester beginning in September.....March 1
For the semester beginning in February.....October 1
For the Summer Session.....March 1

The time of receiving the application bears no relation to acceptance. Except for those who wish to enter the February term of the University, there is no need for residents of Wisconsin to submit a transcript of their work before they have been graduated from high school. Principals of high schools in the state will be able to tell Wisconsin applicants whether they will qualify for regular admission. In the event of any question, the applicant is invited to write to the Office of Admissions.

Applicants for the September term are advised to have cleared all aspects of admission by August 1 if possible. Arrangements for housing should be made as early as possible. (See section on Housing, page 17.)

ADMISSION REQUIREMENTS

University studies assume that the entering freshman has (a) competence in oral and written expression; (b) efficient reading and study skills; (c) for some courses the mathematical skill ordinarily gained in high-school algebra and plane geometry; (d) broad preparation in the fields of study which the University requires. (The first year of university work requires studies chosen largely from the fields of English, social studies, science, mathematics, and foreign languages.) The requirements for admission to the University are designed to provide (a) adequate preparation for studies required in the University, and (b) a desirable continuity in the student's educational experience.

Nonresident Applicants. The University of Wisconsin is unable to accept all of the applicants who are not residents of the state of Wisconsin. Applicants who present excellent high-school or college records may be accepted. (The University reserves the right to alter its policy as the enrollment situation requires.) The sons and daughters of alumni and friends of the University and of persons having strong associations with the state of Wisconsin will receive preference within the admissions policy.

1. For Admission by Certificate of Graduation

Graduates of accredited high schools will be admitted upon recommendation of the principals of their high schools, provided that they present 16 units,* 9 of which are distributed as follows:

English (or English and speech)	3 Units
Plus at least 6 additional units, chosen from these fields in these amounts	
Mathematics	2 or 3 Units
Foreign language	2 or 3 Units (in one language)
History and social studies	2 or 3 Units
Natural science	2 or 3 Units

Mathematical Preparation. Mathematical preparation is essential for successful work in many fields of university instruction.

Students who are mathematically prepared will be admitted to all schools and colleges and to all majors and fields of specialization therein. Minimum mathematical preparation is considered to be **1 unit of algebra and 1 unit of plane geometry.** To gain **full** admission to

* A unit represents a norm of five class periods per week in one field of study for a school year of at least 36 weeks. Two laboratory periods are considered equivalent to one class period. In subjects not taught throughout the entire year, a unit may be constructed by adding each of two related subjects.

the **College of Engineering,** or to **Agricultural Engineering,** in the College of Agriculture, however, the student must present 1½ units of algebra and 1 unit of plane geometry. The additional ½ unit of algebra required may be absolved by completing one semester of college algebra without university credit.

Students who do not have the minimum mathematical preparation may enroll in the College of Letters and Science, the College of Agriculture (except Agricultural Engineering), and the School of Education. By carefully using his choices, he may take the courses in applied art, art education, journalism, music, or physical education (the completion of the course in physical education for women requires mathematical preparation), or take majors in Hispanic studies, art history and criticism, the classics, comparative literature, English, foreign languages, geography, history, philosophy, political science, or speech. No subjects in astronomy, mathematics, or physics will be open to a student without mathematical preparation, nor may he enroll in the course in chemistry, engineering, including technical agricultural engineering, medical technology, nursing, occupational therapy, pharmacy, or physical medicine; nor may he major or specialize in agriculture, American institutions, bacteriology, biological aspects of conservation, botany, chemistry, commerce, economics, geology, home economics, humanities, international relations, mathematics, medical science, physics, psychology, social work, sociology, or zoology. If a student plans to major in one of these fields, he must obtain credit for the high-school mathematics before he will be accepted as a major student in these departments. This must be done before the beginning of the junior year.

The University does not offer residence courses in elementary mathematics. Hence, students admitted without mathematical preparation can become eligible for courses requiring mathematical preparation only by passing entrance examinations, by earning the required units in mathematics at an accredited school, or by taking correspondence courses from the University Extension Division.

General Scholarship. Applicants who rank in the lower one-third of their graduating classes are advised that their chance of success in university studies is not good. Such applicants will be admitted only on probation.

Graduates of Wisconsin high schools who do not have the 9 academic units as stipulated above may be admitted if they rank in the upper one-tenth of the graduating classes of their high schools and their deficiency does not exceed 3 of the 9 units.

Special Deficiencies. Applicants who have failed (1) to earn the total 16 units required, or (2) to receive the recommendation of their principals because of low grades, will be required to take entrance examinations.

Applicants Who Are Graduates of Nonaccredited High Schools. Graduates of nonaccredited Wisconsin high schools who have satisfied the full requirements for admission may be admitted on probation, without examination, upon recommendation of the principal.

Graduates of nonaccredited high schools, *outside Wisconsin,* may be admitted when properly recommended and certified, provided the high school, on the basis of regular inspection, is accredited by universities who are members of the Association of American Universities, or by its state university if it maintains the same standard of admission requirements as institutions belonging to the Association of American Universities.

2. For Admission by Entrance Examination

These examinations are given (1) to applicants who may not have been graduated from secondary schools, but who wish by this means to establish their readiness for university studies; (2) to applicants who lack the units specified in the entrance requirements according to the certificate plan; and (3) to applicants having special deficiencies as described in Section 1 above.

Applicants who wish to qualify by entrance examinations should correspond or consult directly with the Office of Admissions about the character, time, place, and procedure of these examinations. Applicants are urged to take them as early as possible. They must be taken prior to the beginning of the term the applicant wishes to enter. The College Entrance

Board Examinations, the New York Regents' Examination, or the Canadian Matriculation Examinations are accepted in lieu of the entrance examination administered by the University of Wisconsin.

3. For Admission as a Veteran

Veterans of World War II who do not possess all of the requirements for admission may be admitted to the University upon giving satisfactory evidence that they are prepared to take advantageously the subjects open to them. Candidates applying for admission on the war-veteran basis are required to present an official statement of their preparatory studies for evaluation and approval. They may also be asked to take scholastic aptitude tests administered by the University. Students so admitted will not be asked to remove deficiencies in meeting the entrance requirements if and when they earn the credits and grade-points required for junior standing.

4. For Admission as an Adult Special

Citizens of Wisconsin, 21 years of age or over, who do not possess all the requirements for admission, and who are not candidates for a degree, may be admitted to the College of Letters and Science or the College of Agriculture upon giving satisfactory evidence that they are prepared to take the subjects open to them. This privilege of admission is granted in the College of Engineering only to students who are able, on examination, to meet all the entrance requirements in mathematics, or who have completed their preparatory mathematics in the Extension Division of the University and present a certificate therefrom. Students so admitted, must have fully satisfied all entrance requirements before beginning the third year of university work.

Students will not be admitted, save in exceptional cases, directly from the secondary schools to the status of adult specials; nor will graduates of accredited schools be permitted to enter as adult specials, since they are required to qualify for regular matriculation.

5. For Admission With Advanced Standing

Students from accredited colleges and universities may be admitted on presentation of satisfactory records. In general, an honorable dismissal from the last school attended and an average of at least C on an A-B-C-D-Fail grading system (with emphasis on the work of the semester immediately preceding transfer) is required. This minimum standard of achievement is subject to any nonresident restrictions which may be in effect when the student applies for admission.

The senior year of work must be completed in residence at the University of Wisconsin.

Students who have completed work at other institutions of college level cannot be admitted as new freshmen without regard to their performance in college studies. Applicants for admission who have had any work whatsoever in other colleges, whether or not they wish to receive credit, must submit complete records of all high-school and college work to the appropriate admissions office as listed in the beginning of the section on Admission. **Failure to submit such records may constitute sufficient cause for later dismissal from the University.**

REGISTRATION PERIOD

A period of time is allotted each September, February, and June during which students accomplish their registration for the immediate following session. The calendar on the front pages of this bulletin lists dates for certain of these periods. During this time students secure their registration materials and directions for completing their registration.

To initiate registration the new student must have a Permit to Register issued by the Office of Admissions, to which the applicant is directed to file an application for admission.

During registration, the new student has a conference with his faculty adviser, decides on his program of studies, obtains any necessary special permissions (e.g., for reduced program, etc.), obtains assignment to classes by the Assignment Committee, makes arrangements for physical examination, completes and files his registration cards, and pays his university fees.

NEW STUDENT PROGRAM

In order to acquaint new students with educational, cultural, and recreational opportunities offered in the university community, a program for new students is planned in conjunction with the registration period prior to the opening of the September and February semesters. New freshmen are required to be in attendance throughout the program. New students transferring from other colleges are required to participate in some, but not all, of the activities. The program includes greetings from faculty and students, conferences with advisers, tours of the campus, tests for the use of university counselors' and deans' offices, social events, and registration for classes.

ADVANCED CREDIT

Advanced credit for high-school work may be granted to students with satisfactory average standings who present more than 16 units acceptable for admission, provided: (a) the subjects in which advanced credit is sought are the general subjects accepted for admission to the University; (b) the work is as advanced as work given in the freshman year; (c) the subject for which credit is desired be approved by the chairman of the department; and (d) the student passes a satisfactory examination, at least two hours in length, held at the University before or during the Christmas recess. No advanced credit will be given for work in language unless it be in excess of 6 units offered for admission, nor will advanced credit be given for less than three semester hours.

FOREIGN LANGUAGES

Although foreign language is not definitely required for admission to any course, failure to present it will curtail the student's free elections in some courses. Students who desire to absolve their foreign language requirements by passing attainment examinations should acquire a considerable degree of proficiency in their high-school languages. (See bulletin of the College of Letters and Science for statement concerning foreign language attainment examinations.) Those who expect to enroll in any of the following courses are strongly advised to prepare themselves, at least partially, in foreign language as indicated below. Students should also consult the college bulletin describing specific language requirements in the curriculum of their interest.

COLLEGE OF LETTERS AND SCIENCE

Course in Chemistry—2–4 units of German
Medical Science—2 units of Latin; language as needed for the B.A. or B.S. degree
Medical Technology—2–4 units of French or German
Course in Nursing—2 units of any foreign language
Physical Medicine—0–4 units
General Course leading to the Bachelor of Arts degree—2–4 units; Bachelor of Science degree—2 units
Course in Journalism—For the B.A. degree: 2–4 units; for the B.S. degree: 2 units
Course in Humanities—4 units of Latin, and 2–4 units of Greek, French, or German
Course in Music (Bachelor of Music degree)—0–4 units

COLLEGE OF AGRICULTURE

Course in Home Economics—2–4 units in one language or 5 units in two. (See bulletin of the School of Home Economics for specific language requirements.)

SCHOOL OF EDUCATION

Foreign language is not definitely required of students enrolled in the School of Education. Those who elect the foreign language option, however, will find it distinctly to their advantage to be prepared for foreign language attainment examinations.

High-School Foreign Language

High-school work in a foreign language is accepted in satisfaction of the foreign language requirements for the various degrees at the rate of 4 university credits for one unit, with a minimum of two units in one language (unless the language is continued in college) and a maximum of six units.

AUDITORS

Students may enroll in the University as auditors provided they obtain the written approval of the dean of the college in which they plan to take courses. Auditors are required to pay fees and to register in the same way as regular students.

Regular students may enter classes as auditors subject to approval by their adviser and the instructor.

Auditors are under no obligation of regular attendance, preparation, recitation or examination, and receive no credit toward graduation.

Part III - Student Expense and Financial Aids

There is considerable variation in student expenditures for room and board, books and supplies, laundry, recreation, and local transportation. The average total expense for these items during 1951–52 was nearly $850 for the 38-week academic year. The actual expenditures of many students for these items may vary by as much as $350. These estimates do not include university fees, nonresident tuition, clothing, or transportation to and from Madison. More detailed information on the cost of board and room may be found in the section on housing.

FEES AND TUITION

The resident and nonresident semester fees listed below include, among other things, membership in the Memorial Union, Infirmary hospitalization privileges, and a laboratory-library charge. Any student not registered in the Law School who elects 8 or more credits per semester of Law School subjects will be assessed the Law School fee.

The University reserves the right to alter any of these charges without notice.

SEMESTER FEES

	Residents	Nonresidents
All Colleges and Schools except Law and Medicine	$ 75.00	$225.00
Law School	85.00	235.00
Medical School		
1st, 2nd, and 3rd years	155.00	305.00
4th year	110.00	260.00

Exceptions and Remissions. Following are the exceptions to and remissions of the above semester fees:

(a) War veterans who qualify under the G.I. bill, Public 346, or the Veterans Rehabilitation bill, Public 16, are entitled to have their fees paid by the Veterans Administration.

(b) The Memorial Union portion of the semester fees will be remitted for life members of the Memorial Union.

(c) With the consent of the appropriate dean or director students may enroll in the University on a per-credit fee basis as follows:

		Residents	Nonresidents
All Colleges and Schools except Graduate, Law and Medicine	Per credit	$ 9.50	$28.00
Law School			
Graduate School	Per credit	12.50	37.50

The Medical School does not admit students on a per-credit basis.

Infirmary and Union privileges are excluded. No late registration fee will be charged.*

(d) Students entering after half a semester has elapsed shall pay half of the semester fees. No late registration fee will be charged.

(e) When any candidate for a Ph.D. degree holding an official university appointment shall have paid to the University as a graduate student seven semester or summer session

* Subject to change.

fees, he is permitted to enroll on payment of a reduced fee as long as he shall continue to hold such official appointment.

(f) Graduate students who are members of the teaching and research staff of the University, fellows and scholars, honorary fellows and honorary scholars, members of the State Geological and Natural History Survey, members of the technical staff of the Forest Products Laboratory, staff members of the United States Department of Agriculture stationed at the University and engaged in research, technical experts employed in any department of the state government, and officers of the United States Army detailed as students by proper authority are entitled to *remission of the nonresident tuition fee.*

The general rules as to exemption from the nonresident tuition for instructors and assistants is that the exemption applies only to those whose stipend amounts to at least $400 per academic year (or $200 per semester). Those with lesser stipends will be required to pay the nonresident tuition.

(g) Honorary fellows are entitled to remission of the semester fee and to remission of the nonresident tuition fee. Honorary scholars are entitled to remission of the incidental portion of the semester fee and to remission of the nonresident tuition fee.

(h) Candidates for the master's or doctor's degree who are not enrolled at the time they present themselves for examination are required to pay a registration fee of $10.

Exemption From Nonresident Tuition. In addition to the general semester fee a nonresident tuition is charged to students who are nonresidents of the state, or who are not exempt from payment of nonresident tuition pursuant to the following excerpt from Section 36.16 of the Wisconsin Statutes:

> "Any adult student who shall have been a resident of the state for one year next preceding his first admission to the University, or any minor student whose parents have been bonafide residents of the state for one year next preceding the beginning of any semester for which such student enters the University, shall, while he continues a resident of the state, be entitled to exemption from fees for nonresident tuition, but not from tuition, incidental, or other fees in the University. Any student who shall not have been a resident of the state for one year next preceding his first admission to the University, except as above provided, shall not be exempt from the payment of the nonresident tuition fees until he shall have attended the University for four academic years; but if he shall have attended the University and thereafter shall continuously have been a resident of this state for a period of combined attendance at the University and subsequent residence in the state of not less than four years, he shall, while he continues a resident of the state, be entitled to exemption from payment of the nonresident tuition fees upon reentering the University."

The following types of students are in general exempt from the nonresident tuition:

I. Any adult student who has been a legal resident of the state for one year next preceding his first admission to the University, and as long as he continues to be a legal resident of the state, is not charged the nonresident tuition.

II. Any minor student whose parents have been bonafide legal residents of this state for one year next preceding the beginning of any semester for which the student registers is not charged the nonresident tuition.

III. Any adult student who has entered the University and paid nonresident tuition for four academic years, consisting of fall and spring semesters, and has established legal residence in this state prior to the end of the fourth academic year, is not charged nonresident tuition thereafter as long as he continuously maintains legal residence in this state.

IV. Any adult student who has paid nonresident tuition for one semester or more and has continuously been a legal resident of this state for the full four-calendar-year period following his admission to the University, and so long as he continues to be a resident of this state, is not charged the nonresident tuition.

Payment. Students are not officially registered until their tuition and fees are paid. All fees must be paid on or before Friday of the first week of instruction in each semester. Failure to pay fees by this date will result in cancellation of registration, and class attendance must be discontinued.

Students who register, or re-register, after the first week of instruction are subject to the following schedule of penalties:

Registration during the second and third week of instruction.....$3.00
Registration after the third week of instruction.....$6.00

Refunds. The cashier, upon recommendation of the Registrar, is authorized to make refunds of semester tuition and fees on the following basis to students withdrawing from the University: withdrawal before and during the first week, 100 per cent; during the second week, 80 per cent; during the third and fourth weeks, 60 per cent; during the fifth and sixth weeks, 40 per cent; during the seventh and eighth weeks, 20 per cent; and after the eighth week, no refund.

No claim for refund or remission of nonresident tuition will be allowed unless such claim is made during the fiscal year to which the claim is applicable; and no claim for refund or remission of other fees will be allowed, except when specially authorized by the Regents, unless such claim is made within one year from the date of payment of the fee. No fees will be refunded to a student who has been suspended for disciplinary reasons.

PART-TIME STUDENT EMPLOYMENT

A recent study indicates that approximately one third of the men and one third of the women registered as undergraduates contribute to their own support by working part time while they are enrolled in the University. Since the employer usually requires a personal interview, the student should not expect to obtain a definite job before he arrives to stay. Help is often wanted on very short notice. It is then necessary to send a student who is available and ready for immediate work.

The departments of the University normally employ around two thousand students. Part-time technical and semi-professional positions in the University are usually filled by graduate students. However, many positions which do not require special training or experience are held by undergraduates.

The Student Employment Bureau is called upon to recommend students for housekeeping duties in private homes, as stenographers, baby sitters, clerks, typists, waiters and waitresses, dishwashers, cooks, janitors, bell boys, clothes pressers, musicians, repair men, window washers, house cleaners, tutors, skilled tradesmen, and technical workers. Much student employment is temporary in nature. When they have become established in the community, many students are able to obtain work which makes better use of their talents.

It is highly desirable for students entering the University to come with sufficient funds to finance at least their first semester. Part-time work schedules should be arranged with extreme caution. A student carrying a normal academic schedule should plan to study at least twenty-five hours per week—this is in addition to the usual fifteen to twenty class hours. Good health and reasonable scholastic ability are important considerations. If a heavy part-time employment schedule is necessary, the student should consult the office of the dean of his college about the advisability of a reduced academic program.

The Student Employment Bureau is often able to locate some kind of part-time work for those who want it. It can give no guarantee to that effect, of course. At present, competition is keen and there are more applicants for part-time work than there are jobs available. Students are expected to be dependable and to consider a job as a business proposition. The present minimum wage for part-time student work is sixty-five cents an hour. The office of the Student Employment Bureau is located in the Memorial Union Building at 770 Langdon Street.

LOANS

The State Legislature, the Regents, and friends of the University have made money available to be used to assist students of limited financial means and good character. The purpose of these funds is to aid as many deserving and worthy students as possible. In many cases, the donor himself has set certain qualifications which determine the successful applicant.

In general, loans are made for periods of less than a year, are limited in amount, and interest rates are variable though nominal. In a limited number of exceptional cases, loans may be arranged for larger amounts, for longer terms or to be repaid after graduation. In any case the total of loans outstanding to any one student at any time may not exceed $500. Loans are available only to students who have attended the University a minimum of one semester and have achieved a satisfactory scholastic average. A loan is granted for a definite period of time. Prompt payment is expected and student borrowers are encouraged to liquidate their obligations prior to the due date.

Various foundations which are not under university control have loan funds available to University of Wisconsin students. Some of these provide opportunities for loans in greater amounts and for longer terms than the Committee on Loans and Undergraduate Scholarships authorizes. Students may obtain information concerning loans from the Dean of Men, Bascom Hall; or in the office of the dean of their school or college. Women students may inquire in the office of the Dean of Women.

SCHOLARSHIPS, FELLOWSHIPS, ASSISTANTSHIPS

Scholarships for undergraduate students are awarded annually to applicants selected by the University Committee on Loans and Undergraduate Scholarships on the basis of scholastic attainment, financial need, and future promise. There are special scholarship opportunities for entering freshmen who are recent graduates of Wisconsin or Illinois high schools. A few nonresident tuition scholarships are awarded to new students who are not residents of the state of Wisconsin. These remit the nonresident tuition fee. Otherwise, because of the keen competition for scholarship aid, there is little opportunity to consider applications of undergraduate students who have not completed at least one semester at the University of Wisconsin.

Application forms or information may be obtained from the Office of Admissions, 166 Bascom Hall. Full information about scholarships for undergraduate students is given in the bulletin, Student Financial Aids, which may be obtained from the Office of Admissions. High-school seniors should consult their principal. Students at the University of Wisconsin Extension Centers should seek the aid of the adviser to students at the centers.

Graduate scholarships and fellowships are awarded to graduate students on the basis of academic record and future promise by the Committee on Scholarships and Fellowships of the Graduate School. Application blanks and information may be obtained from the Graduate Office, 150 Bascom Hall. Research, teaching, and industrial assistantships are awarded to graduate students by the departments concerned. Further information about scholarships, fellowships, and assistantships is available in the bulletin of the Graduate School.

Part IV -- Housing and Meals

It is the purpose here to give general information about student housing and to familiarize the student with the types of residences. Initial requests for additional information regarding student housing should be directed to the **University Housing Bureau, 434 Sterling Court, Madison 6, Wisconsin.** The Bureau serves as a clearing center for all types of student housing accommodations. Applications and deposits cannot be accepted by the Bureau, but information will be provided on *where, when,* and *how* to apply for available quarters.

Prospective students should understand that acceptance for admission does not guarantee housing and that housing secured does not insure acceptance for admission. These arrangements must be made separately.

The cost of board and room is the largest item in a student's budget. These costs vary considerably from one unit to another depending on the type of residence and the place of meal service. In 1951–52 meal service rates ranged from $1.40 to $2.15 a day in the respective housing units, and room rates from $3.50 to $8.50 a week. The cost of meals in the Union cafeteria (3 meals) averaged $1.50 to $2.00 per day in 1951–52.

The cost of room and board for the academic year ranged from $460 to $948. This investment should be made with care. The many types of residences listed on the following pages should be reviewed to aid in making a selection. It is advisable for students to apply in person for off-campus accommodations.

WOMEN STUDENTS

FOR UNDERGRADUATE WOMEN

Women students live in the following types of houses: University Residence Halls (23 per cent), privately operated and university approved dormitories and houses (34 per cent), sororities (11 per cent), private home rooms (9 per cent), co-operative houses (1 per cent), parents' homes (13 per cent), and apartments (9 per cent).

Undergraduate women who do not live in university owned and operated Residence Halls, or with parents, guardians, or near relatives, are required to live in approved private dormitories, rooming houses, or sorority houses. Lists of approved houses are available at the Housing Bureau upon request. During the present housing shortage, permission to live in units not on the approved list is granted when the circumstances merit. Such permission must be approved by the parents of the student and cleared through the Housing Bureau before the student reserves a room.

It is the responsibility of the prospective students to make applications and pay their deposits directly to the units where they want to live. Room application cards will be supplied in the houses. Students may apply for more than one residence, but as soon as they accept a contract in one unit they are obliged to cancel immediately all other applications for the period covered by the contract accepted. However, they may request that their applications be transferred to the next contract period. Contracts are signed for the semester in "room only" houses, and for the academic year in all other approved units. Partial payments are due in advance. The length of contracts in emergency units (private homes in Madison) varies and is determined mutually by the householder and the student concerned.

1. UNIVERSITY RESIDENCE HALLS

The University Halls are an integral part of the educational pattern of the University, and their operation is directed toward filling this role effectively. Students of all creeds,

races and backgrounds live together. A Head Resident of faculty rank and a Housefellow staff of outstanding young women bring to hall residents leadership and counsel, aid in fostering and promoting their welfare, and in providing a wealth of educational opportunities for them.

Recreational space for leisure-time activities is provided. Active student organizations govern the halls, giving to students the opportunity of enjoying and participating in a democratic type of group living. All students living in the halls belong to their hall associations and must pay the nominal fees assessed by such organizations to meet the costs of the social and cultural programs.

Rooms are comfortably and attractively furnished. Meals in all University Residence Halls are well balanced, nutritious, and skillfully prepared. A number of students work in the kitchens and dining rooms on a part-time basis in exchange for lunch and dinner. Applications for such work may be made at the Division of Residence Halls personnel office in Slichter Hall.

Barnard Hall, accommodating 156 residents in single and double rooms, is located on the main campus near the library, Union, and classroom buildings.

Chadbourne Hall will be closed to occupancy beginning in fall, 1952, in order that construction of a new, larger, modern university women's residence hall can be begun.

Elizabeth Waters Hall, accommodating 498 students in double rooms, is located on Observatory Hill overlooking a wooded slope and Lake Mendota.

Badger Club consists of three houses for 22 women each. Residents eat their meals in the Barnard Hall dining room.

Slichter Hall on the lakeshore, constructed in 1946 as a men's hall, will be assigned to women for the academic year 1952–53 as a temporary substitute for Chadbourne. It will accommodate 200 women in double rooms.

Rates, Applications, and Assignments (Applies to Both Men and Women)

Rates are based on a prediction of future costs, and the University reserves the right to make adjustments during the year if necessary. Rates for the 1951–52 academic year ranged from $625 to $680 for women, and from $565 to $665 for men, depending upon the room assigned. Charges for room and board are payable in advance by the quarter. Rooms are not rented without board.

Room Application. (See application form on page 19.) Undergraduates who are residents of Wisconsin receive preference in assignment to the University Residence Halls. No applications will be accepted from graduate or out-of-state students for 1952–53. To give equal opportunity to all applicants, the procedure for accepting room application for University Residence Halls is as follows:

March 1 is the first date on which applications may be made for the following academic year. Those applications postmarked March 1–10 inclusive are included in an impartial drawing held about March 15. This determines assignment and waiting-list order. Students who wish to be roommates must submit their applications in the same envelope to assure being considered together at the drawing. Applicants are urged to submit applications by mail; no priority is given to applications submitted in person. Applications postmarked after March 10 will be numbered and processed in the order received and added to the proper waiting list. Students who have not applied by March 10 should not be discouraged from adding their applications to the waiting list; each year more applications are accepted than there are accommodations available, so those on the waiting list may have an opportunity for assignment when cancellations are received.

Applications for the second semester are accepted beginning June 1; for the eight-week summer session, January 2.

Room deposits of residents are **not** applied on room and board accounts but are automatically transferred from year to year until the end of the period of residence, at which

time they are refunded. If after a student makes application and files a $10.00 deposit he finds he cannot attend the University, **the deposit is refunded,** provided the student gives notice to the Residence Halls Assignment Office. Room and board payments are refunded from the time of check-out when a student leaves the halls to enter military service.

Rooms are rented for the entire academic year, and a student can not be released from his room contract at the end of the first semester. Students planning to move into sorority or fraternity houses for the second semester are urged not to apply for rooms in the University Halls.

Room Assignments. Quotas for each class are established each year by the Board of Regents on the basis of hall capacities. **For women** the following 1952–53 quotas have been set: freshmen, 32 per cent; sophomores, 28 per cent (25 per cent returning, 3 per cent new); juniors, 22 per cent (20 per cent returning, 2 per cent new); seniors, 16 per cent (15 per cent returning, 1 per cent new); foreign students, 2 per cent (undergraduate or graduate). **Quotas for men,** because of the unusual draft and manpower situation, have been suspended for the school year 1952–53; but the policy of keeping as much as possible a balance of freshmen, sophomores, juniors, and seniors in each house will continue; a 5 per cent quota has been established in the men's halls for foreign students. Wisconsin veterans of World War II and those who have been in service since then are given preference in assignment.

New room assignments are made, within quota limitations, in strict accordance with the applicant's location on the waiting list.

APPLICATION FOR UNIVERSITY RESIDENCE HALLS

The following application may be filled in and sent to the **Division of Residence Halls, Slichter Hall, University of Wisconsin, Madison 6, Wisconsin.** It must be accompanied by a ten-dollar deposit as specified above, made payable to University Residence Halls. If you wish a receipt for the deposit, enclose a stamped, self-addressed envelope for its return.

Name .....
Please Print (Last Name) (First) (Middle) Date of Application

.....
Present Address (St. and No.) (City) (Zone) (State) (Telephone No.)

.....
Name of Parent or Guardian (St. and No.) (City) (State) (Telephone No.)

APPLICATION FOR:

.....Academic Year (Sept.-June)—Deposit $10

.....Second Semester (Feb.-June)—Deposit $10

.....Summer Session (June-Aug.)—Deposit $ 5

Choice of Room (Give hall and type of room).

1. .....

.....

YOUR CLASSIFICATION WILL THEN BE:

Fr..... Soph..... Jr..... Sr..... Grad.....

Course of Study.....

Married or Single.....

Age..... Are you a Veteran?.....

Roommate preference:

.....

The person you name should also request you as roommate. If no one is named, it is assumed that you will accept the person assigned.

List name of College or University attended since graduation from high school:

.....

If you are a former student at the University of Wisconsin, list former Madison address:

.....

2. OFF-CAMPUS ACCOMMODATIONS

Privately operated university approved dormitories and houses for women students house 1,400 women in 32 units. Houses which meet at least the minimum standards of the University and the city safety code are classified as approved houses. The approved houses offer contracts for rooms on a semester basis and for room and board on the academic year basis.

Special Interest Houses

La Maison Francaise is operated under the auspices of the French Department and is open to women for both room and board.

The Spanish House, operated under the auspices of the Spanish Department in **summer session only,** is open to women for both board and room.

For full information write directly to the departments above.

Several co-operative houses where residents do a certain amount of work each day in order to reduce living costs are available.

Tabard Inn and Andersen House, operated by the University Women's Housing Corporation, are reserved for undergraduate women. For further information, address the Office of the Dean of Women.

One other unit, a combination co-operative and special interest house for 29 women, offers interracial group living, at low cost.

Sorority Houses

About 450 women students live in sorority houses. Ordinarily sororities offer room and board to members only. However, the Housing Bureau lists them as approved residences for women during the summer session.

HOUSING FOR GRADUATE WOMEN

There are five university approved houses for graduate women. Food service and rooms are available in one private house; two have kitchen privileges, and two offer room-only accommodations by the semester. All are located near the campus and are within walking distance of the Memorial Union dining rooms. They are regularly inspected by the University.

Many rooms in private homes throughout Madison are listed with the Housing Bureau. The University does not generally inspect these rooms and therefore makes no evaluation of the accommodations offered. Privately owned and operated apartments may be rented through personal application but the supply is insufficient to meet the demand.

During the summer session some of the large dormitories, sororities, and approved houses are made available to women students. Both graduates and undergraduates are accepted in some units. Whenever a graduate student elects to live in an undergraduate unit during the summer, she accepts senior rules under the Women's Self-Government Association.

MEN STUDENTS

The following types of housing accommodate single men: University Residence Halls (23 per cent), privately operated lodging houses (40 per cent), fraternities (15 per cent), parents' homes (9 per cent), and private room rentals (13 per cent).

Although men students are not required to live in approved houses, the University reserves the right to request men students to move when their quarters are unsatisfactory and below accepted university housing standards. Men students may not live in houses accommodating women who are not members of the resident family.

1. UNIVERSITY RESIDENCE HALLS

The University Halls are an integral part of the educational pattern of the University, and their operation is directed toward filling this role effectively. Students of all creeds,

races and backgrounds live together. An educational adviser of faculty rank and a House-fellow staff of outstanding young men bring to hall residents leadership and counsel, aid in fostering and promoting their welfare and in providing a wealth of education opportunities for them.

The halls are comfortably furnished and of modern fireproof construction. Recreational space for leisure-time activities is provided. Active student organizations govern the halls, giving to students the opportunity of enjoying and participating in a democratic type of group living. All students living in the halls belong to their hall associations and must pay the nominal fees assessed by such organizations to meet the costs of the social and cultural programs.

Meals in all University Residence Halls are well balanced, nutritious, and skillfully prepared. A number of students work in the kitchens and dining rooms on a part-time basis in exchange for lunch and dinner. Applications for such work may be made to the Division of Residence Halls personnel office in Slichter Hall.

Tripp and Adams Halls, built in quadrangular form around common courts, provide housing for 50 men in double and single rooms in each of their 16 houses. Men have their meals in nearby Van Hise dining rooms.

The eight **Kronshage houses** are located along the lake shore to the west of Tripp and Adams. They accommodate 80 men each in double rooms; the dining rooms are located in Kronshage Hall, the central unit.

(See pages 18 and 19 for Rates, Application, and Assignment Information.)

2. OFF-CAMPUS ACCOMMODATIONS

Private Lodging Houses. About 3,500 men live in lodging houses near the campus and in private homes in the residential sections of the city. It is almost impossible to obtain such accommodations by mail; rentals are arranged by personal interview with the individual owners. Houses meeting the minimum standards of the University and the city building code requirements are classified as approved houses. Contracts are provided for semester rentals in such units. In the absence of a signed university contract all rentals are on a weekly basis.

Fraternities. Fraternities operate their houses for fraternity members only. However, when vacancies occur in these houses, they are listed with the Housing Bureau, and rental information is available there for non-members.

Babcock House. Accommodations in this co-operative house are available to a limited number of students in the College of Agriculture. For detailed information write to the Associate Dean of the College of Agriculture, Madison 6, Wisconsin.

MARRIED COUPLES AND FAMILIES

1. TEMPORARY HOUSING PROJECTS

Temporary housing projects are units operated by the Division of Residence Halls to help meet the demand for student housing during the continued housing shortage. As demand decreases, these projects will be curtailed or eliminated but as yet no definite date for final closing has been set. Students are advised to request current housing information from the Housing Bureau well in advance of the opening date of the semester in which they will enroll. The temporary housing projects now in operation are listed below:

Monroe Trailer Park. The 114 trailers in this camp, located on the campus, are for the use of married students and their families. Veterans are given preference, but some non-veterans were assigned trailers for the academic year 1951–52.

East Hill Trailer Parking Site. There are 122 trailer parking sites in this camp, located about one mile from the campus, which are available to married students who own trailers. This park is located two blocks from a city bus line.

There may be a few trailer sites available at 2929 University Avenue, which is on a bus line.

2. APARTMENTS AND HOUSEKEEPING ROOMS

A limited number of family-unit type accommodations are listed with the Housing Bureau as they become vacant and are available to those married students who call at the Housing Bureau. The turnover in apartments in the city continues throughout the year. Generally there is a fair number of light housekeeping units and sleeping rooms available for married couples, but there is not enough family housing of this type to meet the demand at the beginning of the semester. Married student families with children are advised not to bring their children to Madison unless housing has been arranged for in advance. Here, as elsewhere in times of shortage, it is difficult to obtain housing for families with children. Men who cannot secure family housing for the opening date of the semester should come alone and send for their families when housing has been obtained.

Detailed information on all accommodations described under this section on housing will be sent at your request. Address the University Housing Bureau, 434 Sterling Court, Madison 6, Wisconsin.

MEALS

For students who live in houses that do not have dining halls, the University provides meal service in the Memorial Union Building and the Union Breese Terrace Cafeteria on the west side of the campus. Four large rooms in the Union furnish a variety of dining services—cafeteria, Georgian Grill with waiter service, Tripp Commons with set-meal buffet service, and Rathskeller for sandwiches and short orders. The highest quality food is offered at economical prices. Approximately 8,000 meals are served daily. The average cost of meals in the Union Cafeteria in 1951–52 was approximately 20 cents for breakfast, 60 cents for lunch, and 70 cents for dinner.

There are several student sponsored co-op meal service clubs in the campus area—applications can be made after students arrive in Madison.

COLLEGE OF LETTERS AND SCIENCE

MARK H. INGRAHAM, DEAN

FACULTY

ADAMS, JOHN ALLAN STEWART, *Ph.D.*, Project Associate in Chemistry
AGARD, WALTER RAYMOND, *B.A., B.Litt., Litt.D.*, Professor of Classics
ALBERSON, MRS. HAZEL STEWART, *Ph.D., Litt.D.*, Associate Professor of Comparative Literature
ALBERTY, ROBERT ARNOLD, *Ph.D.*, Associate Professor of Chemistry
ALCALA, HUGO RODRIGUEZ, *M.A., Ph.D. (Law)*, Instructor in Spanish
ALEXANDER, JOHN WESLEY, *Ph.D.*, Associate Professor of Geography
ALLEN, CHARLES ELMER, *Ph.D., Sc.D.*, Emeritus Professor of Botany
ALLEN, FLORENCE ELIZA, *Ph.D.*, Emeritus Assistant Professor of Mathematics
ALLEN, PAUL JAMES, *Ph.D.*, Associate Professor of Botany
AMES, DAVID WATSON, *Ph.D.*, Instructor in Sociology
ARCHER, E. JAMES, *Ph.D.*, Instructor in Psychology
ASHTON, JON R., *Ph.D.*, Assistant Professor of Library Science

BACKUS, MYRON PORT, *Ph.D.*, Professor of Botany and Plant Pathology
BAERREIS, DAVID ALBERT, *Ph.D.*, Associate Professor of Anthropology
BAETZHOLD, HOWARD GEORGE, *M.A.*, Assistant to the Associate Dean
BAILEY, STURGES WILLIAMS, *M.A.*, Assistant Professor of Geography
BANDY, WILLIAM THOMAS, *Ph.D.*, Professor of French
BARNETT, MILTON LEONARD, *B.A.*, Assistant Professor of Sociology
BARSCHALL, HENRY HERMAN, *Ph.D.*, Professor of Physics
BAUGHMAN, EMMETT EARL, *Ph.D.*, Assistant Professor of Psychology
BEALE, HOWARD KENNEDY, *Ph.D.*, Professor of History
BECKER, HOWARD, *Ph.D.*, Professor of Sociology
BEEMAN, WILLIAM WALDRON, *Ph.D.*, Professor of Physics
BENDER, PAUL, *Ph.D.*, Associate Professor of Chemistry
BERULFSEN, BJARNE, *Ph.D.*, Visiting Lecturer in Scandinavian Languages
BILSTAD, NELLIE MAE, *Ph.D.*, Associate Professor of Zoology
BING, R. H., *Ph.D.*, Professor of Mathematics
BLAEDEL, WALTER JOHN, *Ph.D.*, Associate Professor of Chemistry
BLANSHARD, RUFUS ANDERSON, *Ph.D.*, Instructor in English
BLOCK, HASKELL, *Ph.D.*, Assistant Professor of Comparative Literature
BLOTZ, HELENE S-THOMAS, *M.A.*, Assistant Professor of Music (also Extension)
BOARDMAN, EUGENE POWERS, *Ph.D.*, Associate Professor of History
BÖGHOLT, CARL MÖLLER, *Ph.D.*, Professor of Philosophy
BORCHERS, GLADYS LOUISE, *Ph.D.*, Professor of Speech (also Education)
BOTTKE, KARL GEORGE, *Ph.D.*, Associate Professor of French
BOYD, CHARLES ALEXANDER, *Ph.D.*, Assistant Professor of Chemistry
BRANDEIS, ELIZABETH (MRS. P. A. RAUSHENBUSH), *Ph.D.*, Lecturer in Economics (Associate Professor)
BREMBECK, WINSTON LAMONT, *Ph.D.*, Assistant Professor of Speech
BRIDGMAN, ALMA LOUISE, *M.A.*, Instructor in Economics
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BRITTIN, MARIE ELEANOR, *Ph.D.*, Instructor in Speech
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BRONFENBRENNER, MARTIN, *Ph.D.*, Associate Professor of Economics
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BRUNS, FRIEDRICH, *Ph.D.*, Emeritus Professor of German
BRYAN, GEORGE SMITH, *Ph.D.*, Emeritus Professor of Botany
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BUCKLEY, JEROME HAMILTON, *Ph.D.*, Professor of English
BUERKI, FREDERICK ALGA, *M.S.*, Assistant Professor of Speech (Assistant Theater Director)
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BURNS, SAMUEL T., *Ph.D.*, Professor of Music (also Education)
BUTLER, ROBERT ALLEN, *B.A.*, Instructor in Psychology

CALDEN, GEORGE, *Ph.D.*, Lecturer in Psychology
CAMERON, EUGENE NATHAN, *Ph.D.*, Associate Professor of Geology
CAMERON, NORMAN ALEXANDER, *Ph.D.*, *M.D.*, Professor of Psychology and Psychiatry
CAMERON, RONDO EMMETT, *Ph.D.*, Assistant Professor of History (also Economics)
CARPENTER, LOUISE LOCKWOOD (MRS. R. H.), *B.M.*, Professor of Music
CARSTENSEN, VERNON, *Ph.D.*, Associate Professor of History (also Agricultural Economics)
CASSIDY, FREDERIC GOMES, *Ph.D.*, Professor of English
CAVANAGH, GLADYS LOUISE, *M.S.*, Assistant Professor of Library Science
CHOU, KUO-P'ING, Assistant Professor of Comparative Philology and Linguistics
CHURCH, RICHARD CASSIUS, *M.A.*, Associate Professor of Music
CLAGETT, MARSHALL, *Ph.D.*, Associate Professor of History of Science
CLARENBACH, FRED A., *Ph.D.*, Professor of Political Science
CLARK, ANDREW HILL, *Ph.D.*, Professor of Geography
CLARK, HARRY HAYDEN, *M.A.*, Professor of English
CLARKE, HELEN ISABEL, *M.A.*, Professor of Social Work
CLARKE, HERBERT MORRIS, *Ph.D.*, Assistant Professor of Botany
CLEVELAND, EDWARD DEWAYNE, *Ph.D.*, Instructor in English
CLINARD, MARSHALL BARRON, *Ph.D.*, Professor of Sociology
CODE, ARTHUR DODD, *Ph.D.*, Assistant Professor of Astronomy
COON, LELAND AVERY, *M.A.*, Professor of Music
COOPER, W. CHARLES, *Ph.D.*, Instructor in Chemistry
CORNWELL, C. DANIEL, *Ph.D.*, Instructor in Chemistry
COTTAM, GRANT, *Ph.D.*, Assistant Professor of Botany
CRANE, ROBERT ELWOOD, *Ph.D.*, Instructor in Music
CROW, JAMES FRANKLIN, *Ph.D.*, Assistant Professor of Zoology (also Genetics)
CURTI, MERLE EUGENE, *Ph.D.*, *L.H.D.*, Frederick Jackson Turner Professor of History
CURTIS, CHARLES WHITTLESEY, *Ph.D.*, Instructor in Mathematics
CURTIS, JOHN THOMAS, *Ph.D.*, Professor of Botany
CURTISS, CHARLES FRANCIS, *Ph.D.*, Assistant Professor of Chemistry and Physics
CURVIN, JONATHAN WADHAMS, *Ph.D.*, Associate Professor of Speech
CUTLIP, SCOTT MUNSON, *Ph.M.*, Associate Professor of Journalism

DANIELS, FARRINGTON, *Ph.D.*, Professor of Chemistry; Chairman of the Course in Chemistry
DATTA, DHIRENDRA MOHAN, *Ph.D.*, Visiting Knapp Professor of Philosophy
DENNISTON, ROLLIN HENRY, *Ph.D.*, Emeritus Assistant Professor of Botany
DIETRICH, JOHN ERB, *Ph.D.*, Associate Professor of Speech
DILLINGER, JOSEPH ROLLEN, *Ph.D.*, Assistant Professor of Physics
DORAN, MADELINE, *Ph.D.*, Professor of English
DOREMUS, ROBERT BARNARD, *Ph.D.*, Associate Professor of English; Associate Dean

DOUDNA, WILLIAM LESTER, Lecturer in Journalism
DOWLING, JOHN CLARKSON, *Ph.D.*, Instructor in Spanish
DOWNING, WILLARD EDWARD, *M.S.S.*, Associate Professor of Social Work (also Extension)
DUGGAR, BENJAMIN MINGE, *Ph.D.*, Emeritus Professor of Physiological and Applied Botany
DUNCAN, ROBERT ELI, *Ph.D.*, Project Associate in Botany
DUNN, SAMUEL WATSON, *Ph.D.*, Assistant Professor of Journalism
DVORAK, RAYMOND FRANCIS, *B.M.*, *Mus.D.*, Professor of Music

EARLEY, JAMES STAINFORTH, *Ph.D.*, Professor of Economics
EASTMAN, IRENE BELLE, *B.M.*, Assistant Professor of Music
EASUM, CHESTER VERNE, *Ph.D.*, Professor of History
EBERLEIN, WILLIAM FREDERICK, *Ph.D.*, Assistant Professor of Mathematics
ECCLES, MARK, *Ph.D.*, Professor of English
EDSON, CHARLES FARWELL, *Ph.D.*, Professor of History
EKERN, PAUL CHESTER, JR., *Ph.D.*, Assistant Professor of Meteorology (also Soils)
ELLSWORTH, PAUL THEODORE, *Ph.D.*, Professor of Economics
EMLEN, JOHN THOMPSON, *Ph.D.*, Professor of Zoology
EMMONS, RICHARD CONRAD, *Ph.D.*, Professor of Geology
ENCK, JOHN JACOB, *Ph.D.*, Instructor in English
EPSTEIN, LEON DAVID, *Ph.D.*, Associate Professor of Political Science
EVANS, HERBERT PULSE, *Ph.D.*, Professor of Mathematics (also Extension)
EVANS, RICHARD IRVING, *Ph.D.*, Associate Professor of Botany
EWBANK, HENRY LEE, *Ph.D.*, Professor of Speech

FARMER, PAUL, *Ph.D.*, Associate Professor of History
FASSETT, NORMAN CARTER, *Ph.D.*, Professor of Botany
FELCH, WILLIAM EUGENE, *Ph.D.*, Lecturer in Philosophy
FELLMAN, DAVID, *Ph.D.*, Professor of Political Science
FERRY, JOHN DOUGLASS, *Ph.D.*, Professor of Chemistry
FETTER, FRANK WHITSON, *Ph.D.*, Visiting Professor of Economics
FINCH, VERNOR CLIFFORD, *Ph.D.*, *Sc.D.*, Professor of Geography
FINLEY, ROBERT WILLIAM, *Ph.D.*, Assistant Professor of Geography (also Extension)
FISCHER, RICHARD, *Ph.D.*, Emeritus Professor of Chemistry
FISHER, BURTON REUBEN, *Ph.D.*, Professor of Sociology
FISK, EMMA LUELLA, *Ph.D.*, Associate Professor of Botany
FITZGERALD, EDWIN ROGER, *Ph.D.*, Project Associate in Chemistry
FITZGERALD, GEORGE PATRICK, *M.S.*, Project Associate in Botany
FOLEJEWSKI, ZBIGNIEW, *Ph.D.*, Assistant Professor of Slavic Languages
FOWLER, MURRAY, *Ph.D.*, Associate Professor of Comparative Philology and Linguistics (also Classics)
FRASER, LEMUEL ANDERSON, *Ph.D.*, Assistant Professor of Zoology
FRIEDLANDER, ERNST PETER, Artist in Residence, Music
FRIEDMAN, SAMUEL H., *Ph.D.*, Visiting Lecturer in Psychology (1952–53)
FRY, WILLIAM FREDERICK, *Ph.D.*, Assistant Professor of Physics
FULCHER, PAUL MILTON, *Ph.D.*, Professor of English
FULLERTON, ROBERT ELSTON, *Ph.D.*, Assistant Professor of Mathematics

GALPIN, ALFRED MAURICE, *Ph.D.*, Assistant Professor of French
GANE, SALLY LOUISE, *M.A.*, *M.S.W.*, Assistant Professor of Social Work
GARD, ROBERT EDWARD, *M.A.*, Associate Professor of Speech (also Rural Sociology and Wisconsin Idea Theater)
GARNETT, ARTHUR CAMPBELL, *M.A.*, *Litt.D.*, Professor of Philosophy
GASIOROWSKI, XENIA, *Ph.D.*, Assistant Professor of Slavic Languages
GATES, ROBERT MAYNARD, *Ph.D.*, Assistant Professor of Geology
GAUSEWITZ, WALTER, *Ph.D.*, Professor of German
GERLOFF, GERALD CARL, *Ph.D.*, Assistant Professor of Botany
GERTH, HANS HEINRICH, *Ph.D.*, Associate Professor of Sociology

GIBSON, ELLEN BERNICE, *B.A.*, Instructor in Library Science
GIESE, WILLIS ERLE, *M.S.*, Instructor in Economics
GILBERT, EDWARD MARTINIUS, *Ph.D.*, Emeritus Professor of Botany
GILCHRIST, JACK CECIL, *Ph.D.*, Assistant Professor of Psychology
GILLEN, CHARLES FREDERICK, *Ph.D., Litt.D.*, Emeritus Associate Professor of French
GILLIN, JOHN LEWIS, *Ph.D., LL.D.*, Emeritus Professor of Sociology
GLAESER, MARTIN GUSTAVE, *Ph.D.*, Professor of Economics and Commerce
GLAUSER, ALFRED CHARLES, *Ph.D.*, Associate Professor of French
GLICKSMAN, HARRY, *Ph.D., LL.B.*, Emeritus Professor in the College of Letters and Science; Emeritus Lecturer in English
GOERING, HARLAN LOWELL, *Ph.D.*, Assistant Professor of Chemistry
GOLDBERG, RICHARD J., Project Associate in Chemistry
GOLIGHTLY, CORNELIUS LACY, *Ph.D.*, Assistant Professor of Philosophy
GOODWIN, WILLIAM FRANCIS, *Ph.D.*, Assistant Professor of Philosophy
GORDON, EDGAR BERNARD, Emeritus Professor of Music
GOSTING, LOUIS JOSEPH, *Ph.D.*, Assistant Professor of Chemistry
GRANT, DAVID ALEXANDER, *Ph.D.*, Professor of Psychology
GREENE, HENRY CAMPBELL, *Ph.D.*, Curator of Cryptogamic Herbarium
GREENE, JOHN COLTON, *Ph.D.*, Assistant Professor of History
GREENFIELD, STANLEY BRIAN, *Ph.D.*, Instructor in English
GRIM, HARRIETT ELIZABETH, *Ph.D.*, Emeritus Assistant Professor of Speech
GROVES, HAROLD MARTIN, *Ph.D.*, Professor of Economics
GUNLAUGSON, CHRISTINE, *B.M.*, Assistant Professor of Music
GUYER, MICHAEL FREDERIC, *Ph.D., LL.D.*, Emeritus Professor of Zoology

HABERMAN, FREDERICK WILLIAM, *Ph.D.*, Professor of Speech
HAGEN, OSKAR FRANK LEONARD, *Ph.D., F.R.S.A.*, Professor of History and Criticism of Art
HAKEEM, MICHAEL, *Ph.D.*, Assistant Professor of Sociology
HALL, NORRIS FOLGER, *Ph.D.*, Professor of Chemistry
HAMMER, PRESTON CLARENCE, *Ph.D.*, Associate Professor of Mathematics; Director Computing Service
HAMMOND, EDWIN HUGHES, *Ph.D.*, Assistant Professor of Geography
HANLEY, MILES LAWRENCE, *M.A.*, Professor of English
HARLOW, HARRY FREDERICK, *Ph.D.*, Professor of Psychology
HARRINGTON, FRED HARVEY, *Ph.D.*, Professor of History
HARRIS, JULIAN EARLE, *Ph.D.*, Professor of French
HART, CHARLES WILLIAM MERTON, *Ph.D.*, Associate Professor of Anthropology
HART, HENRY COWLES, *Ph.D.*, Assistant Professor of Political Science
HARTSHORNE, RICHARD, *Ph.D.*, Professor of Geography
HASLER, ARTHUR DAVIS, *Ph.D.*, Professor of Zoology
HAUGEN, EINAR INGVALD, *Ph.D.*, Thompson Professor of Scandinavian Languages
HAWKES, LESTER LITCHFIELD, *Ph.M.*, Associate Professor of Journalism
HAY, WILLIAM HENRY, *Ph.D.*, Associate Professor of Philosophy
HEERMANN, WALTER HENRY, Lecturer in Music
HEFFNER, ROE-MERRILL SECRIST, *Ph.D.*, Professor of German
HEIRONIMUS, JOHN PAUL, *Ph.D.*, Assistant Professor of Classics
HENEL, HEINRICH EDMUND KARL, *Ph.D.*, Professor of German
HERB, RAYMOND GEORGE, *Ph.D.*, Professor of Physics
HERRICK, CHESTER ALBERN, *Sc.D.*, Professor of Zoology and Veterinary Science
HERRIOTT, JAMES HOMER, *Ph.D.*, Professor of Spanish; Associate Dean of the Graduate School
HESSE, EVERETT WESLEY, *Ph.D.*, Associate Professor of Spanish
HESSELTINE, WILLIAM BEST, *Ph.D., Litt.D.*, Professor of History
HIGBIE, CHARLES EVERETT, *Ph.D.*, Associate Professor of Journalism
HIGBY, CHESTER PENN, *Ph.D., LL.D.*, Professor of History
HILL, HENRY BERTRAM, *Ph.D.*, Professor of History (also Extension)
HIRSCHFELDER, JOSEPH OAKLAND, *Ph.D.*, Professor of Chemistry

HOFFMAN, FREDERICK JOHN, *Ph.D.*, Professor of English
HOHLFELD, ALEXANDER RUDOLPH, *Ph.D.*, Emeritus Professor of German
HOLT, MATTHEW LESLIE, *Ph.D.*, Professor of Chemistry
HOVDE, BRYNJOLF JAKOB, *Ph.D., Litt.D.*, Visiting Professor of Scandinavian Area Studies (1951–52)
HOVEY, GRAHAM BILLINGS, *B.A.*, Assistant Professor of Journalism
HOWE, HERBERT MARSHALL, *Ph.D.*, Assistant Professor of Classics
HOWELLS, WILLIAM WHITE, *Ph.D.*, Professor of Anthropology
HUFFER, CHARLES MORSE, *Ph.D.*, Professor of Astronomy
HUGHES, MERRITT YERKES, *Ph.D., D.Litt.*, Professor of English
HUITT, RALPH KINSLOE, *Ph.D.*, Assistant Professor of Political Science
HUSKINS, C. LEONARD, *Ph.D., Sc.D.*, Professor of Botany
HYDE, GRANT MILNOR, *M.A.*, Professor of Journalism

IHDE, AARON JOHN, *Ph.D.*, Associate Professor of Chemistry
ILTIS, LEON LEONARD, *B.M.*, Professor of Music
IMMEL, ERIC ROBERT, *Ph.D.*, Instructor in Mathematics
INGERSOLL, LEONARD ROSE, *Ph.D.*, Emeritus Professor of Physics
INGRAHAM, MARK HOYT, *Ph.D., LL.D.*, Dean of the College of Letters and Science; Professor of Mathematics
IRWIN, JOHN VALEUR, *Ph.D.*, Professor of Speech

JACOBS, HERBERT AUSTIN, *B.S.*, Lecturer in Journalism
JENSEN, JOHANNES HANS DANIEL, *Ph.D.*, Carl Schurz Professor of Physics
JENSEN, MERRILL MONROE, *Ph.D.*, Professor of History
JEROME, GLADYS, *M.A.*, Instructor in English (also Extension)
JOHANSEN, GUNNAR, Professor of Music
JOHNSON, GERTRUDE ELIZABETH, *B.A.*, Emeritus Associate Professor of Speech
JOHNSON, WILLIAM SUMMER, *Ph.D.*, Professor of Chemistry
JONES, PAUL GEORGE, *M.A.*, Associate Professor of Music
JOOS, MARTIN, *Ph.D.*, Professor of German
JUDSON, S. SHELDON, *Ph.D.*, Associate Professor of Geology

KADUSHIN, ALFRED, *M.S.*, Assistant Professor of Social Work (also Extension)
KARLSSON, GEORG, *Ph.D.*, Visiting Lecturer in Scandinavian Area Studies (1952–53)
KASTEN, LLOYD AUGUST WILLIAM, *Ph.D.*, Professor of Spanish and Portuguese
KATZ, SIDNEY, *Ph.D.*, Project Associate in Chemistry
KIENITZ, JOHN FABIAN, *Ph.D.*, Professor of Art History
KIMBALL, LUCILLE COOPER, *B.M.*, Instructor in Music
KING, ANNE RUTH, *Ph.D.*, Instructor in English
KING, EDWARD LOUIS, *Ph.D.*, Assistant Professor of Chemistry
KIRKLAND, EDWARD CHASE, *Ph.D., Litt.D.*, Visiting Knapp Professor of History (1951)
KIRSHEN, HIMY BENJAMIN, *Ph.D.*, Visiting Professor of Economics (1952)
KITTEL, PAULA MARGARETHA, *Ph.D.*, Emeritus Assistant Professor of German
KLEENE, STEPHEN COLE, *Ph.D.*, Professor of Mathematics
KLEIN, MICHAEL WILLIAM, *Ph.D.*, Associate Professor of Chemistry
KNAPLUND, PAUL ALEXANDER, *Ph.D., Litt.D.*, Professor of History and Scandinavian Area Studies
KOLISCH, RUDOLPH, Artist in Residence, Music
KOREVAAR, JACOB, *Ph.D.*, Assistant Professor of Mathematics
KRAMER, FRANK RAYMOND, *Ph.D.*, Project Associate in History
KRAMER, SOL, *Ph.D.*, Assistant Professor of Zoology
KROEBER, CLIFTON BROWN, *Ph.D.*, Assistant Professor of History
KROFF, ALEXANDER YALE, *Ph.D.*, Assistant Professor of French

LACY, EDGAR WILSON, *Ph.D.*, Professor of English
LANGER, RUDOLPH ERNEST, *Ph.D.*, Professor of Mathematics
LARSEN, EDWIN MERRITT, *Ph.D.*, Associate Professor of Chemistry
LARSON, JAMES ARTHUR, *Ph.B.*, Lecturer in Journalism (also University News Service)
LAUDON, LOWELL ROBERT, *Ph.D.*, Professor of Geology
LEIBOWITZ, HERSCHEL WELDON, *Ph.D.*, Instructor in Psychology
LEITH, CHARLES KENNETH, *Ph.D., LL.D., Sc.D.*, Emeritus Professor of Geology
LESCOHIER, DON DIVANCE, *Ph.D.*, Professor of Economics
LEVEQUE, ANDRE CAMILLE, *Ph.D.*, Professor of French
LIND, DAVID ARTHUR, *Ph.D.*, Assistant Professor of Physics
LINDGREN, RAYMOND E., *Ph.D.*, Visiting Associate Professor of History (1952–53)
LIVELY, ROBERT ALEXANDER, *Ph.D.*, Assistant Professor of History
LUCKHARDT, HILMAR FRANCIS, *M.A.*, Associate Professor of Music
LULL, SARAH D., *M.S.W.*, Lecturer in Social Work
LUTTINGER, JOAQUIN MAZDAK, *Ph.D.*, Associate Professor of Physics
LYON, ALBERT EDDY, *Ph.D.*, Assistant Professor of Spanish
LYSENKO, MICHAEL GEORGE, *Ph.D.*, Assistant Professor of Zoology (also Medical Microbiology)

MACDUFFEE, CYRUS COLTON, *Ph.D., Sc.D.*, Professor of Mathematics
MACK, JULIAN ELLIS, *Ph.D.*, Professor of Physics
MACKENDRICK, PAUL LACHLAN, *Ph.D.*, Professor of Classics
MACLEAN, MALCOLM SHAW, JR., *M.A.*, Instructor in Journalism
MARCH, HERMAN WILLIAM, *Ph.D.*, Emeritus Professor of Mathematics
MARCOUILLER, DONALD RAY, *B.M.*, Instructor in Music
MARGRAVE, JOHN L., *Ph.D.*, Instructor in Chemistry
MASON, CHARLES THOMAS, JR., *Ph.D.*, Instructor in Botany
MATHESON, HELEN MARIE, *B.A.*, Lecturer in Journalism
MATHEWS, JOSEPH HOWARD, *Ph.D.*, Emeritus Professor of Chemistry
MAYDA, JAROSLAV, *J.U.Dr.*, Assistant Professor of Political Science (also Law)
MAYOR, JOHN ROBERTS, *Ph.D.*, Professor of Mathematics (also Education)
MCCAMY, JAMES LUCIAN, *Ph.D.*, Professor of Political Science
MCCORMICK, THOMAS CARSON TOOKE, *Ph.D.*, Professor of Sociology
MCELVAIN, SAMUEL MARION, *Ph.D.*, Professor of Chemistry
MCGANN, LEONA MARIE, *M.S.S.W.*, Lecturer in Social Work
MCGARY, JOHN KEITH, *Ph.D.*, Assistant Professor of Philosophy
MCGILVARY, EVANDER BRADLEY, *Ph.D.*, Emeritus Professor of Philosophy
MCLANE, CHARLES KEITH, *Ph.D.*, Assistant Professor of Physics
MCSHAN, WILLIAM HARTFORD, *Ph.D.*, Professor of Zoochemistry
MEIKLEJOHN, ALEXANDER, *Ph.D., LL.D.*, Emeritus Professor of Philosophy
MELOCHE, VILLIERS WILLSON, *Ph.D.*, Professor of Chemistry
MERCIER, GERMAINE EUGENIE, *M.A.*, Assistant Professor of French
MEYER, ELVA SHIPLEY, *Ph.D.*, Research Associate in Zoology
MEYER, MRS. INEVA R., *M.A.*, Assistant Dean
MICHELL, ROBERT BELL, *Ph.D.*, Emeritus Professor of French
MILES, ARTHUR PARKER, *Ph.D.*, Professor of Social Work
MILHAM, MARY ELLA, *Ph.D.*, Instructor in Integrated Liberal Studies and Classics
MILLER, CARLOS OAKLEY, *Ph.D.*, Project Associate in Botany
MILLER, EDWARD ERNST, *Ph.D.*, Professor of Physics
MILLIGAN, EDWARD ELGIN, *Ph.D.*, Assistant Professor of French (also Foreign Student Adviser)
MILOFSKY, BERNARD, Artist in Residence, Music
MITCHELL, RONALD ELWY, *M.A.*, Professor of Speech; Theater Director
MOBLEY, RALPH CLAUDE, *Ph.D.*, Project Associate in Physics
MONSCHEIN, ROBERT WINFIELD, *M.M.*, Assistant Professor of Music
MORGAN, J. THEODORE, *Ph.D.*, Associate Professor of Economics
MORRISON, PETER REED, *Ph.D.*, Associate Professor of Zoology (also Physiology)
MORTON, WALTER ALBERT, *Ph.D.*, Professor of Economics

MOTE, FREDERICK ALBERT, *Ph.D.*, Professor of Psychology (also Extension)
MULVIHILL, EDWARD ROBERT, *Ph.D.*, Associate Professor of Spanish (also Extension)
MURAKAWA, KIYOSHI, *D.Sc.*, Project Associate in Physics

NAFZIGER, RALPH OTTO, *Ph.D.*, Professor of Journalism; Director of the School of Journalism
NAUMANN, WALTER FRIEDRICH, *Ph.D.*, Assistant Professor of German
NEALE-SILVA, EDUARDO ALVARO, *Ph.D.*, Professor of Spanish
NEESS, JOHN CARL, *Ph.D.*, Assistant Professor of Zoology
NEWCOMB, ELDON HENRY, *Ph.D.*, Assistant Professor of Botany
NOLAND, LOWELL EVAN, *Ph.D.*, Professor of Zoology

ODOI, HIROSHI, *Ph.D.*, Instructor in Psychology
OLMSTEAD, CLARENCE WALTER, *Ph.D.*, Assistant Professor of Geography
ORCHARD, BERNICE ELLEN, *M.Sc.S.A.*, Associate Professor of Social Work
ORSINI, GIAN N. G., *Ph.D.*, Professor of Comparative Literature
OTTO, MAX CARL, *Ph.D.*, Emeritus Professor of Philosophy
OWENS, OWEN GLYNN, *Ph.D.*, Assistant Professor of Mathematics

PAGE, HORACE ALLEN, *Ph.D.*, Assistant Professor of Psychology
PALMERI, JOSEPH, *Ph.D.*, Associate Professor of French and Italian
PATAU, KLAUS ADOLF, *Ph.D.*, Project Associate in Botany
PATTERSON, HELEN MARGUERITE, *M.A.*, Associate Professor of Journalism
PAXTON, J. RUSSELL, *M.M.*, Visiting Lecturer in Music (1952–53)
PERLMAN, SELIG, *Ph.D.*, Professor of Economics
PETROVICH, MICHAEL BORD, *M.A.*, Instructor in History
PETZOLD, ROBERT GEORGE, *Ph.D.*, Assistant Professor of Music
PFANKUCHEN, LLEWELLYN ERNEST, *Ph.D.*, Professor of Political Science
PHILLIPS, BURR WENDELL, *M.A.*, Professor of History
POCHMANN, HENRY AUGUST, *Ph.D.*, Professor of English
POOLEY, ROBERT CECIL, *Ph.D.*, Professor of English and Integrated Liberal Studies
POST, GAINES, *Ph.D.*, Professor of History
POWELL, JOHN LEONARD, *Ph.D.*, Assistant Professor of Physics
PRESSON, ROBERT KING, *Ph.D.*, Assistant Professor of English

QUINTANA, RICARDO BECKWITH, *Ph.D.*, Professor of English

RAHIER, ALBERT NICOLAS, Artist in Residence, Music
RAMSPERGER, ALBERT GUSTAV, *Ph.D.*, Professor of Philosophy
REYNOLDS, ROBERT LEONARD, *Ph.D.*, Professor of History
REYNOLDS, VERNE BECKER, *B.M.*, Instructor in Music
RICHARDS, HUGH TAYLOR, *Ph.D.*, Professor of Physics
RIEGEL, SIEGHARDT MICHAEL, *Ph.D.*, Associate Professor of German; Assistant Dean
RIS, HANS, *Ph.D.*, Associate Professor of Zoology
ROBINSON, ARTHUR HOWARD, *Ph.D.*, Professor of Geology
ROBINSON, DUANE M., *Ph.D.*, Visiting Associate Professor of Social Work (1952–53)
RODGERS, FRANKLIN ALANSON, *Ph.D.*, Assistant Professor of Physics
RODMAN, GEORGE BUSH, *Ph.D.*, Associate Professor of English (also Extension)
ROE, FREDERICK WILLIAM, *Ph.D.*, *Litt.D.*, Emeritus Professor of English
ROEBUCK, JOHN RANSOM, *Ph.D.*, Emeritus Professor of Physics
ROGERS, SAMUEL GREENE ARNOLD, *M.A.*, Professor of French
ROLLEFSON, RAGNAR, *Ph.D.*, Professor of Physics
ROSA, ALBERTO MACHADO, *M.A.*, Instructor in Spanish and Portuguese
ROSALDO, RENATO IGNACIO, *Ph.D.*, Associate Professor of Spanish and Portuguese
RÖSELER, ROBERT OSWALD, *Ph.D.*, Emeritus Milwaukee Seminary Professor of German
ROSSI, JOSEPH, *Ph.D.*, Professor of French and Italian

ROTWEIN, EUGENE, *Ph.D.*, Assistant Professor of Economics (also Integrated Liberal Studies)
RUBINSTEIN, WILLIAM CRANDALL, *Ph.D.*, Instructor in English
RUEDISILI, CHESTER HENRY, *Ph.D.*, Lecturer in Psychology; Associate Dean
RUSSO, JOSEPH LOUIS, *Ph.D.*, Emeritus Professor of Italian

SACHS, ROBERT GREEN, *Ph.D.*, Professor of Physics
SACHSE, WILLIAM LEWIS, *B.Litt.*, *Ph.D.*, Professor of History
SALTER, JOHN THOMAS, *Ph.D.*, Associate Professor of Political Science
SANCHEZ, ROBERTO GARZA, *Ph.D.*, Assistant Professor of Spanish
SANCHEZ-BARBUDO, ANTONIO, *Ph.D.*, Associate Professor of Spanish
SANDER, H. GERHARD F., *Ph.D.*, Assistant Professor of Botany
SANDERS, MARY ELIZABETH, *Ph.D.*, Instructor in Integrated Liberal Studies and Project Associate in Botany
SANDERS, RICHARD, *Ph.D.*, Lecturer in Psychology (1952–53)
SARIG, EMMETT R., *M.M.*, Associate Professor of Music (also Extension)
SASAKI, TOM T., *Ph.D.*, Lecturer in Sociology and Anthropology
SAUER, JONATHAN D., Instructor in Botany
SAUNDERS, DONALD FREDERICK, *Ph.D.*, Project Associate in Chemistry
SCHAEFFER, ALBERT CHARLES, *Ph.D.*, Professor of Mathematics
SCHENK, RACHEL KATHERINE, *M.A.*, Associate Professor of Library Science; Director, Library School
SCHLATTER, EDWARD BUNKER, *Ph.D.*, Emeritus Professor of Romance Languages
SCHOENFELD, CLARENCE, *M.A.*, Lecturer in Journalism (also University News Service)
SCHUETTE, HENRY AUGUST, *Ph.D.*, Professor of Chemistry
SEIFERT, LESTER WILHELM, *Ph.D.*, Assistant Professor of German (also Extension)
SELLERY, GEORGE CLARKE, *Ph.D.*, *LL.D.*, Emeritus Dean and Emeritus Professor of History
SHAIN, IRVING, *Ph.D.*, Instructor in Chemistry
SHANNON, JASPER BERRY, *Ph.D.*, Visiting Professor of Political Science (1952–53)
SHANNON, LYLE WILLIAM, *Ph.D.*, Instructor in Sociology
SHAW, MARVIN EVERT, *M.A.*, Assistant to Associate Dean
SINGLETON, MACK HENDRICKS, *Ph.D.*, Professor of Spanish
SINGER, MARCUS G., *Ph.D.*, Instructor in Philosophy
SKOOG, FOLKE KARL, *Ph.D.*, Professor of Botany
SMITH, ALICE ELIZABETH, *M.A.*, Research Associate in History
SMITH, HENRY LADD, *Ph.D.*, Professor of Journalism
SMITH, KARL ULRICH, *Ph.D.*, Professor of Psychology
SOKOLNIKOFF, ELIZABETH STAFFORD, *Ph.D.*, Assistant Professor of Mathematics
SONNENDECKER, GLENN ALLEN, *Ph.D.*, Assistant Professor of Pharmacy
SORUM, CLARENCE HARVEY, *Ph.D.*, Professor of Chemistry
STANLEY, J. HELEN, *B.A.*, Lecturer in Speech
STANLEY, RAYMOND JOHN, *Ph.M.*, Assistant Professor of Speech and Radio Education
STAUFFER, JOHN FREDERICK, *Ph.D.*, Professor of Botany
STAUFFER, ROBERT CLINTON, *Ph.D.*, Assistant Professor of History of Science
STEBBINS, JOEL, *Ph.D.*, *Sc.D.*, *LL.D.*, Emeritus Professor of Astronomy
STEFFENS, LEO JOSEPH, *M.M.*, Associate Professor of Music
STERLING, HENRY SOMERS, *Ph.D.*, Associate Professor of Geography
STEVE, WILLIAM FREDERICK, *M.A.*, Emeritus Professor of Physics
STOKES, WILLIAM SYLVANE, *Ph.D.*, Professor of Political Science
STONE, KIRK HASKIN, *Ph.D.*, Associate Professor of Geography
SUOMI, VERNER EDWARD, *B.E.*, Associate Professor of Meteorology (also Biometry and Physics)
SWANDER, HOMER D., JR., *Ph.D.*, Instructor in English
SWINNEY, EDWARD EARLE, *B.M.*, Associate Professor of Music

TAYLOR, ROBERT, *B.A.*, Assistant Professor of Journalism (also University News Service)
TAYLOR, WARNER, *M.A.*, Emeritus Professor of English
TETER, JOHN WINFRED, *Ph.D.*, Assistant Professor of Social Work (also Extension)
THATCHER, LIONEL W., *Ph.D.*, Professor of Commerce and Economics

THAYER, FRANK, *M.A., J.D.*, Professor of Journalism
THOMAS, EDNAH SHEPARD, *M.A.*, Assistant Professor of English
THOMPSON, MARCUS LUTHER, *Ph.D.*, Professor of Geology
THOMSON, JOHN SEABURY, *M.A.*, Instructor in Political Science
THOMSON, JOHN WALTER, *Ph.D.*, Associate Professor of Botany (also Extension)
THURLOW, WILLARD R., *Ph.D.*, Assistant Professor of Psychology
THWAITES, FREDERIK TURVILLE, *M.A.*, Assistant Professor of Geology
TODD, MARY AVIS, *M.A., M.S.W.*, Assistant Professor of Social Work
TREWARTHA, GLENN THOMAS, *Ph.D.*, Professor of Geography
TRIPP, L. REED, *Ph.D.*, Associate Professor of Economics
TRUMBOWER, HENRY ROSCOE, *Ph.D.*, Emeritus Professor of Economics and Commerce
TRUMP, PAUL L., *Ph.D.*, Lecturer in Mathematics; also Director of Admissions
TUCKER, JOSEPH EAGON, *Ph.D.*, Associate Professor of French
TWENHOFEL, WILLIAM HENRY, *Ph.D.*, Emeritus Professor of Geology
TYLER, STANLEY ALLEN, *Ph.D.*, Professor of Geology

VAN TAMELEN, EUGENE EARLE, *Ph.D.*, Assistant Professor of Chemistry
VASILIEV, ALEXANDER ALEXANDER, *Ph.D.*, Emeritus Professor of History
VERLINDEN, CHARLES, *Ph.D.*, Visiting Professor of History (1951–52)
VOEGELI, DONALD JOSEPH, *M.M.*, Assistant Professor of Music (also Radio)
VORDTRIEDE, WERNER, *Ph.D.*, Assistant Professor of German

WADE, CHESTER, *M.D.*, Lecturer in Social Work
WAGNER, GEORGE, *M.A.*, Emeritus Professor of Zoology
WAHLIN, HUGO BERNARD, *Ph.D.*, Professor of Physics
WALES, JULIA GRACE, *Ph.D.*, Emeritus Assistant Professor of English
WALLERSTEIN, RUTH COONS, *Ph.D.*, Professor of English
WALTER, EDWARD D., *M.S.W.*, Assistant Professor of Social Work
WANG, YI T'UNG, *Ph.D.*, Visiting Assistant Professor of Comparative Philology (1951–52)
WATROUS, JAMES SCALES, *Ph.D.*, Professor of Art History
WEAVER, ANDREW THOMAS, *Ph.D., LL.D.*, Professor of Speech
WEEKS, IVAN FOREST, *M.Ph.*, Project Associate in Chemistry
WEINBERG, JULIUS RUDOLPH, *Ph.D.*, Associate Professor of Philosophy
WESTLEY, BRUCE HUTCHINSON, *M.S.*, Assistant Professor of Journalism
WHITE, HELEN CONSTANCE, *Ph.D., Litt.D., LL.D., L.H.D.*, Professor of English
WHITEHEAD, PEARL CLAUS, *Ph.D.*, Assistant Professor of Zoology
WHITFORD, ALBERT EDWARD, *Ph.D.*, Professor of Astronomy and Director of Washburn Observatory
WHITLEY, ALVIN, *Ph.D.*, Instructor in English
WILDE, LARISSA IVANOVNA, *Ph.D.*, Instructor in Slavic Langauges
WILDS, ALFRED LAWRENCE, *Ph.D.*, Professor of Chemistry
WILEY, PAUL LUZON, *Ph.D.*, Associate Professor of English
WILLARD, JOHN ELA, *Ph.D.*, Professor of Chemistry
WILLIAMS, HENRIETTA VERMEER, *Ph.D.*, Lecturer in Psychology
WILLIAMS, JOHN WARREN, *Ph.D.*, Professor of Chemistry
WILMOT, WILLIAM VERNON, JR., *M.A.*, Instructor in Economics
WINANS, JOHN GIBSON, *Ph.D.*, Associate Professor of Physics
WINCHELL, ALEXANDER NEWTON, *Sc.D.*, Emeritus Professor of Geology
WINGER, HOWARD WOODROW, *M.S.L.S.*, Assistant Professor of Library Science
WINSOR, GEORGE BYRON, *Ph.M.*, Instructor in Geography (also Education)
WITTE, EDWIN EMIL, *Ph.D.*, Professor of Economics
WOLFE, HAROLD RECLUS, *Ph.D.*, Professor of Zoology
WOOD, CHARLOTTE ROBERTSON, *M.A.*, Emeritus Associate Professor of English
WOODRING, CARL RAY, *Ph.D.*, Assistant Professor of English
WOOLLARD, GEORGE PRIOR, *Ph.D.*, Professor of Geology
WORKMAN, JOHN DAVID, *Ph.D.*, Milwaukee Seminary Professor of German

WRIGHT, EDNA CLOSE, *M.S.*, Assistant Professor of Social Work
WYCKOFF, LEWIS BENJAMIN, JR., *Ph.D.*, Instructor in Psychology

YOUNG, FRANK CHANDLER, *Ph.D.*, Assistant Dean
YOUNG, EDWIN, *M.A.*, Associate Professor of Economics (also School for Workers)
YOUNG, LAURENCE CHISHOLM, *Sc.D.*, Professor of Mathematics
YOUNG, WILLIAM HENRY, *Ph.D.*, Professor of Political Science

ZAWACKI, EDMUND IGNACE, *Ph.D.*, Associate Professor of Slavic Languages
ZDANOWICZ, CASIMIR DOUGLASS, *Ph.D.*, Professor of French
ZELLER, EDWARD JACOB, *Ph.D.*, Project Associate in Chemistry
ZMUDZINSKI, CHESTER FRANCIS, *M.Sc.Ad.*, Lecturer in Social Work

COLLEGE OF LETTERS AND SCIENCE

I. COURSES OF STUDY OFFERED

The work of a student during his first two years in the College of Letters and Science is included under either the B.A. or the B.S. General Course, the alternate Integrated Liberal Studies program, or one of several special courses mentioned below and discussed in detail on the pages indicated. After completing two years the student may regularly (1) work toward either the B.A. or the B.S. degree in the General Course, (2) enter the School of Journalism, (3) transfer to the School of Education as a candidate for the degree of B.S. (Education) and for the University Teachers' Certificate, (4) transfer to the School of Commerce as a candidate for the degree of Bachelor of Business Administration or B.S. (Light Building Industry) or (5) work toward the B.A. or B.S. degree with a view to entering the Law School or Medical School at the beginning of the senior year or later. Transfer to the School of Pharmacy is made after one year in the College of Letters and Science.

LEADING TO THE DEGREE OF BACHELOR OF ARTS

General Course, page 44.
Course in Humanities, page 54.
Course in Journalism, page 83 (School of Journalism).

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

General Course, page 48.
Course in Chemistry, page 52.
Course in Nursing, page 58.
Course in Journalism, page 83 (School of Journalism).
Course in Medical Technology, page 55.
Course in Applied Mathematics and Mechanics, page 50.
Course in Physical Medicine, page 59.
Course in Naval Science, page 56.

LEADING TO THE DEGREE OF BACHELOR OF MUSIC

Course in Music, page 89 (School of Music).

Details concerning transfer to special schools within the University may be found on the following pages:

School of Commerce, page 79.
School of Education, page 80.
School of Law, page 81.
School of Medicine, page 82.
School of Pharmacy, page 83.

II. GENERAL REGULATIONS

1. STUDENT RESPONSIBILITY

The final responsibility for the selection of courses rests upon the student. It is primarily his duty to be familiar with and to meet in the proper order requirements of his course so that he may be sure to be able to graduate at the end of his senior year.

2. ADVISERS

Upon being admitted to the University each student is assigned to a member of the faculty who acts as his adviser during the freshman and sophomore years. The adviser helps a student select his subjects so that he will have a well-rounded education, interprets the requirements for the student, and helps him to meet all his requirements in their proper sequence. The responsibility for the selection of courses rests, in the final analysis, upon the

student and it is not within the province of the adviser to refuse approval of a course which the student is entitled to elect. At the opening of each semester the student is required to consult his adviser concerning his choice of studies, and the adviser must approve the student's elections before he is permitted to enter classes. At the beginning of the junior year, when the student has selected his major study, an appropriate member of the major department becomes his adviser.

In addition to the student's usual faculty adviser, there is a special adviser for foreign students who assists in non-curricular and contingent matters.

3. CREDITS, PROGRAM LOAD, AND EXAMINATIONS

CREDITS. The unit used in computing the amount of work required for graduation is the *credit*, which represents one hour of class work per week (or its equivalent in other forms of instruction) for one semester together with the necessary preparation for that class hour. Two or sometimes three hours of laboratory work are considered as the equivalent of one hour of class work. Students in the general course are expected to earn an average of 15 credits per semester in class and laboratory work, making 30 credits per year, or 120 for the four-year course.

PROGRAM LOAD. Each student in one of the general courses is required to take from 12 to 17 credits of class and laboratory work per semester. A student who desires to elect fewer than 12 credits must obtain permission in advance from the dean. A student in his first semester at Wisconsin is not permitted to elect more than 17 credits. A student who has received a grade-point average of 2.0 or better in the preceding semester at Wisconsin (on a basis of at least 14 credits) may carry a semester program not to exceed 19 credits, provided such a program does not entail taking more than six courses at a given time. In no case will a student be permitted to count toward graduation more than 19 credits in one semester.

Candidates for the bachelor's degree who desire to graduate in three years may usually do so by obtaining 17 to 19 credits per semester after the first semester of the freshman year, and by attending two or three summer sessions. Credit may also be obtained by taking correspondence courses from the Extension Division. Students will need to select carefully their work for the summer with reference to the required and elective subjects of the course in which they expect to graduate. A student who expects to shorten his course in this way will necessarily consult with his adviser very thoroughly before selecting his subjects. Correspondence credits together with other extension credits may not exceed one half the number of credits required for graduation.

Special permission must be obtained from the associate dean by students who wish to take correspondence courses after they have reached senior standing (see also Section 6, "Residence Requirements").

Students taking correspondence courses, however, are reminded of the regulation (see bulletin of the Extension Division) requiring them to return to and deposit with the Recorder of the Extension Division all unfinished assignments or lessons as soon as they enter upon or resume residence work at the University. The penalty for retaining such assignments during residence is forfeiture of the credit for the correspondence course.

EXAMINATIONS. Each study terminates in a two-hour written final examination at the close of the semester. These final examinations are regularly scheduled and the time set may not be changed without authorization of the dean. In addition to the final examinations, two or three one-hour written tests are ordinarily held during the semester in all but the most advanced courses.

4. PHYSICAL EDUCATION AND MILITARY TRAINING

PHYSICAL EDUCATION. Freshman and sophomore women are required to take the equivalent of two hours of physical education per week for four semesters (i.e., for their first two years in the University). Freshman men are required to take two semesters of physical education during their first year of residence.

All women transfer students who enter the University with less than 58 credits are required to take physical education until they attain junior standing. All men transfer students who enter with less than 25 credits are required to take physical education until they attain sophomore standing. The requirement in physical education may be satisfied by accredited courses taken at another institution.

The following groups of students are exempt: (a) students who are certified as physically unfit by the Department of Student Health, (b) students who have served three months or more on active duty in the armed forces, and (c) students who at the time of registration have passed their twenty-first birthday. All applications for deferments or exemptions must be made in advance to the director of required physical education. Permission to defer the work will not be granted for more than one semester at a time and no work will be deferred into the senior year.

Although physical education carries no academic credit, it is a requirement for graduation and must be entered on the study list in the same way as other subjects.

MILITARY TRAINING. All male freshmen and sophomores are required to enroll in Military Science at the time of registration, with the provision that the following groups of students will be exempt: (a) students who qualify and are accepted for membership in the Regimental Band, (b) students who do not meet the established physical requirements as certified by the Student Health department, (c) students who have served three months or more on active duty in the armed forces, and (d) students who for other reasons are exempted or excluded by the Department of Military Science. Students who complete four semesters of Naval Science or Air Science and Tactics will be regarded as having satisfied this requirement.

Although no academic credit is given for the basic course in Military Science, it is a requirement for graduation and must appear on the student's study list in the same way as any other regular subject.

5. MATHEMATICAL PREPARATION

Minimum mathematical preparation, which will allow a student to enroll in all courses, majors, and fields of specialization, is considered to consist of *one* unit of high-school algebra and *one* unit of high-school plane geometry.

Only the following majors are open to the students without the minimum mathematical preparation: Hispanic studies, art history and criticism, the classics, comparative literature, English, foreign languages, geography, history, philosophy, political science, and speech. They may also enroll in the journalism and music courses.

Students without this minimum preparation may *not* enroll in courses in astronomy, mathematics, or physics; nor in the specialized courses in chemistry, medical technology, nursing, or physical medicine; nor may they major or specialize in American institutions, biological aspects of conservation, bacteriology, botany, chemistry, economics, geology, humanities, international relations, mathematics, medical science, physics, psychology, social work, sociology, or zoology.

If a student desires to specialize in a field requiring minimum mathematical preparation, he must satisfy that requirement before the beginning of the junior year.

The College of Letters and Science does not offer residence courses in elementary mathematics. Hence, students who are admitted without mathematical preparation can become eligible for courses requiring that preparation only by passing entrance examinations, by earning the required units in mathematics at an accredited school, or by taking correspondence courses from the University Extension Division.

6. RESIDENCE REQUIREMENTS

(a) At least 30 credits and 30 grade-points must be earned in residence in the College of Letters and Science at Madison.

(b) At least 15 credits and 15 grade-points in advanced subjects of the major must be earned in residence. All candidates for degrees should plan to take their senior year in residence, since the advanced work of the major is normally concentrated in the last year of the undergraduate course.

(c) At least 21 of the last 30 credits must be earned in residence in the College of Letters and Science. Special permission to do some of the work of the senior year at another institution must be secured *in advance* from the dean. In special cases the dean may permit a senior who has finished all of the specific course requirements and the work of his major, and who has maintained a good scholastic record, to complete the requirements for his degree by taking correspondence courses, provided he does not lack more than 6 credits toward that degree. Under special circumstances (see page 82) preprofessional students are

permitted to take the work of the senior year in the medical school of another university.

(d) Students who wish to earn a second baccalaureate degree in the College of Letters and Science, must, while completing the additional studies regularly required for that degree, spend at least one full year in residence beyond their first degree, and must earn at least 30 credits during that year.

7. QUALITY OF WORK REQUIREMENTS

GRADE-POINT SYSTEM

(1) *In each semester or session:* The student is expected to maintain a grade-point average of at least 1.0 in each semester or session of his four-year course. Although failure to meet this requirement will not prevent graduation, such failure will result in the student's being placed on probation or being dropped from the University.

(2) *In each half of the four-year course:* A student in any course requiring 120 academic credits for graduation must secure 60 grade-points and at least 60 credits in order to absolve the academic requirements of the first half of his four-year course. This means that a student may not count toward graduation those credits in excess of 60 that it takes to earn the first 60 grade-points. He must likewise secure 60 grade-points and at least 60 credits during the second half of his four-year course.

A student in a course requiring more than 120 credits for graduation must secure, in each half of his four-year course, grade-points equal to one half the total number of credits required for graduation.

(3) *In the Senior Year:* A student must secure at least as many grade-points as credits carried, whether passed or not, in the work of his senior year. The senior year shall be considered to include all work beyond the first three quarters of the total number of credits required for graduation.

(4) *In the Major Field:* A student must earn at least as many grade-points as credits carried, whether passed or not, in the major.

Letters and Science students electing law in their senior year must meet the same grade-point requirement as other students in the College.

Semester grades are reported by letter only; the characterization of grades by plus and minus signs is not authorized. For the sake of convenience in computing weighted averages, each letter grade carries a specified number of points per credit; thus a *B* in a three-credit subject would yield 6 points. The scale of grades and points follows:

Grade	Percentage Equivalent	Points Per Credit
A—(Excellent)	93–100	3
B—(Good)	85– 92	2
C—(Fair)	77– 84	1
D—(Poor)	70– 76	0
E—(Condition)	60– 69	0 (—½)*
F—(Failure)	Below 60	0 (—1)*

POINT-CREDIT RATIO. The general quality of a student's work over a number of semesters is expressed in terms of a point-credit ratio, which is the result obtained by dividing the total number of points he has earned by the total number of credits earned. The highest possible quotient is 3.0, which represents a grade of *A* in every subject; the lowest possible quotient is zero. Negative grade-points are not used.

GRADE-POINT AVERAGE. The point-credit ratio must not be confused with a somewhat similar figure known as the grade-point average, which is computed at the close of each semester, chiefly for purposes of determining quality of work performed, eligibility, and making statistical comparisons. The grade-point average is based on the number of points earned and credits carried during the semester, with deductions for deficiencies (see * above). The maximum possible average is 3.0, the minimum is 1.0.

8. MAJOR STUDY AND THESIS

At the beginning of his junior year each candidate for a degree shall select a major study in one of the divisions* into which the college is organized and shall be assigned an adviser

appropriate to the field in which he expects to concentrate. A division or department may refuse to accept as a major any student with less than a specified point-credit ratio in those subjects of the first two years which lie within the field of concentration, and may likewise reject him if his subsequent achievement falls below the standard set by the division or department with the approval of the faculty of the college. (See also Section 5, "Mathematical Preparation," above.)

Within each division certain fields of concentration have been outlined, and special fields may be arranged for individual students with approval of the dean. These fields may correspond to the separate departments in the division or may be restricted to groups of subjects within a department, or they may include courses in more than one department. The regular fields at present authorized are announced under the separate departmental headings. (See Departments of Instruction, page 97.) A few majors which cut across departmental lines are announced under Part XIII, page 61.

The general requirements of the major may consist of courses within the field of concentration, related courses outside of the field of concentration but within the boundaries of the division,* and the courses outside of the division which may be considered as valuable or necessary for the specific major. These general requirements are as follows:

(a) A maximum of 60 credits may be prescribed by the division (although a student may *elect* more than that number of credits within a given division), including not more than 40 credits within the field of concentration, and not more than 20 credits outside the field of concentration, of which as many as 10 may be outside the boundaries of the division. Of the total number of credits required for graduation at least 80 must be secured outside the major department (and outside of any one department). For students majoring in a foreign language, these 80 credits may include up to 14 credits in a *second* foreign language taken in the same department. Any course which a student may credit toward his major must be credited toward it. In the major (field of concentration) itself, at least 15 credits and 15 grade-points in advanced courses must be secured in residence at Wisconsin. Some of the credits in the major may be earned during the first two years.

(b) At least as many grade-points as credits carried must be earned in the major.

(c) A thesis of 4 to 6 credits may be prescribed as part of the major, as specified in the detailed announcements of the major requirements.

If a thesis be prescribed by the division, it must represent a scholarly treatment of some phase of the student's work in his major study; the subject thereof requires approval by the student's adviser and the faculty member in general charge of the field of concentration (ordinarily the departmental chairman). The thesis shall be typewritten and bound according to specifications furnished by the University Librarian, and after approval by the faculty member under whose guidance it has been prepared, shall be deposited in the University Library not later than the second Friday before Commencement. The thesis carries 4 to 6 (but not more than 6) credits toward the requirements of the major and toward graduation.

9. HONORS IN SCHOLARSHIP

Excellence in scholarship receives special recognition in the form of Honors awards at the end of the sophomore and at the end of the senior year.

SOPHOMORE HONORS are awarded to students who earn a grade-point average of 2.25 on the first 58 residence credits. SOPHOMORE HIGH HONORS are awarded those who earn a grade-point average of 2.75 on the same number of credits. (In the computation of credits for these

* The term "division" as used in this and the following sections refers to a group of affiliated departments of the college or to any single department not so affiliated. The present groupings are as follows, and all other regular departments are to be regarded as non-affiliated:

Biological Sciences—Botany, History of Science, Mathematics, Pharmacy, Psychology, Sociology and Anthropology, Zoology.

Humanities—Art History and Criticism, Classics, Comparative Literature, Comparative Philology, English, French and Italian, German, History, History of Science, Mathematics, Music, Philosophy, Scandinavian Languages, Slavic Languages, Spanish and Portuguese, Speech.

Physical Sciences—Astronomy, Chemistry, Geography, Geology, History of Science, Mathematics, Meteorology, Pharmacy, Physics.

Social Studies—Comparative Philology, Economics, Geography, History, Journalism, Philosophy, Political Science, Psychology, Social Work, Sociology and Anthropology, Speech.

awards, credits carried at the Milwaukee Extension Center—not to exceed 32—may be substituted for residence credits, but credits in physical education, basic military science, band, or correspondence courses will not be included. Credits transferred from other institutions will not be included in the Honors computation, but a student may be eligible for Sophomore Honors if he presents not more than 15 transfer or other ineligible credits. Grades of Failure will not exclude a candidate but credits in failed courses will be included in the computation, with zero grade-points.)

SENIOR HONORS AND HIGH HONORS are awarded on the basis of the academic requirements for the second half of any four-year course, all of which have been completed in residence at the University. A student securing in residence at Madison 135 grade-points, plus 1.5 grade-points for each credit above 60 required in the second half of his course, will be awarded Senior Honors; a student securing in residence at Madison 165 grade-points, plus 2 grade-points for each credit above 60 required in the second half of his course, will be awarded Senior High Honors. This rule will not be construed so as to bar any student from securing Senior Honors who has been permitted to carry more than the minimum number of credits during the first two years of his course and *less* than the minimum during the last two years.

HONORS IN THE MAJOR may, upon recommendation of the department, be granted at graduation to any student who has done superior work in his major and who has passed with distinction a comprehensive examination on that work. Students doing all their work in the course, as well as those doing it partly in course and partly outside of course, shall, with the approval of the department, be eligible for such examination and honors.

THESIS HONORS are granted for an exceptionally fine or original thesis, without consideration of the student's record in other work.

A framed list of the names of students awarded Sophomore Honors is displayed in Bascom Hall; the names of students awarded Senior and Thesis Honors and Honos in Major are published in the Commencement Register.

10. DEFICIENCIES

FAILURES. Students in this college are required to remove failures only in subjects specifically required for the degree they seek or the major they present. A failure may not be removed by correspondence study, or by repeating the subject in an extension center or in another college, unless prior permission is given by the dean.

CONDITIONS. The grade of condition may be given to a student who has carried a subject throughout a semester with a passing average but who, failing in his final examination, reduces his semester average to a numerical standing between 60 and 69. A condition must be removed by a special examination during the student's next succeeding semester of residence at the University or it becomes a failure. If a student repeats in class a subject in which he has incurred a condition, he is excluded from taking the condition examination and must complete the subject in the regular way. Former students not in residence are permitted to enter condition examinations only if they left the University in good standing. No grade-points are awarded for conditions removed by examination or by special laboratory work. The student, however, receives the grade which his completed work in the course finally justifies.

The usual way of removing a condition is by successful completion of a final examination taken on the day fixed by the rules. If, however, in a course involving both laboratory and classroom work, the condition has been incurred because of unsatisfactory laboratory or report work, it may be removed by absolving such substantial requirements as the instructor in charge of the course may prescribe. The removal of this type of condition will take effect on the official date for the removal of conditions. When a condition in such a course becomes a failure, the student may pass the course by repeating that portion of it (laboratory or classroom work) in which the condition was originally incurred, providing the instructor in charge authorizes this arrangement in advance.

INCOMPLETES. An incomplete may be given to a student who has carried a subject *successfully* until near the end of the semester and has then, because of illness or other cause beyond his control, been unable to complete the final examination, or the final exam-

ination and some limited amount of term work. An incomplete is not given to a student who stays away from a final examination unless he proves to the instructor that he was prevented from attending as indicated above. In default of such proof he will be failed or conditioned; even with such proof, if his term work has convinced the instructor that he cannot pass, he will be failed or conditioned. A subject marked incomplete must be completed during the student's next succeeding semester of residence at the University, or it will lapse into a failure, unless the time limit has been extended in writing by the Executive Committee. Incompletes incurred in the last semester of residence may not be removed after five years of absence from the University without special permission of the Executive Committee in advance. Such incompletes remain on the record but do not lapse into failures. An incomplete in a thesis, however, must be removed within 10 days after the close of the semester or summer session in which it is incurred; if it is not so removed the student is required to re-register for an appropriate part of the thesis (1 or more credits).

11. CLASSIFICATION OF STUDENTS

RANK. A student must have 25 grade-points and at least 25 credits before he may be classified as a sophomore; 58 grade-points and at least 58 credits before he may be classified as a junior; and 88 grade-points and at least 88 credits before he may be classified as a senior.

UPPER AND LOWER GROUPS. At the close of the sophomore year all students in the College of Letters and Science are divided provisionally into two groups on the basis of grade-points earned during the freshman and sophomore years. Students who have a point-credit ratio of at least 1.5 by the end of the sophomore year (or at any subsequent time) are designated as upper-group students. A student's upper-group status continues throughout the remainder of his college course provided his grade-point average does not fall below 1.5. At the discretion of departments, upper-group students are eligible for more advanced work than other students.

ADVANCED STANDING. Students transferring to the University of Wisconsin from other institutions with from 60 to 90 credits will be regarded as upper-group students after they have completed one semester of work at this University, provided their grade-point averages for this semester and subsequent semesters do not fall below 1.5. (See definition of grade-point average in Section 7, "Quality of Work Requirements.")

12. CERTIFICATE OF JUNIOR GRADUATE

A student who has earned at least 60 credits and 60 grade-points in this college, and who has pursued for at least two years an approved program which would normally lead to the B.A. or B.S. degree will be granted a Certificate of Junior Graduate in Liberal Studies.

13. TRANSFERS WITHIN THE UNIVERSITY

Students transferring from special courses, e.g., Chemistry or Physical Medicine, or from another college of the University, to one of the general courses, will receive no more than 17 credits a semester toward graduation for work already done, except in semesters in which their grade-point averages are 2.0 or above, when the maximum is 19 credits. They will not receive credit for technical studies of another college, except to the amount and under the conditions stated under Election of Studies Outside the College, Section 17 below. (For Transfers to Other Schools of the University, see pp. 79-83.)

14. ADMISSION WITH ADVANCED STANDING

Students from accredited colleges and universities who have pursued college courses equivalent to those of the University of Wisconsin with at least a *C* average and who have been granted honorable dismissal may be admitted to this college subject to current policy on nonresident students.

15. SPECIAL STUDENTS NOT CANDIDATES FOR A DEGREE

Persons who meet all the requirements for regular admission to the University, either as freshmen or with advanced standing, may apply to the Executive Committee of the College of Letters and Science for admission as "special students not candidates for a degree." Only in very rare instances will students who have already earned an undergraduate degree be enrolled in this category in the undergraduate college. A student admitted on this basis

will not receive credit for courses taken and no grades or credits will be recorded. Such persons must give evidence of seriousness of purpose before their applications for admission on this basis will be approved. A student so admitted may not enter any course for which he lacks the prerequisites as published in announcements and time tables except by special consent of the instructor therein; nor may he take part in any extra-curricular activity or join any student organization to which the eligibility rules apply. See "eligibility rules" as printed in the Student Handbook.

Regular students in good standing may be permitted by the Executive Committee to transfer from a course leading to a degree to the classification of "special students not candidates for a degree."

Special students are assigned to special advisers, to whom they must give evidence of capacity and of application to their university work in order to be permitted to continue.

16. PLACEMENT AND ATTAINMENT EXAMINATIONS

LANGUAGE PLACEMENT TESTS

IN ENGLISH. All freshmen are required to take, during the New Student Week and the first week in residence, several tests in English, which determine their assignment to Freshman English. **(See Section 23.)**

IN FOREIGN LANGUAGES. All students who plan to resume in college a language begun elsewhere (whether they are freshmen, upperclassmen, or entering advanced standing students) must take a placement test in that foreign language. The result of these examinations determine the classes in which the student is permitted or required to enroll. Advancement of more than one semester is optional rather than mandatory.

If, as a result of such placement in English or in foreign language, a student is required to repeat in college the substantial equivalent of a subject taken in high school, he will receive no college credit for such an equivalent (e.g., in the case of English, English 0).

ATTAINMENT EXAMINATIONS

(Not to be confused with Examinations for Credit—see below.)

Any student who so desires may take *attainment* examinations in English, history, mathematics, biology, chemistry, physics, and the foreign languages, by means of which he may prove his mastery of certain subjects required for graduation. Success in passing such an examination, although it does *not* reduce the number of credits required for graduation, entitles the student to substitute a subject of his own choice for the required subject. The examination in any of the sciences listed will be approximately the equivalent of the final examination in the corresponding freshman semester survey course (the so-called "17" course). Other departments which do not have specific freshman survey courses, will prepare examinations equivalent to those given in the required courses in the individual departments.

FOREIGN LANGUAGE ATTAINMENT EXAMINATIONS are designed to determine either (1) *proficiency*, i.e., advanced knowledge, or (2) *intermediate* knowledge, i.e., reading knowledge. These examinations are given soon after the opening of the first semester and also near the close of each semester of the academic year. (See Academic Calendar for exact dates.)

The test for *proficiency* in a language presupposes preparation equivalent to 24 credits received in college (e.g., four years in high school and one in college, or 2 years in high school and 16 credits in college, etc.). The test for *intermediate* knowledge is based on approximately half this amount of preparation. Students who have lived abroad or who have acquired a knowledge of foreign language in some other way, and superior students who may not have the above-stated amounts of preparation are encouraged to take the examination.

Proficiency in a modern language shall be shown by demonstrating (a) ability to read and comprehend representative passages of literature, (b) the ability to understand and speak simple phrases of the language, and (c) familiarity with the important literary work of some significant period or genre. *Proficiency in Greek or Latin* shall be shown by demonstrating (a) the ability to translate into idiomatic English representative passages

of prose and poetry from the fields of the student's previous reading, which shall be substantially equivalent to the satisfactory completion of four years of the language in high school and three semesters in the University, or a similar amount differently distributed, (b) some knowledge of each author's work as a whole and of its historical and cultural background, (c) the ability to translate English sentences involving the common grammatical constructions into Greek or Latin prose.

Intermediate knowledge in a modern language shall be shown by a test involving the ability to pronounce the modern language and to interpret, adequately, modern prose of average difficulty. *Intermediate knowledge in Greek or Latin* shall be shown by demonstrating the ability to translate adequately and explain the grammatical construction in passages of average difficulty chosen from such portions of at least three Greek or Latin authors as are usually read in high school or college.

EXAMINATIONS FOR CREDIT

In special cases, a student may receive credit toward graduation for university courses in which he requests and passes special university examinations. Under this provision a maximum of 15 credits may be obtained, of which not more than 8 may be in one department.

Examinations for credit will normally be based on work equivalent to a course given at the University, and the credit granted will be for the corresponding course. Evidence of work justifying an examination for credit must be presented to the department chairman during the first week of classes in a semester. Permission for such examination must be secured in advance from the Dean of the College upon recommendation of the departmental chairman. Examinations for credit will be taken during the first four weeks of classes in a semester at a time specified by the department. In general a student may not take such an examination if he was in residence during the three months immediately preceding the application for examination.

17. ELECTION OF STUDIES OUTSIDE THE COLLEGE

The general rule governing election of studies outside the College of Letters and Science is that students in any of the B.A. or B.S. courses are allowed to elect a maximum of 20 credits in other colleges and schools of the University under conditions specified below. However, this rule, hereafter referred to as the "Twenty-Credits Rule," does not apply to the election of music courses by Letters and Science music majors. Students may elect up to 30 credits in the Law School, 36 in the Medical School, and 24 credits in Naval Science under the special provisions outlined in the last three paragraphs of this section. Moreover, certain courses in other colleges listed under "Exceptions" below are counted regularly as Letters and Science subjects and so do not come under these rules.

Students in some special B.S. courses may credit studies taken outside the college only if such studies are required in their respective courses.

The Schools of Journalism and Music, and the Library School are administrative subdivisions of the College of Letters and Science. Students may elect certain (unstarred) subjects in the Department of Journalism without special permission. Rules for enrollment in music subjects may be found on page 93.

General Conditions. (a) The student must have completed the work of the freshman and sophomore years of the College of Letters and Science, including those studies which normally come in the freshman and sophomore years at Wisconsin. This means that B.A. and B.S. General Course students, to enjoy the privileges of this rule, must have been promoted to the junior year and must have completed the courses specified in Sections 22 and 26, pages 46 and 49.

(b) The student must be spending at least two full years in residence for the bachelor's degree. That is, studies outside the college may not be credited by students who have been granted more than two years of credit for work completed in another institution or by those whose residence work is reduced below two years by correspondence study.

(c) Certain courses intended primarily for students of other colleges but offered by departments of the College of Letters and Science (e.g., Mathematics 51, Physics 51, etc.) are open in the same way as courses intended primarily for students of the College of Letters and Science.

(d) No more than 6 of the 20 credits may be earned in each semester of the junior year.

(e) Elections must be approved by the Dean of the College of Letters and Science. In each case such approval will be endorsed in advance on the study list and on the student's permanent record in the Registrar's office. Courses which are parallel to Letters and Science courses will be approved only for special cause. Courses which involve a large manual or routine technical element may be approved, but without credit toward graduation. Special consideration, however, will be given to programs directed to a definite educational end.

Art Education 50a, 50b, 52, 54, 55, 56, 62, 64, 70, 71, 160 and 168, Commerce 43, 121, 138, 168, 169, 171, 178 and 195, Library Science 71 and 74, and all courses in biochemistry, forest products, genetics, plant pathology, and soils, although counting as part of the twenty credits allowed under the Twenty-Credits Rule, do not require that conditions (a), (b), and (c) of this section be met, providing the students meet the specific prerequisites for them. A student may receive credit for no more than 9 credits in drawing courses including Art Education 50a and 50b.

Upon checking at the office of the dean their compliance with the regulations (a), (b), and (d) of this section, students with the proper prerequisites will be given permission under the Twenty-Credits Rule to take Home Economics 2, 3, 6, 7, 8, 18, 20, 50, 109, 110, 115, 116, 117, 119, and 127. A student may receive credit for only one of the courses: Home Economics 2 and Art Education 50.

EXCEPTIONS. Certain courses which are offered in other schools and colleges of the University are not subject to the above rules and may be elected in the same way as Letters and Science subjects by any student who can meet the prerequisites. These courses are:

All courses in medical microbiology and bacteriology.

Drawing 10, 12 and 23.

Any course in agricultural economics which is also listed in economics. Enter on study list as Economics.

Education 106, 108, 119, 120, and 123; Art Education 140.

Preventive Medicine 1.

Library Science 72 and 73.

Any course in rural sociology which is also listed in sociology. Enter on study list as Sociology.

Any course in commerce which is also listed in economics. Enter on study list as Economics.

The rural sociology courses in this group are also listed in the Department of Sociology and must for all purposes be counted as sociology courses. Likewise the agricultural economics and commerce courses are listed in the Department of Economics and must be counted as economics courses.

LAW SCHOOL. Candidates for the B.A. or B.S. degree who are admitted to the Law School at the end of their junior year may count toward either of these degrees certain credits earned in the Law School, providing their elections outside the college have been confined to that school. If they have completely satisfied the conditions specified in paragraphs (a) and (b) above, a maximum of 30 credits may be counted. If, however, they were admitted to the Law School without having met all the specific requirements of paragraph (a), the maximum is 15 credits, and such students must earn at least 40 credits acceptable toward their degree in residence in this college.

Other Letters and Science juniors or seniors in the B.S. General Course or any of the B.A. courses who satisfy the general requirements for election of courses outside of the college may also elect courses in the Law School. If, however, they later enter the Law School, only those law courses will count toward a law degree which have been carried *after* a student has met the entrance requirements as outlined in the section entitled "Transfer to the Law School," page 81.

MEDICAL SCHOOL. Some candidates for the B.A. and for the B.S. degree are permitted to major in medical science. If they are admitted to the Medical School in their senior year, they may count toward their degree the full work of the first-year medical course, 36 credits. Such students must earn at least 90 credits in Letters and Science and meet all the requirements as outlined on page 82.

NAVAL SCIENCE. Students in the B.A. and B.S. General Course may count towards their degrees the 24 credits in Naval Science provided that they offer 126 credits for graduation. Such students may elect other courses outside the college only with the permission of the Executive Committee of the college. Students who transfer from N.R.O.T.C. to civilian status, or who have not completed the 24 credits of Naval Science at the time of their graduation, are allowed to count all Naval Science credits in excess of the first 6 credits, and to offer a total of 120 credits in satisfaction of the requirements for the B.A. or B.S. degree in the general course. These courses will count under the Twenty-Credits Rule.

SCHOOL OF NURSING. Students in the B.A. or B.S. General Course who wish to complete a major in Letters and Science and also obtain a certificate of Graduate Nurse may count toward their degrees up to 20 credits in courses in the School of Nursing (with the exception of Nursing 3, 11, 12 and 21 which may not be credited toward the B.A. or B.S. degree). Such students must earn at least 100 credits in Letters and Science subjects and meet all of the requirements as outlined in Section II of "Course in Nursing," page 58.

18. ADVANCED INDEPENDENT WORK

In many divisions and departments Advanced Independent Work, leading to the B.A. degree with Honors, is open to students whose grade-point averages for the first two years' work are acceptable to their major divisions or departments. Another sort of independent work, not necessarily involving candidacy for honors, permits upper-group students (students who have obtained a 1.5 or higher average on all work carried) to elect independent work in lieu of a regular course or courses. The following is the approved procedure: the student and professor offering the course shall fill out and sign a form indicating the nature of the "180" work to be pursued by the student. If the study plan is approved by the chairman of the department in which the course is offered, he shall retain the approved plan for his files and initial the election on the student's study list. The election then becomes effective when the student's adviser approves the study list. Reports and examinations on this work shall be kept in the records of the department and shall be available for future reviews of the employment of the "180" course.

19. UNIVERSITY TEACHERS' CERTIFICATE

The University Teachers' Certificate is not granted to students in the College of Letters and Science excepting those registered in special courses (Chemistry, Humanities, Journalism, Music, etc.), who may become candidates for the certificate without losing their regular status by registering in both the School of Education and the College of Letters and Science during the junior and senior years.

Students not in one of the special courses who wish to be recommended for the University Teachers' Certificate are required to transfer to the School of Education at the beginning of the junior year as candidates for the degree of Bachelor of Science (Education). See page 80

In order to qualify for the University Teachers' Certificate, special course students must meet the following requirements:

I. Completion of all regular requirements of the special course, plus 4 additional credits and 4 grade-points, if only 120 are ordinarily required for graduation from that course; if more than 120 are ordinarily required for graduation, 2 additional credits will be necessary (e.g., for graduation in the chemistry course, 132 credits will be required).

II. Completion of the following professional requirements, 18 credits:

Educ. 73—The child: his nature and his needs, 3 credits
Educ. 74—The school and society, 3 credits
Educ. 75—The nature and direction of learning, 5 credits
A course in the teaching of the major subject (senior year), 5 credits
*Electives in the Department of Education, 2 credits

III. Completion of the special requirements for teaching a major subject and one minor subject, or a major subject and two minor subjects, as outlined under the appropriate departmental heading in the bulletin of the School of Education.

IV. Recommendation of the departments of the major and minor subjects, or the responsible authorities of the special courses, as to fitness for teaching.

* May include a course in the teaching of the minor subject for 2 credits.

V. Presentation of a certificate of physical health and fitness from the University Medical Examiner.

20. FOREIGN STUDENTS

ENGLISH LANGUAGE TEST FOR FOREIGN STUDENTS

While facility in English adequate to the student's needs for his work at the University of Wisconsin is presupposed, every student whose native tongue is not English must, before registering for the first time at the University of Wisconsin, take a special English language test for foreign students. A student who shows on this test a knowledge of English so inadequate as to indicate he will have trouble carrying university work will be allowed to register if he already has a permit to register. He will be required to take English 9, a noncredit course designed to aid foreign students. Before he is allowed to register for the second semester, his case must be reviewed by the dean of his college or school.

Others whose performance in the English language test indicates need of special training may be advised (or required by the appropriate college or major department) to take English 9. (English 9 is not a substitute for English 1.)

DEGREE REQUIREMENTS FOR FOREIGN STUDENTS

In general, foreign students are held for the same degree requirements as any other entering students. Some exceptions to this policy are made in the individual colleges of the University. For instance, the College of Letters and Science waives the foreign language requirement for those B.A. students whose native tongue is other than English, and does not usually hold junior and senior transfer students to the usual course requirements of the general curricula other than those specified by the major department.

SPECIAL ADVISER FOR FOREIGN STUDENTS

In addition to the student's usual faculty adviser, there is a special adviser for foreign students who assists in noncurricular and contingent matters.

III. B.A. GENERAL COURSE

Presented below are the curriculum requirements for the degree of Bachelor of Arts. The general requirements for the B.A. degree are also satisfied by the program of Integrated Liberal Studies plus the satisfaction of the foreign language requirement, see (2) below.

21. OUTLINE OF CURRICULUM

(1) ENGLISH LANGUAGE AND LITERATURE, 12 credits as follows:
   (a) Use of English, 6 credits (with possible exemptions). Usually English 1a, 1b.
   (b) English and/or American literature, 6 credits in a sophomore year course in English, American, or English and American literature. To complete this requirement, a student may offer two semesters in any combination of courses 30, 32, 33, and 40 with the exception that 30 and 33 may not in any way be combined.

(2) FOREIGN LANGUAGE. This requirement may be absolved (1) by attainment examination, (2) by accumulation of credits, or (3) by a combination of these two methods. In terms of attainment examinations, a student may show "proficiency" in one foreign language or "intermediate knowledge" in two languages.

In quantitative terms, the requirement is: 24 credits in one language (including 4 credits in conversation and composition courses beyond the first-year level, except in Latin or Greek), or 28 credits in two languages, or 30 credits in three. No less than 8 credits in a single language will be accepted; and a minimum of 14 credits (or "intermediate knowledge") must be offered in one. High-school work will be accepted at the rate of 4 university credits for each high-school unit up to a total of six units or 24 credits. Those who elect to fulfill the requirement entirely by credit (as opposed to attainment examinations) are required to offer a minimum of 8 college credits. Thus, if a student offers two units of high-school Latin and two units of a modern foreign language, he may complete his requirement by continuing both languages through courses numbered 10, or by beginning a third language and pursuing it through a course numbered 10.

When attainment examinations are used to satisfy the foreign language requirement, the language credits already earned in college count as electives toward the credits required for graduation. A student is not permitted to repeat in college, for credit, the equivalent of a course in foreign language which he has had in high school.

French, German, Classical Greek, Hebrew, Italian, Latin, Norse, Polish, and Spanish may be offered for entrance; these languages and, in addition, Portuguese and Russian, may also be offered for graduation. Students choosing a foreign language major must present at least 8 credits in a second foreign language.

In case of foreign students whose native language is not English, the foregoing language requirements shall be waived.

(3) Required Work in United States History and Institutions as specified in Section 24, page 48.

(4) One of the Following Groups (A, B, or C):

Group A (Humanities), 33 credits

(a) Special Humanities Requirement, 6 credits within the following range of studies: art history; aesthetics;* music (at present, courses 9 and 20); intellectual history through literature;* literary criticism (e.g., Comparative Literature 165, 170, 171); ideas in literature (e.g., English 133). Students majoring in fields other than language and literature may satisfy this requirement with 6 credits in any literature course (or courses) numbered 100 or above.

(b) History, 6 credits in a continuous year course.

(c) Social Studies, 6 credits, in (a) an interdepartmental year course,* or in (b) *one* or *two* of the following: anthropology, cultural geography, economics, philosophy (logic and philosophy of science excluded), political science, psychology (courses in Group A only),** sociology.

(d) Natural Science—Mathematics—Logic—History of Science—Philosophy of Science—Psychology with experimental laboratory,*** 15 credits within the group, so selected as to include a minimum of 9 credits in laboratory science.

In order that students may come to understand better the interweaving relationships between these four fields of knowledge (an important element in humanistic education), it is desirable that they plan, with their advisers, programs by means of which such relationships may be effectively realized, such as correlative courses in history, literature, art, and philosophy.

Group B (Social Studies), 33 credits

(a) Social Studies, 18 credits, so distributed as to include work in at least *three* (with 6 credits in each of at least *two*) of the following fields: anthropology, cultural geography, economics, history, philosophy, (logic and philosophy of science excluded), political science, psychology (courses in Group A only),** sociology.***

(b) Natural Science—Mathematics—Logic—History of Science—Philosophy of Science—Psychology with experimental laboratory,† 15 credits within the group, so selected as to include a minimum of 9 credits in laboratory science.

Group C (Natural Science), 34 credits

(a) Natural Science, 20 credits, so distributed as to include *two* of the following groups, and within at least *one* of them a continuous year course (in a single science or in any regularly offered combination such as Botany 1—Zoology 1):

1. Two semesters of astronomy, chemistry, or physics, or a combination of these;
2. Two semesters of bacteriology, botany, psychology *with experimental laboratory*,† physiology, or zoology, or a combination of these;

* Not offered at present.

** Psychology courses (Group A) which may be employed in meeting this requirement in social studies are those numbered 1, 50, 105, 108, 109, 127, 135, 143, 144, 147, 148, 160, 161, 165, and 167.

*** Scandinavian 101a may also be counted.

† Psychology courses with experimental laboratory are those numbered 25, 125, 116, 154, 170, 171, and 172.

3. Two semesters of geology, meteorology, or *physical* geography, or a combination of these.

(b) Mathematics, 8 credits.

(c) Social Studies, 6 credits, in (a) an interdepartmental year course,* or in (b) *one* or *two* of the following: anthropology, *cultural* geography, economics, history philosophy (logic excluded), political science, psychology (courses in Group A only),** sociology.

(4) PHYSICAL EDUCATION as specified in Section 4, page 34.

(5) MILITARY TRAINING as specified in Section 4, page 34.

(6) MAJOR STUDY AND ELECTIVES to total 120 credits.

22. REQUIRED WORK TO BE COMPLETED IN FIRST TWO YEARS

By the end of the sophomore year students in the B.A. General Course are expected to complete, or substantially so, the required courses outlined in Section 21 above. In any case (unless for exceptional reasons) they shall complete the following minimum requirements:

1. All English (composition and literature), foreign language (both years unless requirement fulfilled in less time), physical education and military training requirements.
2. The following minimum group requirements:

	Social Studies	Natural Science, Mathematics Logic, History of Science, Philosophy of Science	Mathematics	History	Natural Science
Group A	6 cr.	9 cr.	—	6 cr.	—
Group B	12 cr.	9 cr.	—	—	—
Group C	6 cr.	—	8 cr.	—	10 cr.

23. FRESHMAN STUDIES

(a) ENGLISH. On the basis of placement tests taken during Registration Week and the first week of classes by all freshmen entering the University, most students are assigned to English 1a, some are assigned to English 11 (a course which completes the Freshman English requirement in one semester), some are not admitted to Freshman English, and a few are given exemption from Freshman English.

A student who, on the basis of these tests given at the beginning of each semester, is not admitted to English 1a must comply with the following procedures: (a) He must reduce his program by three credits; that is, he must drop English 1a, and he must not substitute for it any other course carrying credit. (b) He must enroll in English 0, a non-credit course. (c) If through placement-test procedure, he is not admitted to English 1a by the beginning of his third semester in residence, he must withdraw from the University until he is so admitted.

Students earning a grade of *A* in English 1a may, if they so desire, omit English 1b.

On the completion of English 1, a provisional pass mark is given; if at any time later in his course a student is reported as deficient or careless in English composition he may be required to take additional work in that subject.

(b) SCIENCE

Continuous year courses:

Botany 1, 2—5 credits per semester
Chemistry 1 or 4—5 credits per semester
Geography 2a, 2b—5 credits per semester
Geology 1—5 credits per semester
Physics 1 or 31—5 credits per semester
Zoology 1, 2—5 credits per semester

* Not offered at present.

** Psychology courses (Group A) which may be employed in meeting this requirement in social studies are those numbered 1, 50, 105, 108, 109, 127, 135, 143, 144, 147, 148, 160, 161, 165, and 167.

† Psychology courses with experimental laboratory are those numbered 25, 125, 116, 154, 170, 171, and 172.

Elementary survey courses: These are semester courses less specialized than the continuous year courses. They may *not* be taken for credit by students who have had either semester of the year course in the same subject above. Botany 17, Zoology 17, and Physiology 1, taken in that order, are planned to form an integrated sequence. For semesters in which these courses are offered see course listing under the appropriate department.

Astronomy 17—3 credits, first and second semesters
Botany 17—3 credits, first semester
Geography 17—4 credits, first and second semesters
Geology 17—4 credits, second semester
Meteorology 17—4 credits, first semester
Physics 17—4 credits, second semester
Physiology 1—3 credits, first semester
Zoology 17—3 credits, second semester

(c) MATHEMATICS—Semester courses repeated each semester: (Open to freshmen depending upon previous mathematical preparation.)

Mathematics 1a (College algebra)—4 credits
Mathematics 1b (Trigonometry and analytic geometry)—4 credits
Mathematics 3a (Algebra and trigonometry)—4 credits
Mathematics 3b (Algebra and analytic geometry)—4 credits
Mathematics 7 (Theory of investment)—4 credits

In general, students are required to present one full year of mathematics to satisfy the mathematics requirement in the natural science sequence for the B.A. or B.S. degree. However, students who have successfully passed either Mathematics 1b or 3b, will be regarded as having fulfilled this requirement. Mathematics 7 will not count towards the requirement for the B.A. or B.S. degree.

(d) SOCIAL STUDIES:

Anthropology 3 (Man and culture: an introduction to anthropology)—3 credits per semester
Geography 3 (Geography of the Americas)—3 credits, first semester
Geography 4 (Geography of the eastern hemisphere)—3 credits, second semester
Geography 6 (Survey of world geography)—3 credits
Geography 7 (World survey of economic geography)—3 credits
History 3 (European civilization since the year 800)—3 or 4 credits per semester
History 5a (English)—3 credits per semester
History 5bI (British)—3 credits per semester
History 5bII (American Institutions)—3 credits per semester
History 10 (Ancient)—3 credits per semester
Philosophy 1a (Introduction to philosophy)—3 credits
Political Science 7 (American government and politics)—3 credits per semester
Sociology 1 (Man and society: an introduction to sociology)—3 credits per semester
Sociology 2 (Social disorganization)—3 credits per semester

(e) FOREIGN LANGUAGE. The languages at present available include French, German, Classical Greek, Hebrew, Italian, Latin, Norse, Polish, Portuguese, Russian and Spanish. The number of credits per semester varies from 3 to 4, depending on the courses which the student elects.

A student who continues in college a foreign language which he has studied in high school is assigned to a class on the basis of a placement test (see Section 16) and is subject to promotion or demotion at the end of the first few weeks as determined by the quality of his classwork. Advancement of more than one semester is optional rather than mandatory. In any case of placement other than that indicated by previous training, exception may be made by appealing to a committee.

No credits whatsoever will be given for college courses which are substantially equivalent to those completed in high school.

(f) OTHER FRESHMAN COURSES:
Art Education 50a and 50b (Freehand drawing)—3 credits per semester
Drawing 10 (Mechanical drawing)—3 credits per semester
Freshman Forum—1 credit per semester
General Classics 37 (Latin and Greek words in English)—2 credits
General Classics 41 (Greek life and literature)—2 or 3 credits
General Classics 42 (Roman life and literature)—2 or 3 credits
General Classics 51 (Classical mythology)—2 credits
Geography 5 (Physical earth and its resources)—3 credits
Preventive Medicine 1 (Health problems for university students)—1 credit

(g) Freshmen who have a percentile ranking above 92 as determined by standards established for high-school students—at present the Henmon-Nelson Test of Mental Ability—and who are in the highest quarter of their high-school graduating class; or those who, if their aptitude test rating is not available, are certified as ranking in the upper 10 per cent in their high-school graduating class, may elect, in each semester of their first year, one course listed in the time table with the prerequisite of sophomore standing.

24. REQUIREMENT IN UNITED STATES HISTORY AND INSTITUTIONS

A new requirement in United States History and Institutions has been established in all of the undergraduate schools and colleges in the University. It must be met by all students who receive degrees in June 1954, or thereafter. The requirement, outlined below, is for all bachelor's degrees in the College of Letters and Science and the School of Education. There are minor variations as noted in Option 3 below for the Schools of Commerce and Pharmacy. The student may satisfy this requirement in one of three ways:

1. By passing, by the beginning of the junior year, an attainment examination in United States History based on college-level work.

2. By completing satisfactorily, in college, a continuous year course in United States History. A year course is here understood to be one so listed in the Announcement of Courses (i.e., History 4, 12–112, 113, 117, 120, 121, 122); or two semester courses which, as to content, are in chronological sequence (i.e., any two *consecutively numbered* semester courses chosen from the following: History 101, 102, 103, 104, 105, 106, 107, 108, 109).

3. By combining a semester in advanced United States History with any one of the following courses: Economics 1a; English 140; Geography 146; Integrated Liberal Studies 23; Philosophy 139; Political Science 7, 110, 112a, 112b, 165, 166, or 171; or Sociology 178. The student may choose the semester of history from one of the following semester courses: History 101, 102, 103, 104, 105, 106, 107, 108, 109, or 111; or he may complete either semester of one of the following year courses: History 112, 113, 117, 120, 121, or 122.

In this option, Commerce students may *not* elect Integrated Liberal Studies 23. Pharmacy students may include a semester of History 4 or 12 in the group of history courses in this option.

IV. B.S. GENERAL COURSE

Presented below are the curriculum requirements for the degree of Bachelor of Science. The general requirements for the B.S. degree are also satisfied by the program of Integrated Liberal Studies, see page 50.

25. OUTLINE OF CURRICULUM

(1) ENGLISH LANGUAGE, LITERATURE, AND COMPOSITION, 15 credits, as follows:

(a) Use of English, 6 credits (with possible exemptions). Usually English 1a, 1b.

(b) English and/or American Literature, 6 credits in a sophomore year course in English, American, or English and American literature. To complete this requirement, a student may offer two semesters in any combination of courses 30, 32, 33, and 40 with the exception that 30 and 33 may not in any way be combined.

(c) Intermediate Composition, 3 credits.

(2) FOREIGN LANGUAGE, 8 credits. To fulfill this requirement, a student may present two

units in one foreign language from high school, or take two semesters of one foreign language in college; or he may present a combination of these two methods. To fulfill the requirement by a combination of high-school and college courses, the student who presents *one* unit of a foreign language from high school must take one semester of the *same* language in college.

(3) REQUIRED WORK IN UNITED STATES HISTORY AND INSTITUTIONS, as specified in Section 24, page 48.

(4) ONE OF THE FOLLOWING GROUPS (*A or B*):

Group A (Social Studies), 36 credits

(a) Social Studies, 21 credits, so distributed as to include work in at least *four* (with 6 credits in each of at least *two*) of the following fields: anthropology, *cultural* geography, economics, history, philosophy (logic excluded), political science, psychology (courses in Group A only),* sociology**

(b) Natural Science—Mathematics—Logic—History of Science—Psychology with experimental laboratory.*** 15 credits within the group, so selected as to include a minimum of 9 credits in laboratory science

Group B (Natural Science), 34 credits

(a) Natural Science, 20 credits, so distributed as to include *two* of the following groups, and within at least *one* of them a continuous year course (in a single science or in any regularly offered combination such as Botany 1—Zoology 1):
1. Two semesters of astronomy, chemistry, or physics, or a combination of these;
2. Two semesters of bacteriology, botany, psychology with experimental laboratory, physiology, or zoology, or a combination of these;
3. Two semesters of geology, meteorology, or *physical* geography, or a combination of these.

(b) Mathematics, 8 credits

(c) Social Studies, 6 credits in (a) an interdepartmental year course,† or in (b) *one* or *two* of the following: anthropology, cultural geography, economics, history, philosophy (logic excluded), political science, psychology (courses in Group A only),* sociology

(5) PHYSICAL EDUCATION, as specified in Section 4, page 34.

(6) MILITARY TRAINING, as specified in Section 4, page 34.

(7) MAJOR STUDY AND ELECTIVES, to total 120 credits.

26. REQUIRED WORK TO BE COMPLETED IN FIRST TWO YEARS

By the end of the sophomore year students in the B.S. General Course are expected to complete, or substantially so, the required courses outlined in Section 25 above. In any case (unless for exceptional reasons) they shall complete the following minimum requirements:

1. All English (composition and literature), physical education and military training requirements must be fulfilled.
2. The following minimum group requirements must be fulfilled:

	Social Studies	Natural Science, Mathematics, Logic, History of Science	Mathematics	Natural Science
Group A	15 cr.	9 cr.	——	——
Group B	6 cr.	——	8 cr.	10 cr.

27. FRESHMAN STUDIES

For a list of the studies of the freshman year, see Section 23. This section applies to both the B.A. and B.S. General Courses.

* Psychology courses (Group A) which may be employed in meeting this requirement in social studies are those numbered 1, 50, 105, 108, 109, 127, 135, 143, 144, 147, 148, 160, 161, 165, and 167.
** Scandinavian 101a may also be counted.
*** Psychology courses with experimental laboratory are those numbered 25, 125, 116, 154, 170, 171, and 172.
† Not offered at present.

V. INTEGRATED LIBERAL STUDIES

This two-year program is open to entering freshmen and is limited to 300 students in each freshman group.

The integrated program offers a new approach to meeting the general (non-departmental) requirements of the College of Letters and Science. Students admitted to the integrated program will follow a prescribed schedule of subjects designed to give a broad basic education preparatory to later specialization and to provide an introduction to many fields of study seen in relationship to each other. (See page 165 for description of courses.)

In addition to the prescribed subjects, candidates for the B.A. degree will take one subject in a foreign or classical language each semester until the B.A. language requirement is satisfied (see page 44). Candidates for the B.S. degree must complete the basic language requirement and thereafter will have the opportunity of electing at least one additional subject each semester with the approval of an adviser.

Students completing the two-year integrated curriculum with a foreign language or with additional elective subjects will be accepted as majors in many of the departments of the College of Letters and Science, or will be accepted for transfer to the School of Education, to the School of Commerce (with the addition of Mathematics 7, Economics 1a, Commerce 8 and 9), or to the School of Journalism (with the addition of Journalism 1 and Journalism 2). After a third year in the College of Letters and Science, such students may transfer to the Law School. The Library School recommends the integrated program as the first two years of college study for those who plan to enter Library Science.

PROGRAM OF INTEGRATED LIBERAL STUDIES

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
I.L.S. 11—Greek and Roman culture	4	I.L.S. 12—Medieval and renaissance culture	3
I.L.S. 21—Early man and his society	3	I.L.S. 22—Transition to industrial society	4
I.L.S. 31—Physical universe	4	I.L.S. 32—Earth science	3
I.L.S. 41—Theory and practice of writing	2	I.L.S. 42—Nature and function of language	2
Electives	3-4	Electives	3-5
	16-17		15-17

SOPHOMORE YEAR

I.L.S. 13—European culture, 1750-1850	4	I.L.S. 14—American culture, 1850-1950	3
I.L.S. 23—Modern industrial society, USA	4	I.L.S. 24—International scene	3
I.L.S. 33—Biology	3	I.L.S. 34—Biology	4
Electives	4-6	Electives	4-6
	15-17		14-16

VI. COURSE IN APPLIED MATHEMATICS AND MECHANICS

COMMITTEE IN CHARGE: PROFESSORS LANGER, *chairman*, ROARK, SOKOLNIKOFF, WAHLIN, WOODBURN.

It is the purpose of this course to give an integrated basic training in the related fields of mathematics, physics, and engineering. It does not give specialized training in any one branch of engineering, but is designed to cover a wider field and to lay a basis for the theoretical training which is requisite for industrial research and technology. The demand for persons having such training may be expected to rise with the increasing scope of the applications of science to industry. This course provides a thorough foundation for post-graduate studies and for specialization in various fields of engineering.

REQUIREMENTS FOR ADMISSION AND GRADUATION. For graduation from the course in Applied Mathematics and Mechanics, 125 credits are required. Admission to the course is restricted to students whose high-school training in mathematics includes at least one and a half years of algebra and a year of geometry, or who have passed equivalent entrance examinations. Admission to the sophomore year is restricted to those who have at least a 1.75 grade-point average in the courses in mathematics and physics or chemistry taken during the freshman year. The grade-point average of at least 1.75 in all subjects taken at the University of Wisconsin shall be required for admission to the senior year. Of the elective credits, at least

8 must be taken in courses offered by the College of Letters and Science outside of the Division of the Physical Sciences. The College of Letters and Science requirement in United States History and Institutions must be satisfied.

PROFESSIONAL ELECTIVES

To facilitate the planning of a co-ordinated program of studies for students with special interest in the fields indicated below, the following suggestions for professional electives are made:

	Credits
1. Mathematics	
115a—Theory of equations	3
115b—Determinants and matrices	3
117—Vector analysis	3
119—Differential geometry	3
121—Elementary plane topology	3
137—Introduction to math. statistics	3
2. Mechanics	
(See also M.E. & C.E.)	
53—Materials of construction	2
101—Advanced statics	2
102—Advanced dynamics	3
106—Advanced mechanics of materials	3
109—Graphics	2
112—Airplane stress analysis	3
3. Physics	
106—Atomic physics	6
113—Atomic and molecular structure	3
115—Thermodynamics	2
118—Kinetic theory of matter	3
124—Mathematical theory of heat conduction	2-3
126—Fundamental experiments in physics	3
4. Chemistry	
14—Quantitative analysis	4-5
130—Physical chemistry	4
131—Physical chemistry	2-6

	Credits
5. Civil Engineering	
21—Engineering curves	2
22—Theory of route surveying	3
118—Short course in surveying	3
157—Indeterminate structures	3
158—Indeterminate structures	2
6. Electrical Engineering	
Electronics (See also Physics)	
34—Fundamental electronics	4
36—Advanced circuits and networks	4
101—Fundamentals of electro-acoustical engineering	3
115—Open and closed cycle control systems	3
116—Electrical circuits	3
151—Industrial electronics	3
153—Electronics	3
182—Electronics and communications engineering	4
7. Mechanical Engineering	
25—Machine practice	3
41—Mechanism	3
43—Machine elements	3
44—Advanced machine design	3
141—Dynamic problems in design	3
142—Advanced kinematics of machinery	3
143—Advanced mechanics of machinery	3
169—Internal combustion engines	3
172—Flow of compressible liquids	3

COURSE IN APPLIED MATHEMATICS AND MECHANICS

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (APPLIED MATHEMATICS AND MECHANICS)

RECOMMENDED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Math. 51, 53, or 2—Elementary analysis	5-4	Math. 52 or 20—Elementary analysis	5-4
Chem. 1a, 2a, or 4a—General chemistry	5-4	Chem. 1b, 2b, or 4b—General chemistry and qualitative analysis	5-4
Drawing 12—Engineering drawing	3	Drawing 23—Engineering drawing and descriptive geometry	3
Military Training	0	Military Training	0
Physical Education	0	Physical Education	0

SOPHOMORE YEAR

Math. 102a or 21—Calculus	4	Math. 102b or 22—Calculus	4
Physics 51, 53, 1a or 31—General physics	5	Physics 52, 54, 1b or 31—General physics	5
Mechanics 1—Statics	3	Mechanics 2—Dynamics	3
Military Training	0	Military Training	0
Physical Education (women only)	0	Physical Education (women only)	0
Electives		Electives	

JUNIOR YEAR

Math. 111—Higher mathematics for engineers	3	*Math. 110—Higher mathematics for engineers	3
Physics 103—Optics	4	Physics 102—Heat and thermodynamics, or	4
Mechanics 3—Mechanics of materials	4	M.E. 64—Thermodynamics	3
E.E. 8—Electrical machinery	3	E.E. 9—Electrical machinery	3
*Electives		C.E. 71—Hydraulics	3
		Electives	

* Students who plan to do graduate work are advised to elect Math. 120a and replace Math. 110 with Math. 120b.

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
Math. 116a—Higher analysis	3	Math. 116b—Higher analysis	3
Math. 118—Introduction to the theory of probability, or		Physics 105—Mechanics	3
Math. 133—Finite differences and interpolation	3	Physics 116—Advanced circuit analysis, or	
Physics 104a—Electricity and magnetism	3	Physics 104b—Electricity and magnetism	3
Mechanics 111—Aerodynamics, or		Mechanics 107—Mechanical vibrations	3
C.E. 173—Advanced hydraulics, or		Electives	
C.E. 177—Mechanics of fluids	3		

VII. COURSE IN CHEMISTRY

FARRINGTON DANIELS, DIRECTOR

The purpose of the Course in Chemistry is to give students a broad basic training in chemistry which will be adequate for those who desire to enter the chemical industry, or to teach chemistry in secondary schools, or to continue their training by doing graduate work for advanced degrees. It does not profess to train chemists for specific industries, for each industry has its special problems and methods. An intensive four-year training is adequate for those who do not wish to become specialists and for those who do not wish to do research; research requires a considerable amount of graduate work. Students who do exceptionally well in their undergraduate work are encouraged to go on with graduate studies so that they may qualify for more responsible positions in research.

The Course in Chemistry (with properly chosen electives) also provides a good preparation for the subsequent study of medicine. By election of certain commercial subjects, an excellent preparation for administrative and executive positions in industries which are based on chemistry may be obtained. Most industries now have chemical control laboratories and many maintain their own research staffs. Several industries maintain central research laboratories to serve the entire industry. Positions in such laboratories are desirable as they often lead to excellent positions in the industry. The demand for men at both the bachelor's level and the doctorate level has been heavy in recent years.

In order to broaden the educational program, the course provides for a substantial amount of elective and required work outside the field of chemistry. Three options are offered—a general option, an option for food chemists, and an option for fermentation chemists. The work of the freshman year is identical in each of the three options.

This course meets the standards recommended by the American Chemical Society for undergraduate professional training in chemistry.

REQUIREMENTS. 130 credits are required for graduation. Students frequently find it desirable to satisfy part of the requirements during one or more summer sessions. High-school mathematical preparation is required.

The equivalent of at least courses 10a and 10b in German is required, but high-school work in this language may be counted toward this requirement.

The College of Letters and Science requirement in United States History and Institutions must be satisfied.

Admission to the junior year is restricted to students who have at least a 1.5 grade-point average for the first two years' work in all chemistry, mathematics, and physics courses combined.

COURSE IN CHEMISTRY

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CHEMISTRY)

FRESHMAN YEAR (ALL OPTIONS)

First Semester	Credits	Second Semester	Credits
Chem. 4a—General chemistry	5	Chem. 4b—General chemistry and qualitative analysis	5
Math. 2—Introductory mathematical analysis.	4	Math. 20—Calculus and analytic geometry	4
English 1a—Freshman composition	3	English 1b—Freshman composition	3
German 1a	4	German 1b	4
Physical Education	0	Physical Education	0
Military Science	0	Military Science	0
	16		16

GENERAL OPTION

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Chem. 11a—Quantitative analysis	5	Chem. 11b—Quantitative analysis	5
Physics 31—General physics	5	Physics 31—General physics	5
Math. 21—Calculus and analytic geometry	4	Math. 22—Calculus and analytic geometry	4
German 10a	3	German 10b	3
Military Science	0	Military Science	0
Physical Education (women only)	0	Physical Education (women only)	0
	17		17

JUNIOR YEAR

Chem. 120—Organic chemistry lectures	3	Chem. 122—Organic chemistry lectures	3
Chem. 121—Organic chemistry laboratory	2	Chem. 123—Organic chemistry laboratory	2
Chem. 130a—Physical chemistry lectures	3	Chem. 130b—Physical chemistry lectures	3
Chem. 131a—Physical chemistry laboratory	3	Chem. 131b—Physical chemistry laboratory	3
Electives[a]	6	English 2—Intermediate composition	3
		Electives[a]	3
	17		17

SENIOR YEAR

Chem. 98—Senior seminar	1	Chem. 98—Senior seminar	1
Advanced Chem. (See Note c)	3	Chem. 156—Advanced inorganic chemistry	3
Chem. 100—Senior thesis (See Note b)		Bact. 103—General survey	4
Electives[b,a]	11	Chem. 100—Senior thesis (See Note b)	
		Electives[a,b]	7
	15		15

OPTION FOR FOOD CHEMIST

SOPHOMORE YEAR

Chem. 11a—Quantitative analysis	5	Chem. 120—Organic chemistry lectures	3
Physics 31—General physics	5	Chem. 121—Organic chemistry laboratory	2
Math. 21—Calculus and analytic geometry	4	Physics 31—General physics	5
German 10a	3	Math. 22—Calculus and analytic geometry	4
Miltary Science	0	German 10b	3
Physical Education (women only)	0	Military Science	0
		Physical Education (women only)	0
	17		17

JUNIOR YEAR

Chem. 122—Organic chemistry lectures	3	Chem. 146—Chemistry of foods lectures	2
Chem. 123—Organic chemistry laboratory	2	Chem. 147—Chemistry of foods laboratory	3
Chem. 119—Organic analysis	3	English 2—Intermediate composition	3
Electives[a]	9	Bact. 103—General survey	4
		Electives[a]	5
	17		17

SENIOR YEAR

Chem. 98—Senior seminar	1	Chem. 98—Senior seminar	1
Chem. 130—Physical chemistry lectures	3	Chem. 130—Physical chemistry lectures	3
Chem. 131—Physical chemistry laboratory	3	Chem. 131—Physical chemistry laboratory	3
Chem. 113—Water analysis	1	Electives[a,b]	8
Bact. 125—Food bacteriology	4	Chem. 100—Senior thesis (See Note b)	
Electives[a,b]	3		
Chem. 100—Senior thesis (See Note b)			15
	15		

OPTION FOR FERMENTATION CHEMIST

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Chem. 11a—Quantitative analysis	5	Math. 22—Calculus and analytic geometry	4
Math. 21—Calculus and analytic geometry	4	Physics 31—General physics	5
Physics 31—General physics	5	German 10b	3
German 10a	3	Electives	4
Military Science	0	Military Science	0
Physical Education (women only)	0	Physical Education (women only)	0
	17		16

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Chem. Engr. 41—Elementary chemical engineering principles	3	Chem. Engr. 42—Chemical engineering unit operations	3
Chem. 120—Organic chemistry lectures	3	Chem. 122—Organic chemistry lectures	3
Chem. 121—Organic chemistry laboratory	2	Chem. 123—Organic chemistry laboratory	2
Chem. 119—Organic analysis	3	Bact. 103—General survey	4
Electives	5	Electives	4
	16		16

SENIOR YEAR

Biochem. 105—Principles of biochemistry	3	Bact. 226—Physiology of bacteria	4
Biochem. 106—Principles of biochemistry	2	Chem. 130—Physical chemistry lectures	3
Chem. 130—Physical chemistry lectures	3	Chem. 131—Physical chemistry laboratory	3
Chem. 131—Physical chemistry laboratory	3	Thesis[d]	3
Thesis[d]	3	Electives[e]	3
Electives[e]	3		
	17		16

(a) Of the total elective credits not more than 15 may be taken in chemistry, biochemistry, chemical engineering, mathematics and physics combined. Students who plan to do graduate work in chemistry are advised to elect one year (8 cr.) of French or Russian. It is strongly recommended that the student elect courses in the fields of American history, political science and economics.

(b) Senior thesis (Chem. 100) may be elected for 3 to 6 credits but only by students with an over-all grade-point average of at least 2.25 and only with the consent of an instructor under whose direction the work will be done; Chem. 100 is strongly recommended for those who can qualify. Grades of *B* or better in Chem. 120, 121, 122, and 123 are required for election of Chem. 126. Chem. 126 is a prerequisite for 3 credits of thesis in organic chemistry. The election of other chemistry courses is limited only by Note (a) and the prerequisites for each particular course.

(c) This advanced chemistry requirement is satisfied by the election of senior thesis.

(d) To be done in Department of Biochemistry or Agricultural Bacteriology on a chemical problem.

(e) Students interested in Bacteriology should elect Agricultural Bacteriology 120 (Advanced General). Those interested in Biochemistry should elect Biochemistry 227 (Fermentations).

VIII. COURSES IN HUMANITIES

COMMITTEE IN CHARGE OF MODERN HUMANITIES: PROFESSOR MACKENDRICK; ASSOCIATE PROFESSORS GLAUSER, ZAWACKI, *chairman*, FARMER, WILEY; ASSISTANT PROFESSORS MCGARY, VORTRIEDE.

COMMITTEE IN CHARGE OF CLASSICAL HUMANITIES: PROFESSORS AGARD, *chairman*, MACKENDRICK; ASSISTANT PROFESSORS HEIRONIMUS, HOWE.

PURPOSE AND PLAN. The aim of the Courses in Humanities is to give students a well-rounded liberal education, with greater emphasis on the integration of their course of study than the general B.A. course affords, and closer relations from the beginning between students and their teachers. Integration is secured by means of the study of a great regional culture, classical or European, in its various interrelated aspects: language, literature, geography, history, social institutions, art, and philosophy, on the theory that such study is effective preparation for living in contemporary society. Each student is assigned an adviser, who helps him plan his course and directs his tutorial work; and frequent conferences of students in small groups with their advisers establish a community of intellectual interest. At the end of the junior year the student may, if he wishes, specialize in a given period. A comprehensive examination at the end of the senior year insures further integration of the course of study.

The degree given is Bachelor of Arts (Humanities). Majors and minors may be chosen and teachers' certificates secured in the subjects included in the course of study, as in the general B.A. and teachers' B.S. courses. Students in the Courses in Humanities may become candidates for the teachers' certificate without entering the School of Education by registering in both the School of Education and the College of Letters and Science during the junior and senior years, and fulfilling the special requirements (see School of Education).

The Course in Modern Humanities is especially designed for prospective teachers of modern languages and for students who anticipate careers involving foreign countries; the Course in Classical Humanities is especially designed for prospective teachers of Latin; but both courses are also suitable for other students who wish an integrated cultural basis for later specialization.

Inquiries regarding these courses should be addressed to Professor Keith McGary, Secretary, Bascom Hall, Madison.

I. MODERN HUMANITIES

REQUIREMENTS. For admission, four years of one foreign language, or two years each of two foreign languages. High-school mathematical preparation is required. For graduation, 120 academic credits and an equal number of grade-points, including the following:

a. Tutorial papers (6 cr.). Students read books and write papers dealing with various aspects of modern culture which are not covered in their regular courses.

b. A sophomore course in American or English literature (6 cr.). Students are expected to pass the test exempting them from English 1a.

c. Three of the following: (1) Latin 102 (6 cr.); (2) Greek 1 and 10 (14 cr.); (3) a reading knowledge of French; (4) a reading knowledge of German; (5) a reading knowledge of Spanish; (6) a reading knowledge of Italian. Another foreign language may be substituted for one of these languages with the approval of the Humanities Committee.

d. 10 credits in social studies (not including those taken to satisfy "f" below), of which at least 6 credits will be in history. The College of Letters and Science requirement in United States History and Institutions must be satisfied.

e. 10 credits in laboratory science, and 3 credits in the history of modern science.

f. 9 credits in philosophy or mathematics.

g. 3 credits in art history or music.

h. A final comprehensive examination in the field of major concentration. The committee defines "field of major concentration" as a minimum of 15 credits approved by the committee by the beginning of the junior year.

II. CLASSICAL HUMANITIES

REQUIREMENTS. For admission, three or four years of high-school Latin. High-school mathematical preparation is required. For graduation, 120 credits and 120 grade-points, including the following:

a. Tutorial papers during the first two years (12 cr.). They deal with Greek and Roman history, literature and art.

b. 22 credits in Latin beyond Latin 11; 18 credits in Greek beyond Greek 10.

c. 10 credits in laboratory science.

d. 6 credits in history, preferably History 10. However, the College of Letters and Science requirement in United States History and Institutions must also be satisfied.

e. 6 credits in philosophy.

f. A final comprehensive examination.

IX. COURSE IN MEDICAL TECHNOLOGY

This is a four-year course leading to the degree of Bachelor of Science (Medical Technology) and to a certificate in Medical Technology from the State of Wisconsin General Hospital. The course prepares the student for technical work in laboratories of clinical diagnosis located in hospitals, clinics, or offices. After some experience the university-trained technologist may also qualify for supervisory work and teaching.

A minimum of 90 college credits including both required and elective courses must be completed during the first three years. The fourth year is devoted entirely to the major study (Medical Technology). High-school mathematical preparation is required.

The curriculum for the first three years includes the following required courses: Freshman English 6 cr., English and/or American literature or intermediate composition, 6 cr.; general chemistry 8–10 cr., organic chemistry 4 cr., quantitative chemistry 4 cr., physiological chemistry 4 cr.; general physics 6 cr.; human physiology 4 cr.; zoology 5 cr.; parasitology 3 cr., medical bacteriology 8 cr.; history 6 cr. *or* mathematics 8 cr. The College of

Letters and Science requirement in United States History and Institutions must be satisfied. A working knowledge of French or German is also required. This requirement may be satisfied by the completion of the fourth semester of French or German at the University of Wisconsin or at another accredited college with a grade of at least *C*, or by passing a reading knowledge or the attainment examination in either language to be given by the appropriate department at the University of Wisconsin.

In addition to the above required courses enough elective credits must be earned to make a total of 90.

The fourth year is devoted entirely to the study of the specialized medical subjects required for the major and to practical work in the laboratories of the hospital. The work of the first semester of the fourth year begins September first, and continues through the university final examination period with no Christmas recess. The second semester starts the last week in January and continues through the second semester with no spring recess. The summer months are spent in the laboratories of the Wisconsin General Hospital. No academic credit is given for the summer work, but it is required for completion of the course.

For additional information concerning the course, inquiry should be made to Dr. O. A. Mortensen, Associate Dean of the Medical School.

MEDICAL TECHNOLOGY CURRICULUM

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (MEDICAL TECHNOLOGY)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b—Freshman English	3
Chemistry 1a—General chemistry	5	Chemistry 1b—Qualitative analysis	5
French 1a or German 1a	4	French 1b or German 1b	4
Physics 65—General physics	3	Physics 65—General physics	3
Physical Education	0	Physical Education	0
	15		15

SOPHOMORE YEAR

English 30a, 32a, 33a, 40a, or 2a	3	English 30b, 32b, 33b, 40b, or 2b	3
French 10a or German 10a	3-4	French 10b or German 10b	3-4
Physiology 1—Human physiology	4	Chemistry 120a—Organic chemistry	2
Zoology 1—Animal biology	5	Chemistry 121a—Organic chemistry	2
Physical Education	0	Zoology 119—Animal parasites of man	3
		Electives	2-3
		Physical Education	0
	15-16		15-16

JUNIOR YEAR

Chemistry 16—Quantitative analysis	4	Physiological chemistry 103	4
Medical bacteriology 1	5	Medical bacteriology 2	3
History or mathematics	4	History or mathematics	4
Electives	3-4	Electives	5-6
	16-17		16-17

SENIOR YEAR*

Med. Tech. 101—Urine analysis	5	Med. Tech. 111—Applied serology	4
Med. Tech. 102—Normal hematology	4	Med. Tech. 112—Applied parasitology	3
Med. Tech. 103—Special hematology	3	Med. Tech. 113—Clinical chemistry	5
Med. Tech. 104—Applied bacteriology	4	Med. Tech. 114—Microtechnique	3
	16		15

X. COURSE IN NAVAL SCIENCE

Enrollment in Naval Science is limited and applicants must meet the physical requirements for a commission in the Navy, be unmarried, and be less than 25 years of age on July 1 of the expected year of graduation.

A student in the Naval Science course will be in one of the following categories: (a) *Regular students* selected annually by nationwide competitive examinations who on graduation

* Limited to 24 students.

are commissioned in the regular Navy or Marine Corps and are obligated to serve on active duty as officers for three years. While enrolled in school they receive retainer pay at the rate of $50 per month, and on summer cruises the pay prescribed by law for midshipmen. Tuition, textbooks, and uniforms are furnished. (b) *Contract students* selected on a competitive basis by the Professor of Naval Science from freshman applicants at the beginning of the fall semester who on graduation are commissioned in the Naval or Marine Corps Reserve with the option of applying for commission in the Regular Navy or Marine Corps. Uniforms are furnished and commuted ration allowance (about $27 per month) is payable during their junior and senior years. On summer cruises they are paid at the rate prescribed by law for enlisted men of the seventh pay grade, $75 per month.

Enlisted veterans of any of the armed services who wish to qualify for a commission may apply for advanced standing as contract students. Normally this advanced standing is limited to one or two semesters.

NROTC students in the College of Letters and Science may not receive degrees in the following special courses: chemistry, applied mathematics and mechanics, physical medicine, music, humanities, or 3-year pre-legal. They may select one of the following options: (a) the B.A. General degree, presenting a total of 126 credits and 126 grade-points; (b) the B.S. General degree, with a total of 126 credits and 126 grade-points; (c) the course in Journalism, with a total of 130 credits and 130 grade-points; (d) transfer to the Schools of Commerce or Education, under the appropriate rules of these schools; (e) the degree of Bachelor of Science (Naval Science), requirements for which are as follows:

1. A total of 126 credits and at least 126 grade-points.
2. English: 15 credits, to include freshman English, 6 credits; sophomore literature, 6 credits; and sophomore composition, 3 credits.
3. Foreign language: 14 credits—intermediate knowledge of a foreign language, which may be satisfied by passing an intermediate attainment examination or by completion of the second-year courses in a foreign language.
4. Science and Mathematics: 31–41 credits, to include physics, 15 credits; chemistry, 8–10 credits; mathematics through calculus, 8–16 credits.
5. Social studies: 18 credits, to include 6 credits in Political Science 121 (Foundations of international relations), and 12 credits from the following: history (American, European, or Fart Eastern), political science (foreign policy, American government, Far Eastern politics), geography (United States, European, Far Eastern). The College of Letters and Science requirement in United States History and Institutions must be satisfied.
6. Naval Science: 24 credits. In addition, two hours per week of laboratory instruction, including infantry drill, and one to three summer cruises or periods of active training duty are required.
7. Electives: 14–38 credits.

Students who are interested in the NROTC program should consult the Professor of Naval Science, Naval Armory, 1610 University Avenue.

COURSE IN NAVAL SCIENCE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (NAVAL SCIENCE)

RECOMMENDED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b—Freshman English	3
Mathematics 1a—Introductory college algebra	4	Mathematics 1b—Trigonometry and analytical geometry	4
Chemistry 1a—General chemistry	5	Chemistry 1b—General chemistry	5
Naval Science 11—Naval orientation	3	Naval Science 12—Naval orientation	3
Physical Education	0	Physical Education	0
	15		15

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
English 30a, 32a, 33a, or 40a	3	English 30b, 32b, 33b, or 40b	3
Physics 1a—General physics	5	Physics 1b—General physics	5
Mathematics 101a—Calculus	4	Mathematics 101b—Calculus	4
Naval Science 21—Naval weapons	3	Naval Science 22—Naval weapons	3
	15		15

JUNIOR YEAR

English 2a—Intermediate composition	3	Foreign Language 1b	4
Foreign Language 1a	4	Advanced Physics	3-4
Pol. Sci. 121—Foundations and problems of international relations	3	Social Studies	3
Advanced Physics	2-4	Pol. Sci. 137—International organization and diplomacy	3
Naval Science 31—Navigation	3	Naval Science 32—Navigation	3
	15-17		16-17

SENIOR YEAR

Foreign Language 10a	3	Foreign Language 10b	3
Social Studies	6	Social Studies	3
Naval Science 41—Naval machinery and diesel engines	3	Naval Science 42—Ship stability, naval justice, and leadership	3
Electives	4-5	Electives	7-8
	16-17		16-17

XI. COURSE IN NURSING

For students interested in the study of Nursing, two possible programs are available:

1. The Course in Nursing which leads to the degree of Bachelor of Science (Nursing), combining two years of academic work, 27 months of resident professional instruction, and a major during the fifth year in Public Health Nursing or in Ward Management and Ward Teaching.

   During the period of resident professional instruction, scholarships are awarded to cover the general fees, and the student is given room, board, and laundry service in the Nurses' Dormitory.

2. A combination of the study of Nursing, with a major in the College of Letters and Science leading to a Bachelor of Arts or Bachelor of Science degree in the General Course and also to the Certificate of Graduate Nurse. This procedure combines three years of academic work (approximately 16–17 credits per semester) with 27 months of resident professional instruction. (See II, below.)

I. Requirements for graduation from the Course in Nursing *

A. Curriculum A—For students in the basic professional program; that is, students who do not enter as registered professional nurses.

1. English, 12 credits as follows: Freshman English (English 1a, 1b—with possible exemptions), 6 credits; English and/or American literature (two semesters in any combination of courses 30, 32, 33, and 40 with the exception that 30 and 33 may not in any way be combined), 6 credits.
2. Foreign language, 8 credits as described under requirements for the B.S. General Course.
3. Science, 17–19 credits, to include: Chemistry 5 (3 cr.) *or* 1a (5 cr.), Biochemistry 3 (4 cr.), Microbiology 4 (3 cr.), Physiology 4 (4 cr.), Science elective (3 cr.).
4. History, 6 credits, in a continuous year course. The College of Letters and Science requirement in United States History and Institutions must be satisfied.
5. Social Studies, 10 credits: to include Sociology 1 *or* 2 (3 cr.), Psychology 1 (4 cr.), *and* 105 (3 cr.).
6. Electives: Letters and Science electives to bring the total to 60 credits and 60 grade-points.
7. Resident Professional Instruction (third and fourth years), 37 credits as follows: Dietetics 1 (2 cr.), Nursing 1, 2, 3, 4, and 5 (21 cr.), Nursing 10, 11, 12, 13, 14 and 15 (14 cr.).

* For descriptions of content of nursing courses, see bulletin of the School of Nursing.

8. Major—the completion of a fifth year of closely related subjects which constitute a major in either Ward Management and Ward Teaching or Public Health Nursing.
   A. Ward Management and Ward Teaching—30 credits to include Nursing 30, 31 (6 cr.); Nursing 20, 21 (9 cr.); Education and Social Studies (15 cr.).
   B. Public Health Nursing—30–31 credits to include Nursing 30, 31 (6 cr.); Nursing 40, 41, 42, 43 (11 cr.); Nursing 45 (field work, 8 cr.); Social Work 145 (3 cr.); Education 120 (2 cr.) *or* 123 (3 cr.).
9. A total of 127–128 credits and 127–128 grade-points.

B. Curriculum B—For students who enter as registered professional nurses. The School of Nursing will evaluate the professional education of these students and will also make recommendations regarding elections in the science group listed below.

1. English, 12 credits; foreign language, 8 credits; History, 6 credits—as described above under Curriculum A.
2. Science, 12 credits in at least two fields.
3. Social Studies, 14 credits; to include Psychology 1, 105 and Sociology 1 *or* 2.
4. Electives: Letters and Science electives to bring the total to at least 60 credits and 60 grade-points.
5. Resident Professional Instruction, 37 credits and Nursing Major (30–31 cr.) as described above under Curriculum A. (Actual courses to be taken depend upon evaluation of professional training by the School of Nursing.)

II. Requirements for students who combine the study of nursing with a major in the College of Letters and Science.

Such students may count up to 20 credits in nursing courses under the terms of the Twenty-Credits Rule. Courses outside of the College of Letters and Science, other than those in the School of Nursing, may not be credited under the Twenty-Credits Rule unless permission of the Executive Committee is recorded prior to the election of such courses.

Requirements:

1. Fulfillment of the degree requirements for the B.A. or B.S. General Course. (Satisfactory completion of the program of Integrated Liberal Studies may be substituted for all degree requirements except the foreign language requirement.)
2. Satisfactory completion of specific courses required by the School of Nursing which may be credited either toward the satisfaction of Letters and Science degree requirements or as electives: Chemistry 5 (3 cr.); Biochemistry 3 (4 cr.); Microbiology 4 (3 cr.); Physiology 4 (4 cr.); Psychology 1 (4 cr.), *and* 105 (3 cr.); Sociology 1 *or* 2 (3 cr.).
3. Major Study: To be chosen from the major subjects offered in the College of Letters and Science.
4. Nursing: A total of 37 credits including Nursing 1 and Dietetics.
5. Electives: A sufficient number so that the credits taken in the College of Letters and Science will total at least 100.

XII. COURSES IN PHYSICAL MEDICINE

Degree Course

A four-year course leading to the degree of Bachelor of Science (Physical Medicine) has been established jointly in the College of Letters and Science and in the Medical School. Mathematical preparation is required. The program consists of three years of Letters and Science required and elective subjects and one year in the Physical Therapy major. The academic work is followed by three months of clinical work in approved hospitals under supervision of the faculty. A certificate is given by the Medical School at the completion of this work. No academic credit is given for the work done during the summer months, but it is required for completion of the course. The course prepares the student for full

professional qualifications in the field of Physical Therapy and for the qualifying examination of the American Registry of Physical Therapists. The course is fully accredited by the Council on Medical Education and Hospitals of the American Medical Association.

Requirements for graduation are as follows:

1. A total of 124 credits and at least 124 grade-points.
2. English: 12 credits; or English, 6 credits, and history, 6 credits. The College of Letters and Science requirement in United States History and Institutions must be satisfied.
3. Science: 44 credits to include at least one course in each of the following subjects: physics, zoology, anatomy, physiology, physiological chemistry, kinesiology, and one year of general chemistry.
4. Psychology: 10 credits.
5. One of the following:
   (a) Foreign language, 14 credits (to be earned in college) not more than 8 of which may be in a first-year college course; or intermediate knowledge in one foreign language, as disclosed by an attainment examination, or
   (b) Social Studies (see list—footnote p. 37), 14 credits.
6. Speech: 6 credits.
7. Home Economics 119 (or its equivalent): 2 credits.
8. Physical Therapy: theoretical and technical training, 30 credits in the senior year, to include courses in applied anatomy, pathology, medical sciences, massage, therapeutic exercise, electrotherapy, hydrotherapy, ethics and administration, bandaging and asepsis, research technique and clinical practice. The senior year is a 12-month year, the last three months of which are spent full time in the treatment of patients.
9. Electives: 6 credits.

PHYSICAL MEDICINE CURRICULUM

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (PHYSICAL MEDICINE)

RECOMMENDED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Chemistry 1a or 5—General chemistry	5-3	Chemistry 1b—General chemistry	5
English 1a—Freshman English	3	English 1b—Freshman English	3
Foreign Language 1a or Social Studies	4	Foreign Language 1b or Social Studies	4
Physics 65—General physics	3	Physics 65—General physics	3
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
Electives	0-2		
	15		15

SOPHOMORE YEAR

English 30a, 32a, 33a, 40a, or 2a, or History	3	English 30b, 32b, 33b, 40b, or 2b, or History	3
Language 10a or Social Studies	3	Language 10b or Social Studies	3
Physiological Chemistry 14	3	Psychology 105—Human adjustment	3
Speech 1—Fundamentals of speech	3	Phys. Med. 1 (Orientation)	1
Psychology 1—Introduction to psychology	4	Zoology 1—Animal biology	5
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	16		15

JUNIOR YEAR

Anatomy 37—Human anatomy	6	Physiology 116—Physiology of exercise	3
Physiology 115	5	Speech 25—Correction of speech disorders	3
Psychology 165—Behavior pathology	3	Phys. Ed. 56—Kinesiology	3
Home Ec. 119—Child development	2	Electives	6
	16		15

SENIOR YEAR (12 months)

First Semester	Credits	Second Semester	Credits
Phys. Med. 2—Preclinical subjects	1	Phys. Med. 5—Therapeutic exercise	4
Phys. Med. 3—Medical sciences	3	Phys. Med. 6—Electrotherapy	4
Phys. Med. 4—Massage	2	Phys. Med. 7—Hydrotherapy	1
Phys. Med. 100—Applied anatomy	3	Phys. Med. 8—Clinical practice	5
Phys. Med. 101—Pathology	2	Phys. Med. 102—Ethics and administration	1
Phys. Med. 103—Journal Club	1	Phys. Med. 103—Journal Club	1
Physiology 117—Special problems in physical medicine	3	Phys. Med. 3	1
	15		17

Certificate Course in Physical Therapy

The certificate course for physical therapy is twelve months in length and begins in September of each year. College credit toward a degree in physical therapy is given for this work.

Inquiries and applications for admission should be addressed to Dr. H. D. Bouman, Section of Physical Medicine, Service Memorial Institutes. Requirements for admission: Candidates for admission must be able to satisfy one of the following requirements:

1. A minimum of 60 college (academic) credits including courses in animal biology and physics.
2. Graduation from an accredited school of nursing.
3. Graduation from an accredited school of physical education.

Courses in chemistry are highly recommended. Due to the limitation of clinical facilities, the number of students admitted to the course is limited to twenty.

CURRICULUM

The curriculum includes courses in anatomy, clinical practice, electrotherapy, ethics and administration, hydrotherapy, massage, pathology, physiology, principles of physical therapy as applied to orthopedics, medicine, surgery, neurology, dermatology, psychology, therapeutic exercise and electives.

First Semester	Credits	Second Semester	Credits
Anatomy 37	6	Physical Medicine 5	4
Physiology 115	5	Physical Medicine 6	4
Physical Medicine 2	1	Physical Medicine 7	1
Physical Medicine 3	3	Physical Medicine 8	5
Physical Medicine 4	2	Physical Medicine 103	1
Physical Medicine 101	2	Physical Medicine 1	1
		Physical Medicine 3	1
	19		17

CERTIFICATES

A certificate is issued by the Medical School at the end of the above courses to those who have successfully fulfilled all the requirements including extensive written, oral and practical final examinations.

Additional information about these courses is found in the University of Wisconsin bulletin, Course in Physical Therapy, which can be obtained by writing to University Editor, 811 State Street, Madison 5, Wisconsin.

XIII. SPECIAL MAJORS

MAJOR IN AMERICAN INSTITUTIONS

PURPOSE

This major in the Division of Social Studies is designed for (a) students in the College of Letters and Science desiring a broad liberal knowledge of American life in a number of its phases and not specialization in a department, (b) students in the School of Education, and (c) students planning to enter the Law School. It is open only to students whose major interest is essentially interdepartmental in scope.

PROCEDURE

A Divisional Committee consisting of Professors Hart *(chairman)*, Brandeis, Harrington, Loomer, McGary, Olmstead, and Barton administers the major. The chairman will assign a member of the committee as an adviser to each student entering the major. At the beginning of the junior year the student will work out a program of studies meeting the requirements below and secure the approval of the adviser representing the committee.

A student who plans to elect the major in American Institutions in the School of Education should, as early as possible, carefully plan his college work so as to complete:*

a. the necessary and desirable major and minor combinations required for the University Teachers' Certificate;

b. statutory requirements of courses in conservation and co-operatives;

c. preparation for successful placement in positions in secondary schools.

In fulfilling the requirements of one major and two minor subjects, therefore, the student will normally satisfy the first minor requirement within the 40 credits of the American Institutions major. The second minor of 15 credits, required for certification by the State Department of Public Instruction, should be in a subject outside the general social studies field, and the practice teaching in connection with Education 75 should be in this second minor. For additional information the student should confer with Professor Burr W. Phillips before the beginning of his junior year.

PREPARATION FOR THE MAJOR

Students electing this major will normally have completed one or more of the required courses during their freshman and sophomore years. Integrated Liberal Studies provides a satisfactory background for the major. For other students, course work dealing with the antecedents of American Institutions is recommended in the freshman and sophomore years. This may be obtained in History 5a–b, History 3a–b, or English Literature. It is recommended that majors not planning to take advanced American Literature courses in the major meet their sophomore English requirements by taking English 40.

COURSE WORK

The 40 credits required by the major include:

I. Required Courses, totaling 22 hours, as follows:

6 cr. History 4a–b—History of the United States, 1607–1952 (with the consent of the adviser, the student may substitute: History 113—History of American thought and culture, or History 121—Social development of the American people).

3 cr. Political Science 7—American government and politics (with the consent of the adviser, the student may substitute: Political Science 110—Government and the problems of democracy).

4 cr. Economics 1a—General economics (with the consent of the adviser, students enrolled in the Integrated Liberal Studies program may substitute: Integrated Liberal Studies 23—Modern industrial society).

3 cr. Geography 103—Geography of Anglo-America (with the consent of the adviser, the student may substitute Geography 146—Historical geography: United States and Canada).

3 cr. Sociology 185—Modern American communities.

3 cr. American Institutions 110—Evaluation of American institutions. This is a final seminar for majors, given during the second semester, and scheduled normally at the end of the senior year.

II. Optional Courses, totaling 18 hours, selected from this list:

Art History and Criticism—131, 135, and 159
Contemporary Trends—103
Economics—1b, 105, 110, 117, 119, 120, 122, 123, 124a, 124b, 126, 127, 134, 135, 136, 137, 139, 142, 143, 144, 145, 146, 148, 152, 158, 162, 166, 172, 177, and 179

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* See School of Education section.

English—112, 114, 140, 150, 166, 169, 170, 171, 173, 174, 190, and 191
Geography—104, 125, 126, 127, 128, 129, 146, and 153
History—101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 112, 113, 117, 119, 120, 121, 122, and 137
History of Science—170
Journalism—110, 111, and 114
Philosophy—54, 120, 134, 139, 144, 147, 150, 157, 158, and 162
Political Science—13, 110, 112a–b, 115, 120, 21–121, 122, 123, 126, 131, 134, 135, 139, 143, 148, 152, 159, 163, 165, 166, 170, 171, 172, 173, 174, and 175
Psychology—105
Social Work—145
Sociology and Anthropology—25, 39, 101, 114, 125, 126, 127, 129, 130, 131, 133, 134, 136, 139a–b, 144, 145, 150, 154, 156, 159, 161, 163, 164, 169, 171, 173, 174, 177, 193, 198, and 199
Speech—116, 130, 131, and 156

COURSES OUTSIDE THE COLLEGE OF LETTERS AND SCIENCE

To take these courses, students will need to comply with the Twenty-Credits Rule (see the General Regulations of the College of Letters and Science, Section 17). Permission of the Dean is required for all except those starred:

School of Commerce—*43 and *178
School of Education—104 and 115
College of Engineering: Civil Engineering—141 and 142
Law School—Law in Society
History of Anglo-American Law
College of Agriculture: Agricultural Economics—114

With the approval of his adviser, the student will carefully select courses from the above list so that:

a. not more than 9 of the 18 hours are in one department,
b. at least half of the 40 hours of courses for the major are in courses numbered above 100,
c. at least 12 hours of the 18 hours of optional courses are approved by the adviser as relevant to a theme such as those described below, within the general field of American Institutions.

OPTIONAL THEMES OF INTEREST

Eleven themes are suggested here, any one of which will satisfy requirements II.c. above. The committee may approve a theme not listed here, provided it is interdepartmental in scope. After the description of each theme, representative courses are listed which will be approved by the adviser as relevant to it. But these are merely suggestive, not required, and the adviser will approve any other courses from the list above which are relevant to the theme and meet the individual needs of the student.

1. Rural Life in America. A large part of the American population still lives in rural surroundings, and rural areas will continue to be the great source of population reproduction and replacement for the cities. Traditions of the frontier, the farm, the mining and logging camp, and the village are fundamental in the American social and economic system, even in its urban aspects. Within this theme, students may study the agricultural environment, economy, and society; or they may view developments of American culture from a rural perspective.

   Representative course offerings: Economics 117—Outlines of land economics (Agr. Econ.); History 112a—American economic life; the history of American agriculture; Pol. Sci. 134—Rural local government; Soc. 25—Rural life (Rural Soc.).

2. Urbanization and Industrialization. Since Theodore Roosevelt, national leaders have been concerned with the deep changes in American life occasioned by the shift to the city and the factory. Since most people work for others, central controls of financial investment, of transportation, power and other utilities, and of strategically located land become crucial to the economy. The family ceases to be the unit of work and play; new forces of social disorganization and dependence follow. In a mobile population, vertical affiliations with professional or interest groups replace the old neighborhood

affiliations. Cities sprawl over the surrounding countryside, and their industrialized media of communication reach the remotest farmstead. Accentuated social needs have brought forth new professions to which this theme should provide useful background: social work, corporate and industrial management, social research. Medicine, law, teaching, engineering, and architecture encounter new problems and opportunities in an urban industrial society.

A program of studies on this theme may be selected in preparation for graduate study in metropolitan regional planning. For a description of the special major in Regional Planning (undergraduate), see page 77.

Representative course offerings: Geography 129—Urban geography; Soc. 177—The modern city; Pol. Sci. 13—Municipal government; Economics 134—Economic history of the United States; or History 122b—American economic life: the growth of industrial and finance capitalism; Economics 122—Labor problems; Pol. Sci. 163—Local planning administration.

3. Conservation and Planning in the Use of American Resources. America's wealth, productive capacity and welfare are intricately related to the quantity, quality and intelligent use of its mineral, soil, water, plant, animal, and population resources. The problems of conservation and planning in the wise use of resources become more critical as the ratio of population to available resources increases, as technology calls for more intensive use of resources, and as we begin to regard our part of the earth as a permanent homestead for the American people. The student will discover many new legal, political, scientific, and economic solutions to specific conservation problems.

Representative course offerings: Economics 117—Outlines of land economics (Agr. Econ.); Geography 128—Conservation of natural resources; Philosophy 144—Philosophy of social planning; History 111—History of the West.

One of the following courses dealing with the natural phenomena out of which conservation problems arise may, with the approval of the adviser, be credited toward requirement I.b. above for students electing this theme: Soils 106, Wildlife Management 118, Geology 150 or 136, Botany 160 or 164, Zoology 124.

4. Implications of Technology for American Life. It is commonplace to speak of "the atomic age." In a wider sense, we may be in the process of a "technological revolution" which will leave its mark on our institutions as deeply as did the earlier phase, now called the Industrial Revolution. The pattern of technological change itself is studied in the history of science. Its interaction with economic institutions, with family, church, and government are explored in cultural anthropology and sociology. It is reflected as a formative influence in specific studies of the farm economy, business corporations, labor unions, law, political parties, government administration. Whether or not the scientific method comprises a philosophy, it has certainly had a powerful effect on American ideals. The interdepartmental course, Contemporary Trends, affords an unusual opportunity to bring these varied approaches into synthesis.

Representative course offerings: History of Science 170—Modern science; Economics 146—Government and business; Philosophy 120—Philosophy of science; Contemporary Trends 103—Contemporary trends.

5. Social and Intellectual Development. This theme provides the opportunity to study the development of science, art, literature, philosophy, and law as influenced by, and in turn shaping, the society of which they are parts.

Representative course offerings: Art History 131—American architecture; or Art History 159—Development of American art; History 113—History of American thought and culture; Philosophy 139—American philosophers; English—Any 100 course in American literature.

6. Interpretations of American Social Development which have originated in the University of Wisconsin and have become part of its intellectual pattern and are as such known to the world: Frederick Jackson Turner's theory of the role of the frontier in American history and John R. Commons' theory of the "rise of bargaining classes" and of "industrial government."

It is not the intention to indoctrinate the student but to demonstrate to him by these examples how original thinkers operating within the same culture as his own, have con-

structed intellectual configurations explaining the past and casting light on the present and future.

Representative course offerings: Economics 119—Evolution of industrial society; Economics 145—American labor history; Philosophy 139—American philosophers; Pol. Sci. 115—Law in society; History 111—History of the West, 1763–1893.

7. Security and Opportunity in American Life. With the growth of large-scale social organizations, the traditional American ideal of opportunity comes into apparent conflict with human desires for security. In this theme the student may explore the historical ideals of enterprise, self-reliance and progress through political movements, literature, philosophy, and social manners. With these he may compare the drive for security evidenced by trade associations and union organization, new political alignments, welfare and assistance legislation; or as revealed by religion or psychology. He may thus seek scholarly perspective on what seems destined to remain a many-sided national controversy.

Representative course offerings: Economics 120—Social security; or Econ. 123—Labor legislation; English 150—American fiction; or English 170—Contemporary American literature; Philosophy 150—A philosophy of democracy; Pol. Sci. 165—History of American political thought; History 108, 109—Recent history of the U. S.

8. America and World Problems. America' new position as the world's strongest nation, and a vigorous participant in international affairs opens up many lines of inquiry. A comparative study may be made of ideals and institutions, American and foreign. America's role may be observed in international trade, organizations, and politics. Students who may elect this might include those who are interested in the responsibilities posed for the citizen by the threat of war and national aggression, or who want a broad base for graduate training in international affairs. Those interested in the foreign service as a vocation, or in a slightly more concentrated study of international affairs should consider the major in International Relations.

Representative course offerings: Economics 144—Capitalism and socialism; Geography 125—Political geography: world survey; History 120—American foreign relations; Social Studies 159—Current problems of American foreign policy (Pol. Sci. 159).

Students electing *America and World Problems* as a theme may, with the approval of their adviser, satisfy part of the requirement II.c. above by courses on foreign areas or international affairs not listed under II. above.

9. Old World Contributions to American Life. Our concept of America as "the melting pot" conceals the distinctive influences of older populations and cultures. These are still reflected as differences among national-origin groups in America. But in a wider sense, we have taken up scientific discoveries, literary and artistic movements, legal devices, social ideals and economic practices from older societies. American institutions can be studied as offshoots of European institutions conditioned by developments affecting all human society.

Representative course offerings: History 113—History of American thought and culture; or History 121—Social development of the American people; Economics 119—Evolution of industrial society; or Econ. 144—Capitalism and socialism; Soc. 145—The individual and his culture; Soc. 164—Problems of American minority groups; English 173—The rise of a national literature in America 1775–1836; Geography 146—Historical geography of the United States and Canada.

In this theme, students may, with the approval of the adviser, satisfy part of requirement II.c. above by courses on foreign governments or cultures not listed under II. above.

10. An Area of the United States. It is entirely possible to integrate one's study of American Institutions around a particular area of the United States. For instance a student interested in the northern part of Wisconsin would find relevant course work in geography, land economics, rural zoning, wildlife management, local government, archaeology and ethnography, rural sociology, and history. This theme will be especially productive for students who have an opportunity to make a systematic first-hand observation of the area chosen.

11. A Period Illustrative of American Development. An intensive study of an historical period, approached via several of the social studies, lends itself particularly well to an

appreciation of the interrelation of institutions with environment and ideas. Examples are the post-Civil War period of railroad building, the period producing the Populist movement, the New Deal.

BACTERIOLOGY

Students who wish to prepare themselves for positions in the field of bacteriology may major either in Medical Microbiology or in Bacteriology. The student should consult with the chairman of the department selected.

A Letters and Science *major* in Bacteriology in the Department of Medical Microbiology may be constructed as follows: The student will meet the usual requirements for the B.A. or B.S. degree and secure a minimum of 22 credits in the major including the following: Medical Microbiology 1 or 102, and 2; Zoology 119; Physiological Chemistry 103 or 104; and suitable courses in either Bacteriology or Medical Microbiology to complete the required 22 credits. High-school mathematical preparation is required. The satisfactory completion of the courses laid down as prerequisite to the *major* courses specified above forms an integral part of this major.

A Letters and Science *major* in Bacteriology in the Department of Bacteriology may be constructed as follows: The student shall meet the usual requirements for the B.A. or B.S. degree; in addition the student shall secure a total of not less than 20, and not more than 30, credits in Bacteriology, or in a combination of Bacteriology and Medical Microbiology. If such a combination is used, the student shall present at least 15 credits in Bacteriology. Additional courses in biological sciences, chemistry, and other fields of study will be assigned to meet the needs of the student.

DIVISION OF LANGUAGES AND LITERATURE

The Division of Language and Literature offers the following fields of concentration:

1. Departmental fields of concentration, corresponding to the separate departments of the Division (see statements under departments concerned).

2. Interdepartmental fields of concentration, which include work in more than one department of the Division. For students exceptionally prepared in two or more foreign languages, whose plan of work cannot be adequately met within the Department of Comparative Literature, special arrangements will be made, upon application to the Chairman of the Division.

Supervised Individual Reading. Students who have passed the test for either advanced or intermediate knowledge in a given language and whose general record is of considerably more than average grade, may register for additional language credit, if, in order to further improve their fluency and accuracy in the use of foreign texts, they desire to read, under supervision, works in the foreign language dealing with subjects related to their major field of study. The texts to be read, which should be of a general and not too technical character, will be agreed upon in consultation between the student's major department and the language department concerned. Credit for such reading will be language credit based on an examination given by the language department and not credit in the student's major department. Arrangements for such individual reading require the approval, in advance, of the language department concerned and the dean of the college.

MAJOR IN EAST ASIAN STUDIES

The undergraduate major in East Asian Studies has been arranged for (a) students desiring a general acquaintance with the countries and cultures of Eastern Asia, (b) students interested in a particular country of the area or phase of East Asian culture, (c) students preparing for professional, business, or governmental positions involving a specialized knowledge of East Asia.

A committee consisting of Professors Alberson, Barnett, Boardman *(chairman)*, Bronfenbrenner, Trewartha, and Instructor J. S. Thomson administers the major. The chairman will assign one of the members of this committee to each student electing the major. Registration for the major should be effected no later than the beginning of the junior year.

Students contemplating registration should consult with members of the committee during the sophomore year.

Students electing the major in East Asian Studies will normall complete one or more of the required courses during the sophomore year.

REQUIREMENTS FOR THE MAJOR

A minimum of 30 credits is required for the major if it is not taken for pre-professional purposes. Students electing the major on this basis are strongly urged to take work in at least one Asian language as a part of their major program. Students who plan to use the major for pre-professional purposes will be required to submit a minimum of 30 credits plus 2 years of an Asian language taken at Wisconsin or at an institution of equivalent standing elsewhere. In either case, the study program must include:

(a) History 168a, 3 credits, and History 168b, 3 credits.

(b) Preparation of a senior thesis, 2 credits per semester, under the direction of one of the members of the committee. This requirement is designed to provide some depth of understanding of one phase of East Asian life or culture and to afford opportunity for the development of a special field of interest.

(c) Additional courses to complete the major will be selected according to the student's interests from the following, and must include work in four departments.

ART HISTORY

Art History 130—Fine Arts of China.....3 cr.
Art History 132—Chinese pottery and Porcelain.....3 cr.
Art History 133—Chinese Painting.....3 cr.
Art History 110—Proseminar. Introduction to the critical study of single personalities, movements, or problems drawn from occidental or oriental art.....2 cr.

COMPARATIVE LITERATURE

Comp. Lit. 101—Literatures of Asia.....3 cr.

COMPARATIVE PHILOLOGY

Comp. Phil. 2 (1st yr. Chinese).....8 cr.
Comp. Phil. 12 (2nd yr. Chinese).....6 cr.
Comp. Phil. 140–1 (1st yr. Sanskrit).....6 cr.
Comp. Phil. 240–1 (2nd yr. Sanskrit).....6 cr.

GEOGRAPHY

Geography 110—Geography of the Far East.....3 cr.

HISTORY

History 169—Civilization of China.....3 cr.
History 170—19th and 20th Century China.....3 cr.
History 172—Japan Since 1868.....3 cr.

POLITICAL SCIENCE

Pol. Sci. 140—Far Eastern Politics.....3 cr.
Pol. Sci. 155—Proseminar—The U. S. and the Far East.....2–3 cr.

SOCIOLOGY AND ANTHROPOLOGY

Anthropology 116—Peoples of Asia.....3 cr.
Anthropology 119—Peoples of the Pacific.....3 cr.

POSSIBLE ADDITIONS TO COURSE OFFERINGS IN THE NEAR FUTURE

3rd Year Chinese.....6 cr.
Philosophy 143 (Sem.)—Introduction to Indian Philosophy.....3 cr.
Economics 141—Economic Problems of the Far East.....3 cr.

HISPANIC STUDIES

This major is planned to give students a well-rounded academic preparation in several interrelated fields and also minimum training for various occupational opportunities in export-import houses, manufacturing concerns, shipping companies, airway systems, banking institutions, government offices, etc., or for secretarial work, translating, interpreting or teaching.

Students majoring in Hispanic Studies may also prepare for teaching by meeting the requirements for the teaching certificate. See bulletin of the School of Education.

Those who wish to do advanced work in this field of concentration may continue their studies toward the M.A. degree. See M.A. degree in Hispanic Studies in the bulletin of the Graduate School.

Students intending to major in Hispanic Studies should consult the Chairman of the Department of Spanish and Portuguese either in their freshman year or at the beginning of their sophomore year. Registration in this major field of concentration should be effected not later than at the beginning of the junior year.

Prerequisites for registration are: (a) completion of all or nearly all required subjects for the B.A. degree other than foreign languages; (b) Economics 1a (General economics). The College of Letters and Science requirement in United States History and Institutions must be satisfied. Although not prerequisites for registration, the following courses are recommended for the freshman and sophomore years, to enrich the student's background: Economics 1b (General economics); Geography 2a–2b (Physical geography); Geography 5 (Physical earth and its resources) or Geography 17 (Survey of physical geography: man's natural environment); Geography 6–7 (World survey of cultural geography; I, Regional aspects; II, Economic aspects); History 2 (Modern European history); History 3 (European civilization, 800 to the present); History 4 (History of the United States); Political Science 7 (American government and politics).

Following is a list of the required courses for this major:

Art History 157—Patterns and principles of Spanish art (or related fields of Spanish or Spanish-American art offered by this department)	2
Economics 151—Economic problems of Latin America	2
Geography 102—Geography of South America	3
Political Science 130—Governments of Latin America	3
Spanish 47—Spain of today	3
Spanish 48—Spanish America of today	3
Spanish 112—Composition and conversation	2
Spanish courses above 100 in the field of literature	4
	22

A total of 17 credits chosen from the following group

Anthropology 109—Archaeology of Mexico, Central and South America	3
Anthropology 115—The Indians of Central and South America	3
Geography 111—Geography of Middle America	3
History 119—Latin-American history	6
History 130—Spain and the Spanish Empire	6
Journalism 121—Interpreting Hispanic affairs	2
Political Science 131—The United States and Latin America	3
Spanish 117—Commercial and industrial language practice in Hispanic countries	2
Spanish 150—Spanish civilization	4
Spanish 151—Spanish-American civilization	4
Total credits required for major	39

Students who major in this field are required to obtain a grade of *B* in Spanish 112. Those who have not previously taken a second foreign language are required to take a minimum of one year of college Portuguese, the language of Portugal and Brazil.

The electives are flexible enough to accommodate any individual purpose the student may have. The following courses are especially recommended for election because of their particular bearing on the major or for their professional value.

Art Hist. 153—Representative painters of the 17th century
Art Hist. 159—Development of American art
*Com. 8 and 9—Accounting
*Com. 13—Marketing methods
Com. 31—Business statistics
Com. 109—Commercial law
Com. 114—Marketing management
Com. 169—Air transportation
Econ. 30—Economic statistics
Econ. 105—Money and banking
Econ. 126—International trade in agricultural products
Econ. 136—Transportation problems
Econ. 137—Corporation finance
Econ. 153—International finance
Econ. 156—International trade
Geog. 101—Geography of Europe
Geog. 103—Geography of Anglo-America
Geog. 107—Geography of the Mediterranean and Near East
Geog. 112—Problems of Latin America
Geog. 127—Geography of manufacturing
Geog. 147—Historical geography of the Mediterranean borderlands
Geology 150—Economic aspects of geology
Hist. 116—History of the thirteen colonies to 1760
Hist. 120—American foreign relations
Hist. 122—American economic life
Hist. 124—Recent history of the U.S., 1901–1948
Hist. 138—History of Europe, 1789–1871
Journ. 120—Interpreting foreign news
Pol. Sci. 118 and 119—Principles of international law; survey and problems
Pol. Sci. 123—American diplomacy
Pol. Sci. 127 and 128—Comparative government
Pol. Sci. 137—International organization and diplomacy
Pol. Sci. 138—Contemporary problems in international relations
Portuguese 1, 10 and 15

Econ.-Com. 251 (Seminar, Latin-America development and trade), Geography 202 (Advanced regional geography, Latin America) or Geography 252 (Seminar, Latin America), and Art History 210 (Seminar, when dealing with a Spanish subject) will be open in exceptional cases to undergraduate students.

SAMPLE PROGRAM FOR STUDENTS WHO OFFER TWO UNITS OF HIGH-SCHOOL SPANISH

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b	3
Spanish 10a	3	Spanish 10b	3
(Natural Science)	5	(Natural Science)	5
Spanish 16a	2	Spanish 16b	2
(Other B.A. requirements)	2-3	(Other B.A. requirements)	2-3
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	15-16		15-16

SOPHOMORE YEAR

Spanish 21a	3	Spanish 21b	3
(Sophomore English)	3	(Sophomore English)	3
Economics 1a	4	Spanish 47	3
Spanish 48	3	Spanish 25b	2
Spanish 25a	2	(Other B.A. requirements)	4-5
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	15		15-16

JUNIOR YEAR

Anthropology 115	3	Economics 151	2
Art History 157	2	Political Science 130 or 131	2
Geography 102	3	(Second foreign language, Portuguese 1b)	4
(Second foreign language, Portuguese 1a)	4	Spanish 112	2
Electives	3-4	Electives	5-6
	15-16		15-16

SENIOR YEAR

History 119 or 130	3	History 119 or 130	3
Journalism 121	1	Journalism 121	1
Spanish literature	2-3	Spanish 117	2
Spanish 150 or 151	2	Spanish literature	2-3
Portuguese 15a	2	Spanish 150 or 151	2
Electives	3-4	Electives	4
	14-15		14-15

Students majoring in Hispanic Studies who wish to obtain the University Teachers' Certificate should transfer to the School of Education and fulfill the requirements for a teaching major in Spanish. (See page 80.) Consult requirements for graduation in the announcement of the School of Education.

MAJOR IN INTERNATIONAL RELATIONS

Open only to candidates for the B.A. degree, this major offers a broad general background in international political, social, and economic relations, and in regional civilizations. Al-

* If elected it must be in addition to the 120 credits required for graduation.

though the major is not primarily vocational (experience has shown that the relative number of job opportunities in the international field is not large), it does provide an integrated though flexible program of training for those students who plan to enter the foreign services of the United States Government; for those who are interested in securing positions with exporting and importing firms, shipping companies, international banking houses, or foreign press services; and for those who wish to teach international affairs or engage in research in the field. The major is administered by a Committee of Advisers representing the Departments of Political Science, Economics, and the language departments concerned. Concentration in the field of the major will normally begin in the junior year, but students who contemplate this major should consult with one of the committee members concerning their programs as early as possible. The requirements for the major will be subject to revision from time to time, but students who have entered upon the work of the major will be held to meet the revised requirements only to the extent that their prior academic obligations permit.

During the freshman year the student's program will consist normally of an introductory history or social science course, English, foreign language, and mathematics or a science. High-school mathematical preparation is required. The two-year curriculum in Integrated Liberal Studies, with electives in Modern Languages, offers a suitable preparation for this major.

The foreign language requirement is that of the B.A. degree, provided that college credits in foreign languages are secured in *not more than two modern* languages. When specializing in a particular region, students must offer proficiency in the language relevant to that region. Proficiency in one modern language and intermediate knowledge of a second one is recommended whenever the language preparation in high school permits. The following gateway courses should be taken early, preferably by the end of the sophomore year: Political Science 7 (American government and politics) and Economics 1a (General economics) or their equivalents. Credits earned in these two gateway courses will not count toward the credits required for the major.

The major includes a minimum of *40 credits.* At the beginning of the junior year the student will confer with the Chairman of the Committee of Advisers (Professor Ellsworth), to be assigned an adviser in the chosen field of specialization who will assist him in preparing a sequence of studies covering the work in the major during the last two years. This sequence may be arranged either on a functional or on a regional basis and will be varied to meet the needs of the individual student.

The student's work in the major will consist of a group of fundamental courses, the requirements varying with the field of specialization, and of other courses chosen so as to build an integrated program. These courses will be primarily in political science, economics, geography, commerce, history, and foreign language, but the program may include work in such related fields as anthropology, geology, journalism, philosophy, sociology, and social psychology, or, in general, any courses which, in the opinion of the student's adviser, may be necessary to provide an integrated program to fit his individual purpose.

The various fields of specialization within the major are listed below, together with the requirements in each field. Work in the major will be completed by taking any required courses, along with recommended courses or courses in related fields which, in the adviser's opinion, may be desirable. Among such courses in related fields the following are of special significance: Philosophy 132 (History of modern philosophy) and 150 (A philosophy of democracy).

PREPARATION FOR THE AMERICAN FOREIGN SERVICE

ADVISER, PROFESSOR LLEWELLYN PFANKUCHEN

The forty credits (40) which constitute this major must include the fundamental courses listed below, in addition to Economics 1a (General economics) and Political Science 7 (American government and politics) which are required but not counted toward the major. The rest may be chosen from the list of recommended courses, or from courses in related fields, as recommended by the adviser. Courses marked (*) are of greater general importance. Students may also plan a substantial part of the major centering on a particular geographical region.

I. REQUIRED COURSES

	Credits
History 4a-b, History of the United States	6
Political Science-Geography 21 or 121—Foundations and problems of international relations (or I.L.S. 24—The world scene)	3
Political Science 137—International organization and diplomacy	3
Geography 7—Economic geography	3
Economics 156—International trade	3

II. RECOMMENDED COURSES

Commerce

190a	Commercial law	3

Economics

*105	Money and banking	3
119	Evolution of industrial society	3
126	International trade in agricultural products	3
140	European economic history since 1700	3
*143	Structure of the American economy	3
*144	Capitalism and socialism	3
153	International finance	3
157	International economic policy	3
160	Economic problems of underdeveloped areas	3
166	Population problems	3

Geography

101	Geography of Western Europe	3
102	Geography of South America	3
103	Geography of Anglo-America	3
108	Geography of the Soviet Union	3
110	Geography of the Far East	3
111	Geography of Middle America	3
*125	Political geography	3
132	Use and appreciation of maps	3
146	Historical geography of the United States and Canada	3

Geology

134	Regional geology	2
*150	Minerals in world affairs	3

History

2a-b	Modern European history	6
*37-137	Origins and history of World War II	3
108	Recent history of the U.S., 1901–1929	3
109	Recent history of the U.S., 1929–1951	3
*120	American foreign relations	6
129	Latin-American history	6
139a	The Age of Imperialism, 1871–1918	3
143	British Empire since 1815	6
147	Modern Britain, 1815 to the present	6
149b	History of Russia	3
168b	History of the Far East	3
178	Recent German history	6

Journalism

104	Interpretation of contemporary affairs	3
114	Communication and public opinion	3
120	International communications and the foreign press	3

Political Science

101	Introduction to political theory	3
112a-b	Constitutional law	6
*118a	International law: law of peace	3
119	International law: problems	3
*123	Administration of U. S. foreign affairs	3
127	Government of Great Britain	3
128	Governments of Continental Europe	3
130	Governments of Latin America	3
131	International relations of Latin America	3
132	Governments of Central-Eastern Europe	3
133	Government of the Soviet Union	3
136	International relations of the Soviet orbit in Europe	3
138	Contemporary problems in international relations	3
140	Far Eastern politics	3
155	The United States and the Far East	3
156	Prospects and problems of world government	3
187a	Governments of Scandinavia	3
187b	International relations of Scandinavia	3

Social Studies

*159	Problems of American foreign policy	3

Sociology and Anthropology

134	Democratic and totalitarian societies	3
155	Ideological conflicts	3
187a-b	Social trends in Scandinavia	6
130	Public opinion	3
194	Introduction to public opinion research	3
163	Modern population problems	3
141	Applied anthropology	3

Sociological aspects of certain regions, of special interest to certain students, are treated in such courses as Anthropology 117 (Peoples of Europe), 116 (Peoples of Asia), 118 (Peoples of Africa, and 119 (Peoples of the Pacific).

SPECIALIZATION IN THE ECONOMIC PHASES OF INTERNATIONAL RELATIONS

ADVISER, PROFESSOR P. T. ELLSWORTH

The forty credits (40) which constitute this major must include the fundamental courses listed below, in addition to Economics 1a (General economics) and Political Science 7 (American government and politics), which are required but not counted toward the major. The rest may be chosen from the list of recommended courses or from courses in related fields, as recommended by the adviser. Courses marked with an asterisk (*) are of greater general importance.

FUNDAMENTAL COURSES

	Credits
Economics 156, International trade	3
Economics 157, International economic policy	3
Political Science 121, Foundations of international relations (or I.L.S. 24, The World Scene)	3
Geography 7, Economic geography	3
And one of the following combinations:	
History 4a and b, History of the United States	6
History 122a and b, American economic life	6
History 108, Recent history of the United States, 1901–1929	3

History 109, Recent history of the United States, 1929–1952	3
and History 137, Origins and history of World War II	6
History 139a and b, Recent European history	6
Economics 119, Evolution of industrial society, and Economics 134, Economic history of the U. S.	6
Economics 140a and b, European economic history since 1700	6

Recommended Courses

Economics

		Credits
*105	Money and banking	3
117	Outlines of land economics	3
126	International trade in agricultural products	3
130	Economic statistics	3
*143	The structure of the American economy	3
*144	Capitalism and socialism	3
150	Economic theory	3
151	Economic problems of Latin America	2
*153	International finance	3
158	Large-scale enterprise	3
160	Economic problems of underdeveloped areas	3
*166	Economics of population	3
181	Business cycles	3
182	Economic control	3

Commerce

*8	Elements of accounting	4
9	Intermediate accounting	4
31	Business statistics	3
114	Marketing management	2
137	Corporation finance	3

Political Science

*118a	International law	3
119	Problems of international law	3
*123	Administration of U. S. foreign policy	3
*137	International organization	3
138	Contemporary problems in international relations	3

Political conditions of special regions of interest to certain students are treated in such courses as Pol. Sci. 127 (Government of Great Britain), 128 (Governments of Continental Europe), 130 (Governments of Latin America), 132 (Governments of Central-Eastern Europe), 133 (Government of the Soviet Union) 187 (Governments of Scandinavia), 131 (International relations of Latin America), 136 (International relations of Latin America), 136 (International relations of the Soviet orbit in Europe), 135 (Eastern Europe in world politics, 140 (Far Eastern politics), and 187b (International relations of Scandinavia).

History

		Credits
120	American foreign relations, 1776–1947	3
138a-b	Europe, 1789–1871	6
113	Social and intellectual history of the U. S.	3
151	European intellectual and social history since 1789	3
165	History of commerce	3

The history of special regions of interest to certain students is treated in courses such as History 154 (The British Empire since 1815), 146 (History of the German people), 149 (History of Russia), 168 (History of the Far East).

Geography

5	Physical earth and its resources	3
127	Geography of manufacturing	3
132	The use and appreciation of maps	3

Geography of special regions of interest to certain students is treated in courses such as 101 (Geography of Europe), 102 (Geography of South America), 103 (Geography of Anglo-America), 107 (Geography of the Mediterranean and Near East), 108 (Geography of the Soviet Union), 110 (Geography of the Far East), 146 (Historical geography of the United States and Canada), and 202 (Advanced regional geography: Mexico).

Geology

150	Economic aspects of geology	2

Social Studies

*159	Problems of U. S. foreign policy	3

Sociology and Anthropology

186	European social structure: south and west	3
188	European social structure: north and east	3
134	Democratic and totalitarian societies	3
*163	Modern population problems	3

Sociological aspects of special regions of interest to certain students are treated in such courses as Anthropology 116 (Peoples of Asia), 117 (Peoples of Europe), and 118 (Peoples of Africa).

SPECIALIZATION IN THE LATIN-AMERICAN REGION

ADVISER, PROFESSOR E. NEALE-SILVA

The forty credits (40) which constitute this major must include the fundamental courses listed below. The rest may be chosen from the list of recommended courses, preferably those marked (*), or from courses in related fields, as recommended by the adviser.

Fundamental Courses

	Credits
Commerce 151 (see Economics 151)	
Economics 151, Latin America: Economic development and relations	2
Geography 102, Geography of South America	3
Geography 111, Geography of Middle America	3
History 129a–b, Latin-American history	6
Journalism 121(II), Reporting Hispanic affairs (Latin America)	1
Political Science 130, Governments of Latin America	3
Political Science 131, International relations of Latin America	3

Recommended Courses

		Credits
	Anthropology	
*115	The Indians of Central and South America	3
	Commerce	
**8	Elements of accounting	3
9	Intermediate accounting	4
**13	Marketing methods	3
31	Business statistics (or Economics 130)	3
109	Commercial law	3
114	Marketing management	2
136	Transportation problems	2-3
137	Corporation finance	3
	Economics	
105	Money and banking	3
126	International trade in agricultural products	3
130	Economic statistics (or Commerce 31)	3
153	International finance	2
*156	International trade	3
157	International economic policy	3
	Geography	
3	Geography of the Americas	3
5	Physical earth and its resources	3
103	Geography of Anglo-America	3
112	Problems of Latin America	3
127	Geography of manufacturing	3
202	Advanced regional geography: Mexico	2
	Geology	
134	Regional geology (Western hemisphere)	2
150	Economic aspects of geology	2
	History	
*4a-b	History of the United States	6
108	Recent history of the United States, 1901–1929	3
109	Recent history of the United States, 1929–1952	3
120	American foreign relations	6
122a	American economic life (1789–1860)	3
122b	The age of big business (1861 to present)	3
	Journalism	
120	International communications and the foreign press	2
	Political Science	
118	Principles of international law	3
119	Problems of international law	3
*21 or *121	Foundations of international relations (or I.L.S. 24, The world scene)	3
123	Administration of United States foreign policy	2
127	Government of Great Britain	3
128	Governments of Continental Europe	3
	Social Studies	
159	Current problems of American foreign policy, Interdepartmental seminar	3
290	Interdepartmental seminar in Latin America	2-3

Students electing specialization in the Latin-American region must also show proficiency in Spanish by offering the following courses or equivalent training beyond Spanish 10b (two years of college Spanish):

Spanish 16a and 16b (Elementary composition, conversation and grammar review) . . 4 cr.
Spanish 21 or 23 (Elementary survey of Spanish literature *or* modern Spanish readings) . . . . . 6 cr.
Spanish 27 (Spanish commercial letter writing) . . . . . 2 cr.
Spanish 48 (Spanish America of today) . . . . . 3 cr.
†Spanish 151 (Spanish American civilization) . . . . . 4 cr.

18–19 cr.

Students who have not taken a second foreign language in high school or in college are required to take a minimum of one year of Portuguese, the language of Brazil.

Those who specialize in the Latin-American region should have a grade-point average of at least 1.8 before they are accepted as majors. All majors in this field will be required to write a thesis on a Latin-American topic in the Departments of Economics, Geography, History or Political Science. Thesis work carries 2 credits per semester and is counted as part of the major.

SAMPLE PROGRAM FOR STUDENTS WHO OFFER TWO UNITS OF HIGH-SCHOOL SPANISH

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a	3	English 1b	3
Spanish 10a	3	Spanish 10b	3
Natural science	5	Natural science	5
Spanish 16a	2	Spanish 16b	2
Other B.A. requirements	2-3	Other B.A. requirements	2-3
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	15-16		15-16

** If elected must be in addition to the 120 credits required for graduation.
† When this course is not offered, it may be replaced by 176, Spanish-American essay and novel (4 cr.) or 146, Survey of Spanish-American literature (6 cr.).

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Spanish 21a or 23	3	Spanish 21b or 23	3
Second modern foreign language	4	Second modern foreign language	4
Sophomore English	3	Sophomore English	3
Political Science 7	3	Economics 1a	4
Other B.A. requirements	2-3	Other B.A. requirements	2
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	15-16		16

JUNIOR YEAR

History 4a	3	History 4b	3
Geography 102	3	Geography 111	3
Spanish 27	2	Political Science 130 or 131	3
Spanish 48	3	Economics 151	2
Political Science 123	2	Economics 105	3
Electives	3-4	Electives	2
	15-16		16

SENIOR YEAR

History 119a	3	History 119b	3
*Thesis	2	*Thesis	2
Economics 156	3	Economics 157	3
Spanish 151	2	Spanish 151	2
Journalism 121 (II)	1	Anthropology 115	3
Electives	4-5	Electives	2-3
	15-16		15-16

SAMPLE PROGRAM FOR STUDENTS WITH NO PREVIOUS FOREIGN LANGUAGE TRAINING

FRESHMAN YEAR

Spanish 1a	4	Spanish 1b	4
English 1a	3	English 1b	3
Natural science	5	Natural science	5
Other B.A. requirements	4	Other B.A. requirements	4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	16		16

SOPHOMORE YEAR

Spanish 10a	3	Spanish 10b	3
Spanish 16a	2	Spanish 16b	2
Sophomore English	3	Sophomore English	3
Geography 102	3	Geography 111	3
Economics 1a	4	Political Science 7	3
Physical Education (women only)	0	Other B.A. requirements	2
Military Training	0	Physical Education (women only)	0
		Military Training	0
	15		16

JUNIOR YEAR

Spanish 21a or 23	3	Spanish 21b or 23	3
History 4a	3	History 4b	3
Economics 151	2	Anthropology 115	3
Spanish 48	3	Political Science 131	3
Political Science 130	3	Political Science 123	3
Journalism 121 (II)	1	Electives	1
Electives	1		
	16		16

SENIOR YEAR

Spanish 27	2	Spanish 151	2
Spanish 151	2	Economics 157	3
Economics 156	3	History 119b	3
History 119a	3	Portuguese 1b	4
Portuguese 1a	4	Electives	2
*Thesis	2	*Thesis	2
	16		16

* Thesis work carries 4 credits at the rate of 2 credits per semester. These credits are counted as part of the major.

SPECIALIZATION IN FRENCH AREA STUDIES

ADVISER, PROFESSOR JULIAN HARRIS

The 40 credits which constitute this major must include the following courses or their equivalent:

French 22	Elementary survey of French literature	6 cr.
French 25 or 124	Composition and conversation	4 cr.
French 120	French for translators or Advanced French translation	3–4 cr.
French 150	French civilization, or 48, France of today	4 cr.

In addition to completion of the required courses, each major is required to pass the Oral Proficiency Test (see page 133) with a rating of at least "Satisfactory."

Oral practice acquired by residence or meals at the French House or by foreign travel is strongly recommended to supplement class instruction. Such practice may, upon recommendation of the chairman, be accepted in lieu of a conversation course. Students will note that intermediate attainment in a second modern foreign language is recommended for majors in International Relations. This should be acquired as early as possible. Unless at least two units of modern language are offered from high school, it will be difficult to complete the major with less than 128 credits.

In the first two years, in addition to French, English, and science (or mathematics), it is advisable to choose History 2 (Modern European history) 6 credits; Economics 1a (General economics) 4 credits; and Political Science 7 (American government) 3 credits. If possible, English 2a (Composition) and Geography 7 (Economic geography) or Geography 6 (Regional geography) 3 credits, should be included.

The sequence of courses to be chosen in the junior and senior years will be determined on consultation with the adviser, the special purpose or interest of each student being taken into consideration. In addition to the courses specified in French, the following courses are recommended for French Area Studies (those marked with an asterisk will usually be interesting to the largest number of students):

		Credits
	Commerce	
†8	Elements of accounting	4
	Economics	
105	Money and banking	3
119	Evolution of industry	3
143	Problems of structural change in the American economy	3
*144	Capitalism and socialism	3
*156	International trade	3
157	International economic policy	3
	History	
4a, 4b	History of the United States	6
120	American foreign relations	6
*136	History of France	6
137	Origins and history of World War II	3
138	History of Europe, 1789–1871	6
139a	Age of imperialism in Europe	3
*139b	European history since 1918	3
145	European intellectual and social history	3
151	European intellectual and social history since 1789	3
	Geography	
*101	Geography of Europe	3
	or	
*107	Geography of the Mediterranean and Near East	3
147	Historical geography of the Mediterranean borderlands	3
	Journalism	
104	Interpretation of contemporary affairs	3
120	International communications and the foreign press	3
	Political Science	
101	Introduction to political theory	3
118	Principles of international law	3
*21 or *121	Foundations of international relations (or I.L.S. 24, The world scene)	3
123	Administration of U. S. foreign policy	3
128	Governments of Continental Europe	3
137	International organization	3
	Social Studies	
159	Current problems in American foreign policy	3
	Sociology and Anthropology	
6	Peoples of Europe	3
134	Social psychology of democratic and totalitarian societies	3
136	Public opinion, propaganda, and censorship	3

SAMPLE PROGRAM FOR STUDENTS WHO OFFER TWO UNITS OF HIGH-SCHOOL FRENCH

(Other equally acceptable programs could be worked out.)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
French 10a	3-4	French 10b	3-4
English 1a	3	English 1b	3
History 2a	3	History 2b	3
Mathematics or Science	4-5	Mathematics or Science	4-5
Freshman Forum	1	Freshman Forum	1
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	14-16		14-16

† If elected must be in addition to the 120 credits required for graduation.

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
French 22a	3	French 22b	3
French 25a or 124	2	French 25b or 124	2
Science or Mathematics	4-5	English 33b	3
English 33a	3	Economics 1a	4
Political Science 7	3	Second foreign language	4
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	15-16		16

JUNIOR YEAR

French 120	2-3	French 120	2-3
Second foreign language	4	Second foreign language	3-4
History 4a	3	History 4b	3
Political Science 121	3	Political Science 137	3
Economics 105	3	Geography 7	3
	15-16		14-16

SENIOR YEAR

French 150	2	French 150	2
History 136	3	History 136	3
Economics 156	3	Economics 144	3
Political Science 128	3	Geography 101	3
Second foreign language	3-0	Electives	4-5
Electives	2-5		
	16		15-16

MEDICAL SCIENCE

A major in Medical Science is authorized for students in the General Course who satisfy the requirements as detailed on page 82.

MAJOR IN THE BIOLOGICAL ASPECTS OF CONSERVATION

This major is designed to provide (a) a knowledge of the importance to man of biological resources, (b) an understanding of some of the relationships of these various resources to one another, (c) training in the natural sciences dealing with these resources, and (d) an appreciation of the esthetic and recreational values and possibilities attached to these resources. While this major will not train professionals in any phase of conservation, it will be training for subprofessionals such as biological aids, wardens, ranger naturalists, museum workers, etc., and will prepare for graduate work in certain phases of conservation. If taken in the School of Education, it will be preparation for teaching in biology and general science. It should also be useful as a cultural course and training for citizenship. Students interested in this major should consult with Professor John W. Thomson, 209 Birge Hall. Mathematical preparation is required.

1. Required courses, 25–32 credits as follows:

   Botany 1 or 17—5 or 3 credits
   Zoology 1 or 17—5 or 3 credits
   Geology 1 or 17—5 or 3 credits
   or Geography 2b or 17—5 or 4 credits
   Chemistry 1a—General chemistry, 5 credits
   Botany 160—Flora of Wisconsin and its conservation, 3 credits
   Zoology 124—Conservation of aquatic resources, 2 credits
   or Zoology 126—Field zoology, 3 credits
   Geography 128—Conservation of natural resources, 3 credits
   Wildlife Management 118—Wildlife ecology, 3 credits

2. Courses chosen from the following subjects, to bring the total to 50 credits—the number of credits in the 100-group of courses to total at least 25. (Subject to the rule governing election of courses outside of the college in which the student is enrolled.)

   Botany: Economic, Taxonomy, Dendrology, Identification, Ecology, Plant conservation.
   Economics: Land economics.

Geography: Geography of Anglo-America, Geography of Wisconsin, Climatography, Mapping.
Geology: Physiography, Soil erosion, Glacial geology, Mapping.
Political Science: Government and natural resources, Rural local government.
Zoology: Entomology, Ecology, Fishes, Birds, Mammals, Hydrobiology, Parasitology.
Agricultural Economics: Land economics.
Agricultural Engineering: Surveys and structures, Drainage and irrigation, Soil erosion.
Agronomy: Crop production, Pastures.
Entomology: Farm insects, Taxonomy, Control, Ecology.
Forestry: Forest products, General forestry.
Horticulture: Landscape design, Public grounds.
Rural Sociology: Rural life, Rural local government.
Soils: General survey, Soil erosion, Forest soils, Genesis and classification.
Veterinary Science: Animal body, Fur farming.
Wildlife Management: Wildlife ecology, Wildlife management.

3. At least one summer of practical experience, such as work with the Soil Conservation Service, the Wisconsin Conservation Department, the Fish and Wildlife Service, nature counselor at a camp, ranger naturalist, or the equivalent.

4. Attendance at the seminars in Wildlife, Limnology, and Plant Ecology is recommended.

MAJOR IN REGIONAL PLANNING

The major in Regional Planning is designed to provide a broad but integrated program of studies focusing upon problems in sub-national area planning. The emphasis is upon substantive issues and the processes of public decision-making and action concerning (a) the development and use of land and other basic resources and (b) the provision of public services closely related to land development and use.

In recent years there has been a growing awareness of serious problems of congestion, blight, and haphazard expansion of our *urban metropolitan regions*. Similarly, there is an increasingly wide recognition of complex land-use and other resource-use problems in *major regions* such as large river valleys. (The term "major regions" includes any extensive areas defined with primary reference to land-use and other resource-use problems; also states and counties or groups of counties.) In both types of regions, natural ecological factors are intricately interwoven with the human factors of population and technology, economic and governmental patterns, and fiscal and legal systems. Intelligent public action must, therefore, be based upon an improved understanding of interrelations of all these significant elements in our regional problems.

The Regional Planning sequence joins the essential values of the liberal arts program with the values of a thorough study of an important group of public problems in contemporary life. Successful completion of the requirements of this major will equip the student with the basic prerequisites for work as a junior social science analyst dealing with regional planning problems. The undergraduate major or its equivalent is also the basis for graduate work leading to a master's degree in Regional Planning.

This major in the Division of Social Studies is administered by a Divisional Committee consisting of Professors Beuscher, Clarenbach, and Ratcliff *(chairman)*. The chairman will assign one of the members of this committee, or a member of a larger associated committee on regional planning, as adviser to each student electing this major. The student will consult with his advisers, and shall, not later than the beginning of the junior year (preferably earlier), submit a program of studies for the approval of the adviser.

The student in this major will choose *one* of two sequences of required courses. Sequence A is concerned primarily with *Urban (Metropolitan) Regions*, sequence B with *Major Regions*. Credits in sequence A required courses total 53; in sequence B, 52.

COURSES REQUIRED FOR THE MAJOR

1. For Sequence A and for Sequence B:

Economics 1a	General economics, 4 cr.
Economics 117	Outlines of land economics, 3 cr.
Economics 124a	Public finance (or Economics 124b), 3 cr.
Economcis 142	Public utilities, 3 cr.
Economics 130	Economic statistics (or Sociology 132), 3 cr.
Political Science 112b	Constitutional law, 3 cr.
Political Science 143	Introduction to public administration, 3 cr.
Political Science 163	Local planning administration, 3 cr.
Sociology 163	Modern population problems, 3 cr.
Sociology 171	Planning and social organization, 3 cr.
Geography 132	The use and evaluation of maps, 2 cr.

2. Additional, required for Sequence A only:

Economics 179	Urban land economics, 3 cr.
Political Science 13	Municipal government, 3 cr.
Sociology 177	The modern city, 3 cr. (or Geography 129—Urban geography, 3 cr.)
Sociology 157	Methods of sociological inquiry, 3 cr.
Commerce 178	Housing and planning problems, 3 cr.
Drawing 10	Elements of drawing, 3 cr.
Civil Engineering 141	City planning, 2 cr.

3. Additional, required for Sequence B only:

Political Science 134	Rural local government, 3 cr.
Political Science 152	Government and natural resources, 3 cr.
Sociology 125	Principles of rural sociology, 3 cr.
Sociology 127	Rural community organization, 2 cr.
Sociology 128	Methods of research in rural sociology, 2 cr.
Geography 103	Geography of Anglo-America, 3 cr.
Geography 128	Conservation of natural resources, 3 cr.

SAMPLE PROGRAM FOR B.S. DEGREE CANDIDATES WITH MAJOR IN REGIONAL PLANNING

(A) Urban (Metropolitan) Regions

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a	3	English 1b	3
(Natural science, etc., requirements)*	3-9	(Natural science, etc., requirements)*	3-9
Electives**	3-9	Drawing 10	3
		Electives**	0-6
	15		15

SOPHOMORE YEAR

English 2a	3	(Sophomore literature, required)	3
(Sophomore literature, required)	3	(Natural science, etc., requirements)	0-4
(Natural science, etc., requirements)	0-5	Economics 130—Economic statistics (or Soc. 132—Introduction to social statistics)	3
Economics 1a	4	Geography 129—Urban geography (or Soc. 124—The modern city)	3
Electives	0-5	Geography 132—Use and evaluation of maps.	2
		Electives	0-4
	15		15

JUNIOR YEAR

Sociology 163—Modern population problems.	3	Economics 179—Urband land economics	3
Economics 117—Outlines of land economics.	3	Political Science 163—Local planning administration	3
Political Science 143—Introduction to public administration	3	Sociology 157—Non-statistical methods of sociological inquiry	3
Political Science 13—Municipal government.	3	Electives	3
Electives	3		
	15		15

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
Economics 124a—Public finance	3	Political Science 112b—Constitutional law	3
Economics 142—Public utilities	3	Commerce 178—Housing and planning problems	3
Civil Engineering 141—City planning	2	Sociology 171—Planning and social organization	3
History 121—Social development of the American people	3	Electives	6
Electives	7		
	15		15

SAMPLE PROGRAM FOR B.S. DEGREE CANDIDATES WITH MAJOR IN REGIONAL PLANNING

(B) Major Regions

FRESHMAN YEAR

English 1a	3	English 1b	3
(Natural science, etc., requirements)*	3-9	(Natural science, etc., requirements)*	3-9
Electives**	3-9	Electives**	3-9
	15		15

SOPHOMORE YEAR

English 2a	3	(Sophomore literature, required)	3
(Sophomore literature, required)	3	(Natural science, etc., requirements)	0-4
(Natural science, etc., requirements)	0-5	Economics 130—Economic statistics (or Soc. 132—Introduction to social statistics)	3
Economics 1a	4	Geography 83—Geography of Anglo-America	3
Electives	0-5	Geography 132—Use and evaluation of maps	2
		Electives	0-4
	15		15

JUNIOR YEAR

Sociology 163—Modern population problems	3	Geography 128—Conservation of natural resources	3
Economics 117—Outlines of land economics	3	Political Science 112b—Constitutional law	3
Political Science 143—Introduction to public administration	3	Political Science 163—Local planning administration	3
Sociology 125—Principles of rural sociology	3	Electives	6
Economics 142—Public utilities	3		
	15		15

SENIOR YEAR

Economics 124a—Public finance	3	Political Science 152—Government and natural resources	3
Political Science 134—Rural local government	3	Sociology 127—Rural community organization	2
Sociology 128—Methods of research in rural sociology	2	Sociology 171—Planning and social organization	3
History 122a—American economic life: the history of American agriculture	3	Electives	7
Electives	4		
	15		15

The sample programs may be appropriately modified to allow for the Integrated Liberal Studies alternative in satisfying the basic freshman-sophomore requirements.

The College of Letters and Science requirement in United States History and Institutions must be satisfied.

Appropriate modifications may also be made if the student is a candidate for the B.A. degree instead of the B.S. degree.

XIV. TRANSFER TO THE SCHOOL OF COMMERCE

The School of Commerce is organized as an administrative unit separate from the College of Letters and Science. However, students who expect to enter the School of Commerce will register as pre-Commerce students in the College of Letters and Science during their freshman and sophomore years. In the first two years they will carry general liberal arts subjects offered by the College of Letters and Science, supplementing these subjects with Commerce 8 and 9 and Economics 1a. High-school mathematical preparation is required. At the beginning of their junior year students with a grade-point average of 1.3 will transfer to the

* It is strongly recommended that at least one course in mathematics (1a or 3a) be included.

** A student who must take a foreign language in order to meet the new B.S. requirement will have a reduced number of electives.

School of Commerce and continue the appropriate course of study leading either to the degree of Bachelor of Business Administration or to the degree of Bachelor of Science (Light Building Industry). Those students who have failed to achieve the required grade-point average at this time must transfer to the B.A. or B.S. General Course.

Each of the two curricula outlined below specifies the credits required in certain fields of study and provides for a substantial number of free electives in the College of Letters and Science.

1. CURRICULUM LEADING TO THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION

The following requirements must be met by juniors seeking admission to the School of Commerce as candidates for the degree of Bachelor of Business Administration:

1. A minimum of 12 credits in English composition, English literature, American literature, or comparative literature, of which at least 6 credits must be in English composition.
2. Mathematics through Mathematics 7 or a semester in calculus for transfers from Engineering.
3. A minimum of 8 credits in laboratory science.
4. Economics 1a.
5. Commerce 8 and 9.
6. Elective credits in Letters and Science subjects.
7. Junior standing (58 credits).
8. A minimum scholastic average of 1.3 (on all work carried in first two years).

Foreign language is optional. Juniors who do not present Economics 1a, and Commerce 8 and 9 may be admitted *conditionally* to the School of Commerce, at the discretion of the dean, pending completion of these requirements.

2. CURRICULUM LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (LIGHT BUILDING INDUSTRY)

The student in the Light Building Curriculum is admitted to the School of Commerce in his junior year as a candidate for the degree of Bachelor of Science, Light Building Industry, provided he has satisfactorily completed the following required courses:

1. Six (6) credits in English composition.
2. Art Education 18.
3. Mathematics through Mathematics 102a or 21.
4. Physics 1b.
5. Economics 1a.
6. Elective credits in Letters and Science subjects.
7. Junior standing (58 credits).
8. A minimum scholastic average of 1.3 (on all work carried in first two years).

XV. TRANSFER TO THE SCHOOL OF EDUCATION

The School of Education is organized as an administrative unit separate from the College of Letters and Science. Students enter the School of Education as freshmen or juniors, depending upon the majors which they plan to complete.

Students desiring to major in Art Education, Applied Art, Physical Education, Occupational Therapy, or in Community Leadership in Recreation will register in the School of Education at the beginning of the freshman year.

The elementary education program is a four-year program leading to the B.S. degree in Education. Students who are preparing to be elementary teachers will hold joint registration in the College of Letters and Science and the School of Education as freshmen and sophomores with the records being kept in the College of Letters and Science and faculty advising carried on by members of the School of Education staff.

Students who plan to become teachers of academic subjects will register in the College of Letters and Science as freshmen and sophomores and will meet the general requirements of the first two years of the College of Letters and Science. These students will transfer to the School of Education at the beginning of the junior year.

All students registered in the School of Education as freshmen and sophomores and those who plan to transfer to the School of Education at the beginning of the junior year are advised to meet the speech proficiency requirement before junior standing is achieved. A student may meet this requirement either (1) by enrolling in a special non-credit speech course until such time as his proficiency is certified, or (2) by enrolling in a speech-skills course and securing certification by his instructor. If the latter method is chosen the student must notify his instructor at the beginning of the semester of his desire to be certified. Speech 1, 2, 3, 6, 7, 105, and 110 may be taken by students seeking to meet the speech proficiency requirement for the University Teachers' Certificate under Option B. If the student fails to be certified under one of these plans, he must reach the required standard through special clinic or course assignments.

Students who expect to enter the School of Education at the beginning of the junior year are advised to take at least the elementary courses in as many as possible of the fields that serve as foundations of the later required courses. Such subject fields are economics, geography, physiology or zoology, psychology, and a selection from the introductory courses in the several social studies.

No student will be accepted into the School of Education unless his scholastic record is sufficiently high to indicate the probability of success in a teaching field.

XVI. TRANSFER TO THE SCHOOL OF JOURNALISM

(See School of Journalism, page 83.)

XVII. TRANSFER TO THE SCHOOL OF LAW

Students in the B.S. General Course or in any of the B.A. courses at Wisconsin are eligible to transfer to the Law School as regular students when they have (1) received the bachelor's degree or (2) completed three academic years of satisfactory work, including those studies which normally come in the freshman and sophomore years at Wisconsin. "Three academic years of satisfactory work" means that a student must be eligible to register as a senior in the College of Letters and Science (subject to the provisions of Section 7), with an over-all grade-point average of 1.5. In the case of veterans, this requirement is subject to modification by the Registrar in consultation with the Dean of the Law School upon evidence of hardship in its application to a particular veteran.

Students transferring to the Law School under these provisions may credit not to exceed 30 law credits as free electives toward their B.A. or B.S. degree, provided, however, that they secure at least 30 credits in residence at this University in regular Letters and Science courses, and take no other work for credit by correspondence or under the Twenty-Credits Rule (see Section 17).

Students entering the College of Letters and Science with the intention of meeting the requirements for transfer to the Law School should, in their three years of preparation, complete all or almost all the requirements for their Letters and Science majors; reasonable foresight will enable them to do this.

Students who complete at the University of Wisconsin the requirements in Letters and Science for entrance to the Law School must meet the requirements of the College of Letters and Science even though they may have entered Wisconsin with advanced standing.

Any major in Letters and Science, energetically carried with the general degree requirements, will furnish adequate preparation for the study of law. But the Law School Faculty believes that, as a rule, the student intending to study law should choose a field of concentration in the division of social sciences (economics, cultural geography, history, philosophy, political science, sociology), and that, in any event, when he begins the study of law he should have acquired some understanding of the economic and political life of the United

States and of Anglo-American constitutional history, as well as some acquaintance with philosophy and social psychology. Consult the bulletin of the Law School for specific recommendations in this respect.

By availing themselves of either this section or Section 17, students may earn both the undergraduate degree and the law degree in six years. Students who do not secure their undergraduate degrees in addition to their law degrees will be at a disadvantage.

XVIII. TRANSFER TO THE SCHOOL OF MEDICINE

A student in the College of Letters and Science who wishes to prepare for a career in medicine will register in the B.A. or B.S. General Course during his first two years and will plan his course with one of a group of special advisers.

At the beginning of his junior year, he will be required to select a major study in consultation with the Associate Dean of the Medical School. Properly qualified students will be admitted to the major in Medical Science at this time, but, because this major requires a minimum of 25 credits in closely related medical subjects, a student can complete it only if he is admitted to the Medical School. Therefore, the student should plan his program so as to include the possibility of an alternate major. He may integrate the preprofessional requirements with a major in one of several fields of study if the program of the last two years is carefully planned.

Permission to elect the Medical Science Major does not imply admission to the Medical School (such admission is the function of the appropriate committee). However, if the student qualifies for admission to the Medical School, he will be registered concurrently, during his fourth year, as a senior in the College of Letters and Science and as a freshman in the Medical School. At the end of the senior year and upon completion of the major in Medical Science, the student will be awarded the degree of Bachelor of Arts (Medical Science) or the Bachelor of Science (Medical Science).

REQUIREMENTS FOR ADMISSION TO THE SCHOOL OF MEDICINE

90 credits to include:

1. All of the general course requirements for the B.A. or B.S. degrees (see pages 44 and 48) except that of the major.
2. The following specific courses, which may have been taken either to fulfill some of the requirements of (1) or as electives:
   A. Chemistry: general chemistry, including quantitative analysis (8–10 cr.); organic chemistry, including both aliphatic and aromatic compounds (4–5 cr.); quantitative chemistry (3–4 cr.).
   B. Physics: general physics (8–10 cr.).
   C. Zoology: general zoology (5 cr.); vertebrate embryology (3–5 cr.).
   D. Mathematics: college mathematics (3–4 cr.).
   E. Origin of Greek and Latin medical terms (3 cr.). Required of candidates who have not taken two years of high-school Latin or its equivalent.

NOTE: Students are urged to choose elective credits from the fields of humanities and social studies.

Students who transfer to another medical school for the work of the senior year may secure a degree at the University of Wisconsin upon satisfaction of the following requirements: (a) Completion of at least 60 credits in the University and the work of the junior year in residence at Madison; (b) Transfer to an accredited medical school which requires a bachelor's degree for continuation, but whose regulations prevent it from granting this degree after only one year of residence; (c) Completion of one year in such an accredited medical school with a record which makes him eligible for advancement to the second year of the medical course; (d) Fulfillment of all requirements of the B.A. or B.S. degree with a major in Medical Science of the University of Wisconsin except for the requirement of residence in the senior year.

Those students who plan to complete their undergraduate degrees before attending the School of Medicine should consult with the Associate Dean of the Medical School before the

XIX. TRANSFER TO THE SCHOOL OF MUSIC

(See School of Music, page 89.)

XX. TRANSFER TO THE SCHOOL OF PHARMACY

The School of Pharmacy is an independent administrative unit separate from the College of Letters and Science. However, a minimum preparation of one year of collegiate work will be required for admission to the School of Pharmacy. This pre-pharmacy work of the freshman year will normally be taken in the College of Letters and Science.

Applicants for admission to the School of Pharmacy must present a minimum grade-point average of 1.3 for all of their collegiate work. Pre-pharmacy students in the College of Letters and Science who fail to attain a grade-point average of 1.3 at the end of their first year of work may continue their registration in Letters and Science provided they have met the minimum requirements of the college. Students may not be registered in pre-pharmacy for more than four semesters and in the second year of their pre-pharmacy work they are not permitted to carry courses in the Department of Pharmacy. See bulletin of the School of Pharmacy for complete details.

RECOMMENDED SUBJECTS OF THE FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b—Freshman English	3
Chemistry 1a—General chemistry	5	Chemistry 1b—General chemistry	5
Mathematics 1a, 3a or Language	4	Mathematics 1b, 3b or Language	4
Botany 17—Survey	3	Zoology 17—Survey	3
Pharmacy 1a—Orientation	1	Pharmacy 1b—Orientation	1
Physical Education	0	Physical Education	0
Military Training or Band	0	Military Training or Band	0
	16		16

XXI. SCHOOL OF JOURNALISM

RALPH O. NAFZIGER, DIRECTOR, PROFESSOR OF JOURNALISM

PURPOSE AND PLAN. The University of Wisconsin was one of the first universities to offer systematic instruction in journalism—the first course having been listed in 1905. The department became a charter member in 1916 of the organization now known as The Association of Accredited Schools and Departments of Journalism. The present organization, the School of Journalism, was established in 1927. In co-operation with the Department of Agricultural Journalism, operated separately in the adjoining College of Agriculture, the school offers a diversified journalism program.

Students may enter the School of Journalism at the beginning of their junior year. As freshmen and sophomores, they enroll in basic pre-journalism courses that determine whether or not students may transfer into the school as juniors. All but a few credits of the first two years are concerned with subjects required of all students in the College of Letters and Science.

After completing the last two years of college in the School of Journalism, students become candidates for one of two degrees. The Bachelor of Arts (Journalism) is the older degree, and is awarded to those who have completed language requirements prescribed by the College of Letters and Science. In the Bachelor of Science (Journalism) degree an extra semester of English composition is required, and only two semesters of a foreign language.

GRADUATE DEGREES. The school also confers the degrees of Master of Arts (Journalism) and Master of Science (Journalism) upon graduate students meeting the requirements (see Graduate School bulletin). The school has worked out a plan for obtaining the Ph.D. in allied fields with a "double minor" in journalism, or with journalism as one of several fields in an inter-disciplinary program in mass communications under the supervision of a Graduate School committee.

ADVISERS. Journalism faculty members act as advisers of all students in the school, including freshmen and sophomores who should inform the Registrar in advance that they plan to enter the School of Journalism.

Of the 124 credits required for graduation from the University, 94 are in subjects outside of the journalism curriculum. Up to 45 of these credits are in the social studies—economics, cultural geography, history, philosophy, psychology, political science, sociology—or in English. Of the 30 credits required in journalism, a large proportion are in non-technical subjects (law, history, public opinion, communications and society). Education for journalism is conceived to involve a general and liberal education and an understanding of the relationship of the press and society, as well as training in enough technical courses to qualify students as good craftsmen for journalistic positions immediately after graduation. The record of alumni throughout the world is believed by the staff of the school to demonstrate that such technical and general education is well balanced.

The scope of journalism teaching is indicated in the list of courses on page 167. Additional information may be obtained by writing to the Director, 301 South Hall, Madison 6, Wis.

ORGANIZATIONS AND PRACTICAL EXPERIENCE

Students preparing for journalism are given regular news assignments in Madison. The editors of a number of Wisconsin daily and weekly papers meet and share their experiences with the students. Places on the editorial and business staffs of student publications are open to journalism students. The *Daily Cardinal* is owned and managed by students interested in journalism. The *Octopus,* a humorous periodical, *Wisconsin Idea,* a literary magazine, and the *Badger,* university annual, offer a variety of experience in journalism. The *Wisconsin Engineer,* a monthly published by the students of the College of Engineering, and the *Wisconsin Country Magazine,* a monthly edited by the agricultural students, furnish practice in technical journalism.

All students preparing for journalism are required to learn typewriting before or soon after entering the University.

The school aids graduates in obtaining positions in newspaper, magazine, trade journal, publicity, radio news, and advertising work, and in school or college teaching.

REQUIREMENTS FOR ADMISSION

For admission to this school, students must be eligible for junior standing in the College of Letters and Science, having completed the first two years of the B.A. or B.S. General Courses. A minimum of 58 credits is necessary for junior standing, but students are advised to present at least 60 credits for admission to the school if they expect to complete in two years of residence the 124 credits required for graduation. Credits that are lacking may be earned in summer session or by correspondence study. Students must obtain a 1.5 grade-point average in English 1, and Journalism 2 to be permitted to continue in journalism.

Students entering the University as freshmen or sophomores must complete the studies required in the first two years of the B.A. or B.S. General Courses (see Sections 23 and 26) and are strongly advised to carry, during these two years, such courses, prerequisite to the advanced courses of the School of Journalism, as are open to freshmen and sophomores. As far as possible students should carry the following courses during the freshman and sophomore years:

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Journalism 1—General survey	1	English 1b—Freshman English	3
English 1a—Freshman English	3	Foreign language (one or two)	3-4
Foreign language	3-4	History 3, 5 or 10 or Political Science 7	3
History 3, 5 or 10 or Sociology 1 or 2	3	Science	5-6
Science	5-6	Physical Education	0
Physical Education	0	Military Training	0
Military Training	0		
	15-16		14-15

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Journalism 2a—Newspaper reporting	3	Journalism 2b or Commerce 112 for advertising students	3
English 30a, 32a, 33a, or 40a	3	English 30b, 32b, 33b, or 40b	3
Foreign language or History 2 or 4	3	Foreign language or History 2 or 4	3
Pol. Sci. 7—American government	3	Psych. 1—Introductory psychology	4
Economics 1a—General economics	4	Economics 1b—General economics	4
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	16		17

Students who have completed two or more years in another institution (college, university, or normal school), must be eligible for junior standing in the B.A. or B.S. General Courses of the College of Letters and Science, in order to be admitted to the School of Journalism. To complete the requirements for graduation from the School of Journalism in two years, they should present most of the subjects listed above for the first two years at the University (excepting the credits in journalism). Students from other institutions should send certified copies of their preparatory school and academic records to the Office of Admissions, Advanced Standing, Bascom Hall, before coming to the University.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS (JOURNALISM) OR BACHELOR OF SCIENCE (JOURNALISM)

(1) A total of 124 credits. (2) Completion of either the B.A. or B.S. General Course requirements, including a minimum of 30 credits in journalism subjects, as specified by the department, to satisfy the requirement for the major. (3) Economics 1a and 1b, Political Science 7, Psychology 1 and 15 credits in advanced social studies as indicated below. At least 6 of these must be in the field of recent American History. The College of Letters and Science requirement in United States History and Institutions must be satisfied.

The required journalism subjects, except in the journalism-advertising sequence, are: Journalism 2 (6 cr.); Journalism 3 (4 cr.); Journalism 4 (2 cr.); Journalism 109 (2 cr.); Journalism 110 (3 cr.); Journalism 111 (3 cr.); and at least one among the following courses: Journalism 105a (3 cr.); Journalism 112 (2 cr.); Journalism 113 (3 cr.). Journalism 1 does not count toward the 30 credits required in the major, but does count toward the 124 university credits. Students in the journalism-advertising group may include Commerce 112 and Commerce 116 in the required 30 credits in journalism.

Required subjects in the journalism-advertising sequence are: Journalism 2a (3 cr.); Journalism 3 (4 cr.); Journalism 4 (2 cr.); Journalism 5 (2 cr.); Journalism 109 (2 cr.); Journalism 111 (3 cr.); Commerce 112 (3 cr.); Journalism 115 (3 cr.); Journalism 141 (3 cr.); and at least two chosen from the following courses: Journalism 108 (2 cr.); Commerce 116 (3 cr.); Journalism 117 (2 cr.); Journalism 118 (3 cr.); Journalism 126 (3 cr.); Journalism 142 (3 cr.). A course in statistics, like Commerce 31 or Sociology 32, is strongly recommended.

The student's point-credit ratio in courses in journalism and advertising must not be less than 1.5, and in other courses not less than 1.0. Those students in the School of Journalism who fail to maintain the grade-point requirements will be advised to withdraw.

For journalism students the languages which may be offered include Latin, Greek, French, Italian, Norse, Spanish, Russian, and German (other foreign languages only by permission of the Director).

Upper-group seniors (who have a point-credit ratio over 1.5 in all studies) have the privilege of writing a thesis (4 credits).

In addition to the introductory courses in the social sciences required in the freshman and sophomore years (Psychology 1, Political Science 7, and Economics 1a and 1b), at least 15 credits, including 6 credits in American history, must be elected from *advanced courses* in at least three of the following groups: history, political science, economics, sociology, psychology, philosophy, geography, contemporary trends.

SPECIAL AREAS OF STUDY

The major in Journalism may be combined also with various area studies which have been developed within the college. The major in American Institutions which is designed for

students who wish to make an integrated study of American culture is an example. (See page 61.) The two-year program of Integrated Liberal Studies, following a prescribed schedule of courses and designed to give a broad basic education, is open to a limited number of entering freshmen. (See page 50.)

SPECIAL JOURNALISM FIELDS

Students are required to pursue at least one of several special fields: 1. Daily newspaper, 2. Community newspaper, 3. Journalism-advertising and Business management, 4. Journalism-magazine, 5. Journalism teachers, 6. Journalism-radio, 7. Public relations, 8. Communications media and Public opinion. (For sequences in Agricultural and Home Economics journalism see the bulletin of the College of Agriculture.)

Further explanation of optional areas of specialized study follows:

DAILY NEWSPAPER

Reporting, editing, press association, and other editorial work. See sample sequences page 87.

JOURNALISM MAGAZINE

See sample sequences page 87.

ADVERTISING

Students may prepare for advertising positions by combining courses in journalism with those in advertising. The normal arrangement of those courses is indicated in the Journalism-Advertising Field. Such students must earn grade-points equal to credit carried in Economics 1a and 1b, and usually must earn a grade of *B* in Journalism 115.

COMMUNITY JOURNALISM

Because of the growing opportunities in community journalism, including the 9,000 country and suburban weekly newspapers, special training is outlined in the Community Newspaper Group. "Back shop" laboratory work on the linotype, stereotyping, presses, cost accounting, and job estimating is provided at the Campus Publishing plant for Journalism 107.

JOURNALISM–RADIO

For specialization in radio news and other radio work, journalism majors usually elect such courses as Journalism 122a and 122b, Speech 7, 110, 115, 116, Education 163, and Music 125.

JOURNALISM TEACHERS

Candidates for the University Teachers' Certificate must register in the School of Education as well as in the School of Journalism in the junior year. They should take one minor in English and substitute a second minor in one social science for the required 15 credits of advanced social science. (See page 80.) Through a co-operative arrangement with the School of Education, students who wish to prepare for the supervision of journalism classes, student publications, and public relations in high school, may obtain the University Teachers' Certificate, along with the B. A. (Journalism). A minor in English is also required for these students.

PUBLIC RELATIONS

A suggested selection of courses in journalism and elsewhere to train graduates for publicity, public relations, house organs, and company magazines. Journalism 114, 117, 125, and 128 are normally elected. The scope includes educational, governmental, military, and industrial public relations.

TECHNICAL JOURNALISM AND HOUSE PUBLICATIONS

Special work is offered for students interested in technical and trade journalism, house organs, company magazines, and other specialized periodicals. The courses in newspaper and magazine work may be elected by students in other colleges and schools. Subject to special provisions (see page 41), students in the School of Journalism may elect courses in the College of Engineering, the Law School, the School of Education, and the College of

Agriculture including Home Economics. Thus by combining studies, students may prepare for practically all lines of technical and trade journalism. Journalism 105b and 117 are especially designed for such students.

AGRICULTURAL JOURNALISM

The School of Journalism and the Department of Agricultural Journalism offer courses to supplement each other. See the bulletin of the College of Agriculture.

COMMUNICATIONS MEDIA AND PUBLIC OPINION

A sequence emphasizing courses such as Journalism 114, Communications media and public opinion, 111, Newspaper and society, 128, Communication media analysis, 125, Public relations, 122a, Radio news, Journalism 194, Introduction to public opinion research, a course in statistical method, and supporting work in the social studies.

SAMPLE SEQUENCES IN JOURNALISM

Course No.	Title of Course	Yr. and Sem.	Optional Groups: Daily Newspaper	Community Newspaper	Journalism Advertising	Journalism Magazine	Communications Media and Public Opinion
2	Newspaper reporting	2 or 3	6 cr.	6 cr.	3 cr.	6 cr.	6 cr.
3	Newspaper editing	3-I,II	4	4	4	4	4
4	Newspaper typography	3-I,II	2	2	2	2	2
5	Advertising and magazine typography	3-I,II	.....	.....	2	2	.....
104	Interpretation of contemporary affairs	4-I	3	.....	.....	.....	.....
105	Writing of special articles	3-I,II	3	.....	.....	6	.....
106	Critical writing	4-II	.....	.....	.....	2	.....
107	Community newspaper	3-I,II	.....	4	.....	.....	.....
108	Business management	3-II	.....	2	2	.....	2
109	Law of the press	3-I,II	2	2	2	2	3
110	History of journalism	3-I	3	3	.....	3	3
111	Press and society	4-II	3	3	.....	3	.....
112	Reporting of law courts	3-I	2	.....	.....	.....	.....
Com. 112	Marketing methods (See Commerce 112)	2-II	.....	.....	3	.....	.....
113	Reporting of public affairs	4-II	3	3	.....	.....	.....
114	Communications and public opinion	4-I	.....	.....	.....	.....	3
115	Principles of advertising	3-I	.....	3	3	.....	.....
Com. 116	National advertising	4-II	.....	.....	3	2	
117	Periodical journalism	3-I,II	.....	.....	.....	.....	3
120	International communications and foreign press	4-I	.....	.....	.....		3
128	Communication media analysis	4-II	.....	.....	.....	.....	.....
141	Advertising copy and layout	3-I,II	.....	.....	3	.....	.....
142	Advertising media	4-II	.....	.....	3		
	Electives including one or more of the following journalism courses: 10, 104, 114, 118, 120, 122, 125 126, 128, 191, 192, 194.		*	*	*	*	*

XXII. LIBRARY SCHOOL

Rachel K. Schenk, Director, Associate Professor of Library Science

The Library School is a professional school offering a program of training in librarianship to both men and women. This training is given in residence only, as an independent course to those who qualify for admission. Upon successful completion of the full course of study, students will be awarded either the degree of Master of Arts or Master of Science in Library Science. The School also offers certain undergraduate courses to meet preprofessional requirements for the graduate program and to meet certification requirements for both public and school libraries in Wisconsin.

Undergraduate Preparation. Undergraduates in college who are planning to enter the Library School on the completion of their college work are advised to select courses in

literature, modern and classical languages, history, social sciences, psychology, philosophy, and education, science, speech and history of art. Recently many positions are available for students who have a background in certain of the sciences, such as chemistry, physics and biology, and in business administration and law.

The prospective Library School student should also elect the 8 preprofessional credits in Library Science during his junior and senior years. Students in the College of Letters and Science may take courses 72 and 73 for credit without special permission, but courses 71 and 74 fall under the Twenty-Credits Rule and are subject to the regulations governing the election of courses outside the college. These four courses will be offered each summer session for students who seek admission to the graduate program and have not been able to take them in the regular school year.

UNDERGRADUATE MINOR IN THE SCHOOL OF EDUCATION. Students in the School of Education may take a minor in Library Science by completing 11 credits in Library Science including courses 71, 72, 73, 74 and 191. The purpose of this minor is to prepare students for teacher-librarian positions and to meet the certification requirement for teacher-librarians in the state of Wisconsin.

RECOMMENDED PRELIMINARY PRACTICE. Some practice in a library is desirable before entering the Library School. Such experience tests a candidate's aptitude and interest in library work, and gives a knowledge of library terminology and familiarity with library processes. Facility in the use of a typewriter is required in the School as in a modern library.

STUDENT EXPENSE. Library School students are required to pay the regular university fees. Textbooks will average $30 for the full year.

The Alumni Association of the School is building a Loan Fund which is available for tuition loans to a limited number of students who may need to supplement their resources. Information regarding a loan may be had by addressing the Director.

FELLOWSHIPS AND SCHOLARSHIPS. In addition to the fellowships, scholarships and assistantships described in the bulletin of the Graduate School, a special scholarship is available for a Library School student. The Alumni Association of the School annually offers the Mary Emogene Hazeltine Scholarship, amounting to three hundred dollars. Application in the form of a letter should be made to the Director before April 1 of the scholastic year preceding that for which appointment is desired.

APPOINTMENTS TO POSITIONS. Since the war there has been a severe shortage of trained librarians. It seems unlikely that this situation will change in the near future. While the School does not promise to place its graduates, it assumes the work of recommendation and placement through its correspondence with library authorities in the state and throughout the country, and is generally successful in placing graduates in suitable positions. This placement service is also available to alumni of the School who desire change in positions.

To hold a full-time public library position in Wisconsin a certificate is required by state law. Graduation from the Library School meets one of the requirements for a Grade 1 certificate, namely "a one-year course in an accredited library school."

REQUIREMENTS FOR ADMISSION. The general requirements for admission to the Graduate School must be met (see bulletin of the Graduate School). In addition the student must have the equivalent of a bachelor's degree in one of the general courses of the University of Wisconsin including Library Science 71, 72, 73 and 74. He must also have a reading knowledge of a foreign language (see Section 11).

Two application forms are necessary, both of which may be secured from the Director of the Library School. The one for the Graduate School should be sent to the Dean of the Graduate School, as should transcripts of all undergraduate and graduate work. An *official transcript* from *each* school attended is necessary. The other form should be returned at the same time to the Director of the Library School, 811 State Street, Madison 5. When possible it is desirable to file application by May 15 for the ensuing academic year. This is especially necessary when the candidate is planning to take the preprofessional courses in a summer session. Early application is advised, as the number of graduate students that can be accepted is limited to forty-five and each application will be carefully scrutinized.

XXIII. SCHOOL OF MUSIC

SAMUEL T. BURNS, CHAIRMAN, PROFESSOR OF MUSIC AND EDUCATION

The School of Music offers three curricula leading to the Bachelor of Music degree. One prepares the student for applied music teaching and performance, one for school music teaching (vocal or instrumental), and the third for the practice or teaching of musical composition, arranging, or music literature (hereafter referred to as "History and Theory"). An opportunity is also provided for those students who are pursuing a Bachelor of Arts degree in the College of Letters and Science to major in music, and for those students who desire to do so to complete the requirements for a teaching minor in music. The requirements for all of these categories are set forth in detail in the following pages.

GRADUATE DEGREES. The degrees of Master of Arts, Master of Music, Master of Science (Music and Education), and Doctor of Philosophy are granted upon the completion of certain specified requirements. For information regarding the nature of the required work, see the bulletin of the Graduate School.

REGISTRATION AND TRANSFER. All students must present their registration cards from the Registrar's office, before being assigned to classes in the School of Music. All students in applied music will be heard by the Assignment Committee of the School of Music to learn the status of their work and in the case of students other than those in the School of Music, to determine whether or not the subjects may be taken.

Transfers to the School of Music can register only after being officially examined and accepted.

ADVISERS. Students registered for the B.M. or the B.A. degree with a major in Music are assigned to advisers on the staff of the School of Music—one adviser for the freshman-sophomore years and another for the junior-senior years.

REQUIREMENTS FOR ADMISSION

All students desiring to enter the School of Music must present to the Examining Committee evidence of musical ability which includes:

1. A good ear and rhythmic sense;
2. Knowledge of the fundamentals of theory—that is, key signatures, scales, intervals and chords, and musical terminology;
3. Ability to read at sight simple melodies, employing one of the following methods: words, syllables, or numbers;
4. A successful performance at the piano or upon orchestral or band instruments. (Students will furnish their own orchestral instruments and music for the audition);
5. Students desiring to enter the Vocal School Music course must give evidence of having a voice of pleasing quality.

SPECIAL REQUIREMENTS FOR MAJORS IN APPLIED MUSIC

PIANO. Applicants for admission will be required to play music of the following grade or its equivalent: Easier sonatas by Haydn and Mozart, Czerny Op. 299, Books I and II, Heller Op. 47, easier *Songs Without Words* by Mendelssohn. Knowledge of the formation, signatures, and fingering of major and minor scales is necessary; also the ability to read at sight hymn tunes and simple accompaniments.

VOICE. The student must be able to read simple music and must have had training equal to the first half of Concone, with the usual technical study for the same period.

VIOLIN AND OTHER ORCHESTRAL INSTRUMENTS. Candidates should be well grounded in the fundamentals of performance on their instrument, should be able to read works of moderate difficulty and should show promise of developing into a performer of professional calibre.

ORGAN. No previous knowledge of organ playing is required, but a student will not be

enrolled for this major unless he has acquired a satisfactory pianoforte technic and some skill in polyphonic playing.

ORGANIZATIONS

A student in the School of Music may elect to participate in a maximum of two organizations in any one semester. Others may secure only 1 credit per semester for participation in one or more of these organizations and may not count more than 6 credits for participation in orchestra, band, and chorus. Freshmen not in the School of Music receive no credit for participation in orchestra, band or chorus.

THE UNIVERSITY ORCHESTRA has a membership of about eighty players. Two full rehearsals and one sectional rehearsal are held each week. Membership is open to the entire student body on the basis of try-outs. Music students who qualify may receive 1 credit listed as Music 85. A Training Orchestra is also maintained. Mr. Church, Director.

THE UNIVERSITY CHORUS, the A Cappella Choir, the Men's Chorus, and the Women's Chorus study and perform masterpieces of choral literature. Membership is on a competitive basis and is open to any student in the University, including graduate students. Music 86, 1 cr. Mrs. Blotz and Mr. Jones, Directors.

THE UNIVERSITY BANDS consist of more than three hundred men divided into a Concert Band, a Regimental (Badger) Band, and a Regimental (Cardinal) Band. The Regimental Bands serve as a training school for the Concert Band and play for the Military Department at official functions. The University Bands also play for university convocations and cooperate with the Athletic Department at games. Each organization rehearses tnree times weekly. Freshman and sophomore men have the option of electing band in place of Military Science. Membership in band is determined by try-outs. Members of the University Bands may receive 1 credit by registering in Music 87. Mr. Dvorak and Mr. Marcouiller, Directors.

Upperclassmen who are members of the Concert Band and members of other bands who are invited to remain for duty at Commencement receive a stipend of fifteen dollars for freshmen and sophomores, and thirty dollars for others.

CONCERTS AND RECITALS

Lecture-recitals and concerts, open to the public without charge, are given by members of the faculty of the School of Music, the Pro Arte Quartet, and the music organizations at frequent intervals during the concert season. The Wisconsin Union Concert Series and the Union Sunday Music Hour, provide a rich and varied schedule of concerts. The School of Music co-operates with the Department of Speech in producing musical comedy, light opera, and opera.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF MUSIC AND FOR THE TEACHERS' CERTIFICATE

MAJOR FIELDS:

There are at present four major programs of study which may be elected in the School of Music: Applied Music; History and Theory; School Music (Vocal); and School Music (Instrumental).

Students in all majors pursue certain fundamental courses during the freshman and sophomore years, including Music 11, 20, 21, and 30—courses in the fundamentals of musicianship, ear-training, dictation, sight-singing, harmony counterpoint, and literature. All students are required to pursue the courses in applied music in one of the following instrumental or vocal sequences: 61 (pianoforte, 62 (voice), 63 (string or other orchestral instrument), or 64 (organ). They are also required to attend the weekly student recitals (Convocation).

On the completion of the curriculum of the sophomore year, each student who has achieved a 1.6 grade-point average in his music courses will be advised as to his fitness to choose and continue in one of the curricula offered in the junior and senior years.

Students who do not satisfy this requirement may be advised to withdraw or to transfer to another course.

The College of Letters and Science requirement in United States History and Institutions must be satisfied.

Courses planned to meet the requirements for the University Teachers' Certificate are provided by the School of Education and are listed in the schedules of both schools.

The majors in School Music are open only to students seeking both the Bachelor of Music degree and the University Teachers' Certificate. The major in Applied Music and the major in History and Theory, which lead to the degree of Bachelor of Music, are open to students who are not candidates for the University Teachers' Certificate as well as to those who are. The outline of the major in School Music incorporates at appropriate places the courses in education required for the Teachers' Certificate; the outlines of the two other majors do not. But the student in either of these two majors who desires to secure the Teachers' Certificate also may do so by substituting the required courses in education for Letters and Science electives—subject, of course, to the regulations set forth directly below. (Outlines of these courses may be found at the end of the School of Music sections.)

A total of 130 credits and 130 grade-points is required as follows:

MAJOR IN APPLIED MUSIC. 46 credits in Letters and Science to include English, 6 credits, history, 6 credits, plus 6 additional credits in either history or English, and foreign language (see below); 84 credits in music, as specified by the School of Music.

Applied Music majors must study their major instrument each semester and must satisfy the requirements of the 91b, 92b, 93b, or 94b level. Senior recitals, required of all Applied Music majors, may be presented at any time during the senior year, upon the recommendation of the Applied Music faculty concerned and the approval of the faculty of the School of Music. Ensemble (Music 95 or 195) does not satisfy Applied Music requirements.

MAJOR IN HISTORY AND THEORY. 46 credits in Letters and Science to include English, 6 credits, history, 6 credits, and foreign language (see below); 84 credits in music, as specified by the School of Music.

THE FOREIGN LANGUAGE REQUIREMENT. The foreign language requirement for the above majors may be satisfied either (1) by meeting the language requirements of the B.A. degree; (2) by passing an intermediate examination in French, German, Italian, or Spanish; or (3) by securing in high school and/or college the equivalent of 14 credits in French, German, Italian, or Spanish. In special cases, with approval of the faculty of the School of Music, any language accepted by the College of Letters and Science for the B.A. degree may be used to satisfy the foreign language requirement of the B.M. degree.

MAJOR IN SCHOOL MUSIC (VOCAL). 32 credits in Letters and Science to include English, 12 credits and Speech 1, 3 credits; 19 specified credits in Education 73, 74, 75, 4 and 5 (for the University Teachers' Certificate); 70 credits in music, as specified by the School of Music; electives, 9 credits.

PARTICIPATION AND ATTAINMENT REQUIREMENTS:

1. Not less than three years in choral organizations.
2. One year in either band or orchestra.
3. Music 61b (First-year pianoforte).
4. Music 72b (Second-year voice).

MAJOR IN SCHOOL MUSIC (INSTRUMENTAL). 32 credits in Letters and Science to include English, 12 credits and Speech 1, 3 credits; 19 specified credits in Education 73, 74, 75, 4 and 5 (for the University Teachers' Certificate); 72 credits in music, as specified by the School of Music; electives, 7 credits.

PARTICIPATION AND ATTAINMENT REQUIREMENTS:

1. Not less than two years in band plus one year in orchestra
   or
   Not less than two years in orchestra plus one year in band.
2. One year in a choral organization.

3. A major instrument (other than piano) at the level of Music 73b (Second-year string, or other orchestral instrument).
4. Music 55b (Elementary pianoforte).

TABLE OF CREDITS

MAJOR	L & S	MUSIC	EDUCATION	ELECTIVES	TOTAL
Applied Music	46	84	0		130
History and Theory	46	84	0		130
School Music—Vocal	32	70	19	9	130
School Music—Instr.	32	72	19	7	130

TEACHERS' CERTIFICATE. Candidates for the degree of Bachelor of Music who wish to obtain the University Teachers' Certificate are required to register also in the School of Education at the beginning of the junior year and to earn (subject to the quality-of-work rule) a total of 130 credits and 130 grade-points, including a minimum of 32 credits in Letters and Science and 19 required credits in education. The degree for such students will not be awarded unless and until the requirements for the certificate have been met, and *vice versa*. Special attention is called to the requirement in speech proficiency as described in the School of Education bulletin.

The following education courses are required:

1. Education 4, Music education for elementary schools, 4 credits.
2. Education 5, Music education for secondary schools, 4 credits.
3. Education 73, The child: his nature and his needs, 3 credits.
4. Education 74, The school and society, 3 credits.
5. Education 75, The nature and direction of learning, 5 credits.

A teaching minor of 15 credits in an academic field is required.

REQUIREMENTS LEADING TO THE B.A. DEGREE WITH A MAJOR IN MUSIC

1. Admission to the major is decided by the School of Music and presupposes successful passage of such tests in rhythm, diction, music fundamentals and background, sight-singing, and instrumental performance as are currently used to determine admission to the school itself.
2. The student shall complete the general requirements set forth in one of the sequences for the B.A. General Course, except that if the sequence chosen is Group A (Humanities), requirement "A" (6 credits) shall be waived.
3. The student shall complete a curriculum in the major, including the following minimum course requirements (Note: The Twenty-Credits Rule shall not be applied to the election of music subjects by B.A. music majors):

	Credits
Music 9—Quartets of Haydn and Mozart	2
Music 12—First-year harmony	4
Music 22—Second-year harmony	4
Music 20—History and appreciation	4
Music 30a—Music in the Baroque era	2
Music 30b—Music in the Classic era	2
Music 40a—Music in the Romantic era	2
Music 40b—Music in the post-Romantic era	2
Music electives—(of which from 4 to a maximum of 10 credits shall be in applied music)	10
Total	32

SPECIAL INFORMATION

ELECTION OF MUSIC SUBJECTS BY NON-MUSIC MAJORS AND NON-SCHOOL OF MUSIC STUDENTS. For the purpose of election by such students, the subjects in music (except for literature courses) fall under the Twenty-Credits Rule, as if they were elections outside the College of Letters and Science (see Section 17). Such students are allowed to take subjects in the School of Music, subject to the approval of their adviser, the chairman of the School, and the dean (given in writing), under the following conditions: credits in theoretical music courses, not to exceed 20, may be elected by sophomores, juniors and seniors; similarly, not to exceed 10 credits in applied music may be elected by juniors and seniors; credits in music organizations not to exceed 6; the maximum number of credits in theoretical and applied music and music organizations may not exceed 20. Students registered for at least a minimum schedule may take applied music for credit provided they can meet the entrance requirements in applied music. Students in colleges other than Letters and Science are subject to the regulations of their respective schools or colleges.

TEACHING MINOR. All such music minors must pass entrance tests for admission to the School of Music. Required: 22 credits in the following courses: Music 11a and b (Theory), 8 credits; Music 76a (Conducting, 2 credits; 4 credits of Music 65 or 75 (Instrumental technics) *or* Music 62 (Voice), 4 credits; Music 85, 86, 87 (Organizations), 6 credits; electives in Music, 2 credits; and, in addition, Education 4 and Education 5, 2 credits each.

MUSIC COURSES FOR OCCUPATIONAL THERAPY MAJORS. The following courses are recommended:

	Credits
Music 20a–b—Appreciation and history	4
Music 11 and/or 12—Theory	4
Applied Music	6
Music 76a—Conducting	2
Music 65 or 75—Instrumental technics	4
Music Organizations: Four semesters, principally University Chorus or A Cappella Choir	0

The following are recommended as audit courses:

Music 9—String quartets of Haydn and Mozart
Music 38—Vocal problems and interpretation of song literature
Music 115—Music in society

MUSIC COURSES FOR MAJORS IN COMMUNITY LEADERSHIP IN RECREATION. For information covering resource courses in music see the appropriate section in the bulletin of the School of Education and consult with Dr. R. G. Petzold, School of Music.

OUTLINE OF COURSES

MAJOR IN APPLIED MUSIC: RECOMMENDED SEQUENCE FOR DEGREE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Music 11a—First-year theory	4	Music 11b—First-year theory	4
Music 20a—Appreciation and history of music	2	Music 20b—Appreciation and history of music	2
Music 61, 62, 63, 64a	3	Music 61, 62, 63, 64b	3
Music 85, 86, 87	1	Music 85, 86, 87	1
English 1a	3	English 1b	3
Foreign language	4	Foreign language	4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	17		17

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Music 21a—Second-year theory	4	Music 21b—Second-year theory	4
Music 30a—Music in the Baroque Era	2	Music 30b—Music in the Classic Era	2
Music 71, 72, 73, 74a	3	Music 71, 72, 73, 74b	3
Music 85, 86, 87	1	Music 85, 86, 87	1
Foreign language	3	Foreign language	3
English or history	3	English or history	3
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	16		16

JUNIOR YEAR

Music 9a—Quartets of Haydn and Mozart	1	Music 9b—The quartets of Mozart and Beethoven	1
Music 31a—Third-year theory	3	Music 31b—Third-year theory	3
Music 40a—Music in the Romantic Era	2	Music 40b—Music in the post-Romantic Era.	2
Music 81, 82, 83, 84a	3	Music 81, 82, 83, 84b	3
Music 85, 86, 87	1	Music 85, 86, 87	1
Music 95a—Ensemble	2	Music 95b—Ensemble	2
History	3	History	3
L & S electives	2	L & S electives	2
	17		17

SENIOR YEAR

Music 85, 86, 87	1	Music 85, 86, 87	1
Music 91, 92, 93, 94a	3	Music 91, 92, 93, 94b	3
Music 96—Applied technics	2	Music 97—Applied repertoire	2
Music—Secondary Applied	2	Music—Secondary Applied	2
Music electives	2	Music electives	2
L & S electives	5	L & S electives	5
	15		15

MAJOR IN HISTORY AND THEORY: RECOMMENDED SEQUENCE FOR DEGREE

FRESHMAN YEAR

Music 11a—First-year theory	4	Music 11b—First-year theory	4
Music 20a—Appreciation and history of music	2	Music 20b—Appreciatian and history of music	2
Music 61, 62, 63, 64a	2	Music 61, 62, 63, 64b	2
Music 85, 86, 87	1	Music 85, 86, 87	1
English 1a	3	English 1b	3
Foreign language	4	Foreign language	4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	16		16

SOPHOMORE YEAR

Music 21a—Second-year theory	4	Music 21b—Second year theory	4
Music 30a—Music in the Baroque Era	2	Music 30b—Music in the Classic Era	2
Music 65a or 75a	2	Music 65b or 75b	2
Music 71, 72, 73, 74a	2	Music 71, 72, 73, 74b	2
Music 85, 86, 87	1	Music 85, 86, 87	1
Foreign language	3	Foreign language	3
L & S electives	3	L & S electives	3
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	17		17

JUNIOR YEAR

Music 9a—Quartets of Haydn and Mozart	1	Music 9b—Quartets of Mozart and Beethoven	1
Music 31a—Third-year theory	3	Music 31b—Third-year theory	3
Music 40a—Music in the Romantic Era	2	Music 40b—Music in the post-Romantic Era.	2
Music—Secondary Applied	2	Music—Secondary Applied	2
Music 76a—Conducting	2	Music 76b—Conducting	2
Music 85, 86, 87	1	Music 85, 86, 87	1
History	3	History	3
L & S electives	2	L & S electives	2
	16		16

SENIOR YEAR

Music 34a—Arranging	2	Music 34b—Arranging	2
Music 85, 86, 87	1	Music 85, 86, 87	1
Music 141a—Modern contrapuntal technics	3	Music 141b—Modern contrapuntal technics	3
Music 150—Proseminar	2	Music 150—Proseminar	2
Music 162a—Composition	3	Music 162b—Composition	3
L & S electives	5	L & S electives	5
	16		16

MAJOR IN SCHOOL MUSIC—VOCAL

RECOMMENDED SEQUENCE FOR DEGREE AND CERTIFICATE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Music 11a—First-year theory	4	Music 11b—First-year theory	4
Music 20a—Appreciation and history of music	2	Music 20b—Appreciation and history of music	2
Music 61, 62, 63, 64a	2	Music 61, 62, 63, 64b	2
Music 85, 86, 87	1	Music 85, 86, 87	1
English 1a	3	English 1b	3
L & S electives	4	L & S electives	4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	16		16

SOPHOMORE YEAR

Music 21a—Second-year theory	4	Music 21b—Second-year theory	4
Music 30a—Music in the Baroque Era	2	Music 30b—Music in the Classic Era	2
Music 65a or 75a	2	Music 65b or 75b	2
Music 71, 72, 73, 74a	2	Music 71, 72, 73, 74b	2
Music 85, 86, 87	1	Music 85, 86, 87	1
English	3	English	3
L & S electives	3	Speech 1a	3
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	17		17

JUNIOR YEAR

Music 9a—Quartets of Haydn and Mozart	1	Music 9b—Quartets of Mozart and Beethoven	1
Music 38—Vocal technic and song literature	2	Music 40b—Music in the post-Romantic Era	2
Music 40a—Music in the Romantic Era	2	Music 76b—Conducting	2
Music 76a—Conducting	2	Music 81, 82, 83, 84b	2
Music 81, 82, 83, 84a	2	Music 85, 86, 87	1
Music 85, 86, 87	1	Education 75	5
Education 73	3	L & S electives	3
Education 74	3		
	16		16

SENIOR YEAR

Music 34a—Arranging	2	Music 34b—Arranging	2
Music 85, 86, 87	1	Music 85, 86, 87	1
Music 91, 92, 93, 94a	2	Music 91, 92, 93, 94b	2
Education 4	4	Music 138	2
Electives	7	Education 5	4
		L & S electives	3
		Electives	2
	16		16

MAJOR IN SCHOOL MUSIC—INSTRUMENTAL

RECOMMENDED SEQUENCE FOR DEGREE AND CERTIFICATE

FRESHMAN YEAR

Music 11a—First-year theory	4	Music 11b—First-year theory	4
Music 20a—Appreciation and history of music	2	Music 20b—Appreciation and history of music	2
Music 61, 62, 63, 64a	2	Music 61, 62, 63, 64b	2
Music 85, 86, 87	1	Music 85, 86, 87	1
English 1a	3	English 1b	3
L & S electives	4	L & S electives	4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	16		16

SOPHOMORE YEAR

Music 21a—Second-year theory	4	Music 21b—Second-year theory	4
Music 30a—Music in the Baroque Era	2	Music 30b—Music in the Classic Era	2
Music 65a—Instrumental technics	2	Music 65b—Instrumental technics	2
Music 71, 72, 73, 74a	2	Music 71, 72, 73, 74b	2
Music 85, 86, 87	1	Music 85, 86, 87	1
English	3	English	3
Speech 1a	3	L & S electives	3
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	17		17

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Music 38—Vocal technic and song literature	2	Music 40b—Music in the post-Romantic Era	2
Music 40a—Music in the Romantic Era	2	Music 75b—Instrumental technics	2
Music 75a—Instrumental technics	2	Music 76b—Conducting	2
Music 76a—Conducting	2	Music 81, 82, 83, 84b	2
Music 81, 82, 83, 84a	2	Music 85, 86, 87	1
Music 85, 86, 87	1	Education 75	5
Education 73	3	L & S electives	3
Education 74	3		
	17		17

SENIOR YEAR

Music 9a—Quartets of Haydn and Mozart	1	Music 9b—Quartets of Mozart and Beethoven	1
Music 34a—Arranging	2	Music 34b—Arranging	2
Music 85, 86, 87	1	Music 85, 86, 87	1
Music 91, 92, 93, 94a	2	Music 91, 92, 93, 94b	2
Education 4	4	Education 5	4
L & S electives	6	Electives	5
	16		15

XXIV. SCHOOL OF SOCIAL WORK

ARTHUR P. MILES, DIRECTOR, PROFESSOR OF SOCIAL WORK.

ORGANIZATION. The Social Work program of the University of Wisconsin is now organized under the School of Social Work, which was created in 1952. The School of Social Work is an administrative unit of the College of Letters and Science.

PURPOSE AND PLAN. The *undergraduate program* in Social Work is intended to give the student a basic liberal education combined with a well-rounded selection of courses from the social sciences. Undergraduate students majoring in Social Work are candidates for either the Bachelor of Science (General Course) or Bachelor of Arts (General Course) and are classified and registered as such. For more information about these courses, see pages 45 and 50; for details on the major in Social Work, see page 210.

GRADUATE PROGRAM. The professional course in Social Work is exclusively graduate. It is a two-year program leading to the professional degree of Master of Science in Social Work. For more detailed information about the graduate program, see the bulletins of the School of Social Work and the Graduate School.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters
Sem—a one-semester course
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
cr—number of credit hours per semester
*cr—credit to be arranged

Courses numbered under 100 may be credited only by undergraduates; those in the 100-group may be credited by both undergraduates and graduates; those in the 200-group are ordinarily open only to graduates.

Not all of the courses listed in the following pages will be offered regularly. However, required courses will be given regularly, and most of the others will be given at such frequent intervals that a student should have no great problem in making out a satisfactory program of studies. Should a student desire to ascertain in advance whether a particular subject will be given he should consult the chairman of the department; otherwise he may rely on the semester time table which will be published at the opening of each new semester.

AMERICAN INSTITUTIONS

The College of Letters and Science offers an undergraduate major in American Institutions within the Division of Social Studies. For the requirements in this major, see page 61.

ANTHROPOLOGY

For an undergraduate major in Anthropology, see Sociology and Anthropology, page 214. For courses in Anthropology, see page 217.

ART HISTORY AND CRITICISM

PROFESSORS KIENITZ, *chairman;* HAGEN, WATROUS.

The department offers to the general student semester courses providing broad surveys of the history of art based upon aesthetic analysis, i.e., criticism and interpretation. Students unfamiliar with the history of art should normally not elect an advanced course before they have taken an elementary course. Courses 22 and 54 are designed to familiarize the student with the principal art trends (architecture, sculpture, and painting) from prehistoric to current art. The courses offered in the 100-group treat in a more specific way subjects introduced and broadly sketched in the survey group. These courses not only serve majors, but are of general cultural interest and may supplement the work done in the departments of history and literature. A selection from the courses listed below is offered each year in adequate sequence.

MAJOR. 26 credits in art history; in addition, a reading knowledge of one of the following foreign languages: French, German, Italian, or Spanish, as evidenced by the passing of an intermediate attainment examination (students should satisfy this by taking the examination at one of the times scheduled in the University Calendar); and 12 credits in the history department as a minimum.

HISPANIC STUDIES AS A FIELD OF CONCENTRATION. Students interested in this major field should consult the entry under Hispanic Studies.

22. ELEMENTS OF THE FINE ARTS. I, II; 3 cr. Analysis of the elements that contribute to the making of a work of art in: architecture, sculpture, and painting. Prerequisite: Sophomore standing. Mr. Kienitz.

50. EGYPTIAN, GREEK, AND CHRISTIAN ART. I; 3 cr. The great originative styles of Egypt, Hellas, and the Christian West in architecture, sculpture, and painting. Prerequisite: Sophomore standing. Not offered 1952–53. Mr. Hagen.

54. RENAISSANCE TO MODERN ART. I, II; 3 cr. Representative masters in the historical development of European painting, sculpture, and architecture from the fifteenth century to the present day. Prerequisite: Sophomore standing. Mr. Watrous.

101. HISTORY OF THE GRAPHIC ARTS. I; 3 cr. A survey of the chief works of art in woodcut, engraving, etching, and lithography from the fifteenth century to the present. Prerequisite: Sophomore standing. Offered 1952–53 and in alternate years. Mr. Watrous.

102. THE HISTORY OF SATIRE IN THE GRAPHIC ARTS. Sem; 3 cr. A history of satirical commentary in printmaking, including satirical graphics of Brueghel, Hogarth, Gillray, Cruikshank, Rowlandson, Goya, Daumier, Toulouse-Lautrec, Bellows, and Grosz. Prerequisite: Consent of instructor. Mr. Watrous.

103. MODERN GRAPHIC ARTS: 1850 TO 1950. Sem; 3 cr. European and American leaders in printmaking of the last one hundred years, including Whistler, Toulouse-Lautrec, Gauguin, Redon, Munch, Kollwitz, Orosco, Haythor, and others. Prerequisite: Consent of instructor. Not offered 1952–53. Mr. Watrous.

106. NINETEENTH-CENTURY PAINTING IN EUROPE. II; 3 cr. A survey of the history of European painting from 1800 to 1900. Prerequisite: A semester course in art history. Mr. Kienitz.

107. ART HISTORY OF THE THEATER AND THE STAGE FROM ANTIQUITY TO THE PRESENT. I; 2 cr. The history of theatrical architecture and stagecraft, including scenery, costumes, lighting, etc. Prerequisite: Sophomore standing. Mr. Hagen.

110. PROSEMINAR. I, II; 2 cr. An introduction to the critical study of single personalities, movements, or problems drawn from Oriental and Occidental art. Prerequisite: Consent of instructor. Mr. Kienitz.

116. TWENTIETH-CENTURY PAINTING IN EUROPE. II; 3 cr. Painting from 1900 through Fauvism and Surrealism. Prerequisite: Junior standing. Mr. Kienitz.

130. THE FINE ARTS OF CHINA. I; 3 cr. A survey of the development of painting, sculpture, and related arts in China from the T'ang to the Ch'ing dynasties. Prerequisite: Sophomore standing. Mr. Kienitz.

131. AMERICAN ARCHITECTURE. I; 3 cr. A survey of the development of the American house from the colonial beginnings to 1900. Prerequisite: Sophomore standing. Mr. Kienitz.

132. CHINESE POTTERY AND PORCELAIN. I; 3 cr. A study of the techniques and styles of Shang pottery, Han ware, and porcelain from the T'ang to the Ch'ing times. Prerequisite: Sophomore standing. Mr. Kienitz.

133. HISTORY OF CHINESE PAINTING. I; 3 cr. Schools of painting from the Han to the Ch'ing dynasties. Prerequisite: Junior standing. Mr. Kienitz.

135. CURRENT AMERICAN ARCHITECTURE. II; 2 cr. A survey of the domestic architecture in the United States, with special attention to the work of Frank Lloyd Wright. Prerequisite: Sophomore standing. Mr. Kienitz.

139. DEVELOPMENT OF MODERN ARCHITECTURE. I; 3 cr. A survey of European architecture, domestic and public, from 1800 to current times. Prerequisite: Sophomore standing. Mr. Kienitz.

140. THE CRAFT OF OLD MASTER DRAWINGS. I; 3 cr. Studies in the technical resources of the artist and their art historical significance. Prerequisite: Consent of instructor. Mr. Watrous.

142. THE HISTORICAL TECHNIQUES OF PAINTING. II; 3 cr. Studies in media and processes of painting, with special reference to their evolution and art historical importance. Prerequisite: Consent of instructor. Mr. Watrous.

144. MEDIEVAL ART. I; 3 cr. Architecture, painting, and sculpture, from early Christian times to the end of the Middle Ages. Prerequisite: Sophomore standing. Mr. Hagen.

146. PROSEMINAR. I, II; 2 cr. Special studies, which change from semester to semester, but are related to the general field of drawing and painting. Prerequisite: Consent of instructor. Mr. Watrous.

148. THE PAINTINGS AND GRAPHIC ARTS OF GERMANY, 1450–1550. II; 3 cr. The leaders in German painting and graphics from Stephen Lochner and the Master ES to Dürer, Grünewald, Cranach, and Altdorfer. Offered 1953–54. Prerequisite: Sophomore standing. Mr. Watrous.

151. ITALIAN PAINTING OF THE RENAISSANCE. I; 3 cr. More specifically, the history of the Schools of Florence and Rome, from Giotto to Raphael and Michelangelo. Prerequisite: Sophomore standing. Mr. Hagen.

153. REPRESENTATIVE PAINTERS OF THE SEVENTEENTH CENTURY. II; 3 cr. Caravaggio, Rubens, Rembrandt, Velasquez, and Poussin. Prerequisite: Sophomore standing. Mr. Hagen.

155. DUTCH AND FLEMISH MASTERS FROM VAN EYCK TO PETER BRUEGHEL. II; 3 cr. Masters of painting in the Netherlands of the late middle ages and renaissance including van Eyck, van der Weyden, Bouts, van der Goes, Memling, Bosch, the Antwerp mannerists, and Brueghel. Offered 1952–53 and in alternate years. Prerequisite: Sophomore standing. Mr. Watrous.

156. BRITISH PAINTING FROM HOLBEIN TO THE PRE-RAPHAELITES. I; 2 cr. Prerequisite: Art History 54 or one semester course in Art History. Not offered 1952–53. Mr. Hagen.

157. PATTERNS AND PRINCIPLES OF SPANISH ART. II; 2 cr. The history of Spanish painting from the twelfth century to the beginning of the nineteenth century, as well as an inquiry into the national character of Spanish art. Prerequisite: Sophomore standing. Mr. Hagen.

159. DEVELOPMENT OF AMERICAN ART. II; 3 cr. The history of painting in America from 1670 to the present day. Prerequisite: Junior standing. Mr. Hagen.

160. PROSEMINAR: THE USES OF ART HISTORY FOR THE CREATIVE ARTIST. I, II; 2 cr. Mr. Watrous.

180. INDEPENDENT READING AND RESEARCH. Yr; 2–4 cr. Staff.

200. GRADUATE THESIS. Yr; 2–4 cr. Staff.

206. SEMINAR. Modern European painting, sculpture, and architecture. Yr; 2 cr. Mr. Kienitz.

210. SEMINAR. Yr; 2 cr. Mr. Hagen.

ASTRONOMY

PROFESSOR HUFFER, WHITFORD, *chairman;* ASSISTANT PROFESSOR CODE.

Course 17 is the general elementary course; it is available for science credit and is open to freshmen with high-school mathematics. Course 6 is more technical for those wishing to acquire the technique of navigating a ship or airplane. Courses 101 and 102, which do not require previous study of astronomy, may be taken separately. Courses 116 and 122 may be arranged for either semester according to demand. Course 202 is not given every year.

6. NAVIGATION AND PRACTICAL ASTRONOMY. II; 3 cr. The use of charts, compass, sextant,

and transit; sea and air navigation. Prerequisite: A course in trigonometry. Mr. Huffer.

17. SURVEY OF ASTRONOMY. I, II; 3 cr. A general course for beginners. Constellation study and observations through the telescope. A study of the development of astronomy as a science and the use of physical apparatus applied to astronomical studies. The physical nature of sun, planets, and other bodies in the solar system. Modern theories of the nature of the universe and of the stars and nebulae of which it is composed. Prerequisite: One year each of high-school algebra and geometry.

101. ASTROPHYSICS: THE SOLAR SYSTEM. I; 3 cr. The motions and physical properties of the members of the solar system. Prerequisites: Mathematics 101a, Physics 1b. Mr. Whitford.

102. ASTROPHYSICS: STELLAR ASTRONOMY. II; 3 cr. The stars: distances and motions; physical state as shown by analysis of radiation. Structure of the galaxy; extragalactic systems. Prerequisites: Mathematics 101a, Physics 1b. Mr. Whitford.

116. CELESTIAL MECHANICS. I, II; 3 cr. A mathematical study of the problems of two bodies, and of three or more bodies. Application to the orbits of binary stars, comets, and planets. Prerequisite: A course in calculus. Mr. Huffer.

122. EXTRAGALACTIC SYSTEMS. I or II; 2–3 cr. Determination of distance; luminosity; distribution in space. Nebular types and stellar content. Rotation and mass. Velocity-distance relation. Mr. Whitford.

180. ADVANCED INDEPENDENT READING. I, II; *cr.

200. RESEARCH. Yr; 3–5 cr. Graduate students and others qualified to pursue advanced astronomical studies may be given facilities for independent original work in the Washburn Observatory.

202a. THEORETICAL ASTROPHYSICS. I; 3 cr. Transfer of radiation through matter; the continuous spectrum; model stellar atmosphere; formation of absorption lines in stellar atmospheres. Prerequisites: Physics 210 and Physics 113, or consent of instructor. Mr. Code.

202b. THEORETICAL ASTROPHYSICS. II; 3 cr. Abundances of elements in stellar atmospheres, stellar energy generation, non-equilibrium radiation, radiative transfer through interstellar matter. Prerequisite: Astronomy 202a or consent of instructor. Mr. Code.

220. SEMINAR: ASTROPHYSICAL TOPICS. I or II; 2 cr. Prerequisite: Consent of instructor. Staff.

An additional course on galactic structure, and one on binary stars will be offered if demand warrants.

BACTERIOLOGY

The courses in the Departments of Medical Microbiology and Agricultural Bacteriology are accepted as regular Letters and Science courses. For descriptions of these courses see the bulletins of the College of Agriculture and the Medical School. Requirements for a major in Bacteriology may be found on page 66.

BIOLOGICAL ASPECTS OF CONSERVATION

The College of Letters and Science offers an undergraduate major in Biological Aspects of Conservation. Requirements for this major are found on page 76.

BIOLOGY

Study of the biological sciences is conducted in the independent though co-ordinated Departments of Botany, Zoology, Anatomy, Physiology, Physiological Chemistry, Agronomy, Biochemistry, Genetics, Horticulture, Pathology and Medical Microbiology, Pharmacology and Toxicology, Plant Pathology, Soils, and Agricultural Bacteriology.

1. General Biology. Yr; 5 cr. An elementary one-year course in general biology may be taken by combining Botany 1 and Zoology 1, both of which are given each semester. Either one may precede the other, although the normal order is to follow botany with zoology. Introductory to botany, zoology, anatomy, bacteriology, and physiology. (See Botany 1 and Zoology 1.)

TEACHERS' COURSE

The Teaching of Biology. See School of Education.

BOTANY

Professors Backus, Curtis, Fassett, Huskins, Skoog, Stauffer, *chairman;* Associate Professors Allen, Evans, Fisk, Thomson; Assistant Professors Clarke, Cottam, Gerloff, Newcomb, Sauer; Instructor Mason; Curator Greene.

Major. 30 credits, including Botany 1 or 17 and an elementary course in zoology. High-school mathematical preparation is required. Botany 24 may not be counted as an advanced course toward the major. Zoology 6 or 106 may be counted toward the major. A student who majors in the department and attains a grade-point average of 2.0 or above may be permitted to undertake an independent research problem and write a thesis during his or her senior year. Such a student should confer with his adviser or with the chairman of the department in regard to the feasibility of electing a thesis. An I.L.S. student considering Botany as a major should consult the departmental chairman as to requirements.

1. General Botany. I, II; 5 cr. Introduction to structure, physiology, classification, ecology, heredity, and evolution of plants. This course or Botany 17 is preliminary to all advanced work except Botany 24 and 160. This course together with Botany 2 or Zoology 1 may be used to satisfy the requirement of a year course in laboratory science for the bachelor's degrees. Mr. Clarke, Mr. Sauer and staff.

2. Advanced General Botany. II; 5 cr. Identification, morphology and relationships of the major plant groups. Lectures deal with the development of botanical science. Prerequisite: Botany 1 or 17. Mr. Clarke and staff.

17. Survey of Botany: Nature of the Plant World. I; 3 cr. Identification, structure, and life histories of representative plants throughout the plant kingdom. Open to all students excepting those who have taken Botany 1 or its equivalent. Mr. Evans and staff.

24. Economic Botany. II; 2 cr. Plants upon which man's civilization is dependent for food, fiber, shelter, medicines and other purposes; their source, preparation, and uses. Lecture and readings. Prerequisites: Sophomore standing and a college course in science. Mr. Sauer.

100. Senior Thesis. Yr; 2–3 cr. An independent research topic should be selected, if possible, before the close of the junior year. Staff.

101. Diseases of Plants (Same as Plant Pathology 101). I; 3 cr. Prerequisites: Plant Pathology 7 or Agricultural Bacteriology 1, and Botany 104. Mr. Walker, Mr. Pound.

103. Taxonomy and Ecology of Algae. II; 3 cr. Emphasis on local fresh-water forms. Prerequisite: Botany 1 or 17. Offered 1952–53 and in alternate years. Mr. Evans.

104. Fungi. I, II; 3 cr. An introduction to mycology with emphasis on morphology and taxonomy. Prerequisite: Botany 1 or 17. Mr. Backus.

107. Gymnosperms. Sem; 3 cr. Prerequisite: Botany 1 or 17.

108. Morphology of Angiosperms. II; 3 or 4 cr. A general survey of the development, structures, life history, and relationships of the flowering plants. Prerequisites: Botany 1 or 17 and junior standing. Miss Fisk.

112. Bryophytes. II; 3 cr. Prerequisites: Botany 1 or 17. Offered 1953–54 and in alternate years. Mr. Evans.

113. PTERIDOPHYTES. Sem; 3 cr. Prerequisite: Botany 1 or 17.

116. FUNDAMENTALS OF CYTOLOGY (Same as ZOOLOGY 116). I; 3 cr. Microscopic structure, chemical composition and function of cytoplasmic and nuclear components. Mitosis and meiosis. Relations to heredity, reproduction, development and cellular physiology. Prerequisites: A college course in zoology or botany, Chemistry 1a, junior standing. Mr. Sander, Mr. Ris.

117. STRUCTURE OF ECONOMIC PLANTS. I; 3 cr. The developmental anatomy of seed plants of economic importance. Prerequisite: Botany 1 or 17. Miss Fisk.

129. CLASSIFICATION OF CULTIVATED AND NATIVE PLANTS. I; 3 cr. A survey of the families and representative genera of flowering plants using keys and manuals. Lecture and laboratory. Prerequisite: Botany 1 or 17. Mr. Thomson.

131. DENDROLOGY. II; 2 cr. Identification of evergreen and deciduous woody plants, both native and cultivated, using keys and manuals. Laboratory and field. Prerequisite: Botany 1 or 17. Mr. Thomson.

132. PLANT ANATOMY. II; 3 cr. The development and structure of the vegetative and reproductive organs of the seed plant. Emphasis on wood anatomy and on the structure of the plant in relation to its environment. Prerequisite: Botany 1 or 17. Miss Fisk.

146. PLANT PHYSIOLOGY. II; 4 cr. The general physiology of seed plants: methods used in demonstrating and determining rates of plant processes; nutrition; adjustment to environment; factors influencing growth and development. Prerequisites: Botany 1 or 17 and some elementary knowledge of the principles of physics and chemistry. Not open to freshmen. Mr. Stauffer.

153. MICROTECHNIQUE. I; 3 cr. Training in the preparation of plant material for study, with emphasis on practice in killing, imbedding, sectioning, and staining. Prerequisite: Botany 1 or 17. Mr. Evans.

154. PALEOBOTANY AND PROBLEMS OF EVOLUTION. Sem; 2 cr. Prerequisite: Botany 2.

155. ADVANCED MICROTECHNIQUE. II; 3 cr. Emphasis on techniques which supplement standard paraffin methods; adaptation of procedures to meet individual needs. Prerequisite: Botany 153 or consent of instructor. Mr. Evans.

156. INHERITANCE AND VARIATION. I; 2 cr. Prerequisites: Botany 1 and Zoology 1. Not offered 1952–53. Mr. Huskins.

157. MECHANISMS OF EVOLUTION. II; 2 cr. Genetic factors in evolution (mutation, selection, random variation of genotype frequencies); their quantitative relations; evidence for these factors in natural populations. Prerequisite: Genetics 6, or Zoology 6 or 106, or consent of instructor.

160. FLORA OF WISCONSIN AND ITS CONSERVATION. II; 3 cr. Lectures, laboratory, and field trips. Prerequisite: Open to advanced students in the natural sciences. Mr. Fassett.

161. FIELD COLLECTIONS AND IDENTIFICATION. I; 2–4 cr. Lectures, laboratory, and field trips. Students must consult the instructor in May for equipment and directions for collecting plants in the summer. Prerequisite: Botany 129. Mr. Fassett.

162. ADVANCED TAXONOMY. I; 2 cr. Principles underlying taxonomy of vascular plants; problems and practices in classification and nomenclature; relation of modern taxonomy to other fields of biology. Prerequisite: Botany 161 or consent of instructor. Offered 1952–53. Mr. Fassett.

163. IDENTIFICATION AND CLASSIFICATION OF GRASSES. I; 2 cr. Emphasis on native grasses of Wisconsin. Prerequisite: Botany 129 or consent of instructor. Mr. Fassett.

164. PRINCIPLES OF PLANT ECOLOGY. II; 3 cr. Plants and plant associations in relation to their physical and biotic environment. Lectures, laboratory, and field trips. Prerequisite: Botany 1 or 17. Mr. Curtis, Mr. Cottam.

165. Ecological Methods. I; 3 cr. Methods of collecting, compiling, and analyzing data on the association, dispersion, and environment of plants. Lectures, laboratory, and field trips. Prerequisites: Botany 164 and an elementary knowledge of statistics. Mr. Cottam.

166. Plant Conservation. I; 2 cr. Problems and methods in the preservation and restoration of the native flora, with emphasis on ecological life histories. Offered 1952–53 and in alternate years. Prerequisite: Botany 164. Mr. Curtis.

167. Identification of Aquatic Plants. I; 3 cr. Practical experience in identification of aquatic angiosperms. Prerequisite: Botany 129 or consent of instructor. Offered 1953–54. Mr. Fassett.

169. Advanced Plant Ecology. I; 3 cr. Plant communities, their structure, developmental processes and history. Lectures and field trips. Prerequisites: Botany 164 and courses in taxonomy and statistics, or consent of instructor. Mr. Curtis.

174. Growth of Plants. I; 2 cr. Lec.; 0–2 cr. Lab. Lectures on the concepts and techniques employed in the study of growth and development with emphasis on the functions of growth substances. Laboratory: selected problems related to lecture topics. Prerequisites: Botany 146 and organic chemistry. Mr. Skoog.

175. Metabolism of Plants. I; 2 cr. Structure of cell wall and protoplasm in relation to function; cellular processes including respiration and organic acid metabolism, carbohydrate interconversions, and photosynthesis. Prerequisite: Botany 146. Mr. Newcomb and Mr. Stauffer.

176. Nutrition of Plants. II; 4 cr. Lecture and laboratory course. The mineral nutrition of plants and the relation of food and accessory substances to plant growth. Prerequisite: Botany 146. Mr. Skoog.

177. Physiology of the Fungi. I (offered II, 1952–53); 4 cr. Organic and mineral nutrition, growth and metabolism, and phenomena of variation and correlation in the fungi. Lectures and laboratory. Prerequisites: Botany 104 and 146 or equivalent. Mr. Allen.

180. Advanced Botanical Problems. I, II; 2–5 cr. Individual work dealing with advanced phases of botany not taken up in the regular courses. Prerequisite: Consent of instructor. Staff.

200. Research. Yr; *cr. Investigation may be undertaken in any phase of botany in which the student's preparation is adequate. Staff.

213. Proseminar. I; 1 cr. Open to seniors and first-year graduate students. Staff.

214. Seminar in General Botany. Yr; 1 cr. per semester. Mr. Huskins.

215. Seminar in Plant Physiology. Yr; 1 cr. per semester. Mr. Allen, Mr. Gerloff, Mr. Newcomb, Mr. Skoog, Mr. Stauffer.

216. Seminar in Plant Ecology. Yr; 1 cr. per semester. Mr. Curtis, Mr. Cottam

217. Seminar in Mycology. Yr; 1 cr. per semester. Mr. Backus, Mr. Allen.

220. Advanced Mycology. Yr; 2 or 3 cr. Lectures, laboratory, and field work. Prerequisite: Botany 104 or equivalent. Mr. Backus.

248. Physiological Methods and Materials. I; 3 cr. Primarily a laboratory course applying physical methods in the study of plant processes. Prerequisite: Botany 146 or consent of instructor. Mr. Stauffer, Mr. Newcomb.

250. Cytogenetics. I; 3 or 4 cr. The cell considered as the basis of heredity. Prerequisite: Graduate standing; open to seniors by consent of instructor. Mr. Huskins.

251. Cytology. II; 3 or 4 cr. Cell structure: descriptive, leading up to cytochemical, cytophysical and physiological aspects. Prerequisite: Graduate standing; open to seniors by consent of instructor. Mr. Huskins.

CHEMISTRY

PROFESSORS DANIELS, *chairman*, FERRY, HALL, HIRSCHFELDER, HOLT, JOHNSON, MCELVAIN, MELOCHE, SCHUETTE, SORUM, WILDS, WILLARD, WILLIAMS; ASSOCIATE PROFESSORS ALBERTY, BENDER, BLAEDEL, IHDE, KLEIN, LARSEN; ASSISTANT PROFESSORS BOYD, CURTISS, GOERING, GOSTING, KING, VAN TAMELEN; INSTRUCTORS COOPER, CORNWELL, MARGRAVE, SHAIN.

REQUIREMENTS FOR THE MAJOR

To be accepted as a major in Chemistry, a student must have a grade-point average of 1.5 or better in chemistry courses taken in his first two years, must have had high-school mathematical preparation, and must present to his adviser a permit signed by the chairman of the department. Since a minimum of 80 credits in subjects outside the major subject is required for graduation, it follows that no more than 40 credits of chemistry courses may be counted toward graduation.

COURSE NUMBER	TITLE OF COURSE	CREDITS
Chemistry 4a and 4b	General Chemistry and Qualitative Analysis	8–10
Chemistry 11	Quantitative Analysis	8–10
Chemistry 120, 122	Organic Chemistry Lectures	6
Chemistry 121, 123	Organic Chemistry Laboratory	4
Chemistry 130*	Physical Chemistry Lectures	6
Chemistry 131	Physical Chemistry Laboratory	4
Advanced Chemistry Electives to total 40 cr.		0–4
	Total Credits	40

1a. GENERAL CHEMISTRY. I, II; 5 cr. Introductory college chemistry. (Open only to students who have not had a year of high-school chemistry. Cannot be elected by students who are repeating a college general chemistry course.) 2 hrs. lect., 4 hrs. lab., 2 hrs. disc. Staff.

5. GENERAL CHEMISTRY. I, II; 3 cr. Introductory college chemistry. Prerequisite: A course in high-school chemistry. The subject matter is equivalent to Chemistry 1a, the introductory concepts being covered more rapidly and with different laboratory experiments. Serves as a prerequisite for Chemistry 1b. 2 hrs. lect., 2 hrs. lab., 1 hr. disc. Staff.

1b. GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. I, II; 5 cr. Continuation of Chemistry 1a or Chemistry 5. 2 hrs. lect., 4 hrs. lab., 2 hrs. disc. Prerequisite: Chemistry 1a, 2a, 4a or 5. Staff.

2a. GENERAL CHEMISTRY. I; 4 cr. Introductory college chemistry. For freshmen in engineering only. 2 hrs. lect., 4 hrs. lab., 1 hr. quiz. Mr. Holt and staff.

2b. GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. II; 4 cr. Continuation of Chemistry 2a. Prerequisite: Chemistry 1a, 2a, 4a or 5. Mr. Holt and staff.

3. QUALITATIVE ANALYSIS AND PROBLEMS. II; 1 cr. Prerequisites: Concurrent registration in Chemistry 1b or 4b and consent of instructor. Staff.

4a. GENERAL CHEMISTRY. I; 5 cr. Introductory college chemistry. For chemistry course students, chemistry majors, chemical engineers and students majoring in the applications of chemistry; for example, biochemistry and bacteriology (may be elected by any student meeting the prerequisites). 2 hrs. lect., 4 hrs. lab., 2 hrs. quiz. Prerequisites: High-school chemistry and elementary algebra. Mr. Sorum and staff.

4b. GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. II; 5 cr. Continuation of Chemistry 4a. Prerequisite: Chemistry 1a, 2a, 4a, 5 or equivalent. Mr. Sorum and staff.

11a. ELEMENTARY QUANTITATIVE ANALYSIS. I, II; 3–5 cr. For chemistry course students and chemistry majors. Satisfies requirements for Chemistry 12, 14, 15 or 16. Prerequisite:

* NOTE: Mathematics through Math. 22 and Physics 31 are prerequisites for Chemistry 130.

Chemistry 4b or equivalent. 2 hrs. lect., 3–9 hrs. lab. Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche and staff.

11b. INTERMEDIATE QUANTITATIVE ANALYSIS. I, II; 3–5 cr. For chemistry course students and chemistry majors. Prerequisite: Chemistry 11a or equivalent. 2 hrs. lect., 3–9 hrs. lab. Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche and staff.

12. ELEMENTARY QUANTITATIVE ANALYSIS. I; 3 cr. For agricultural students and others in fields requiring one semester of quantitative analysis. Prerequisite: Chemistry 1b or equivalent. 2 hrs. lect., 4–6 hrs. lab. Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche and staff.

14. ELEMENTARY QUANTITATIVE ANALYSIS. I; 4–5 cr. For engineering students. Prerequisite: Chemistry 2b or equivalent. 2 hrs. lect., 6–9 hrs. lab. Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche and staff.

15. ELEMENTARY QUANTITATIVE ANALYSIS. II; 4 cr. For premedical students. Prerequisite: Chemistry 1b or equivalent. 2 hrs. lect.; 6 hrs. lab. Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche and staff.

16. ELEMENTARY QUANTITATIVE ANALYSIS. I; 4 cr. For medical technicians and bacteriology majors. Prerequisite: Chemistry 1b or equivalent. 2 hrs. lect., 6 hrs. lab. Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche and staff.

98. SENIOR SEMINAR. I, II; 1 cr. Staff.

99. SPECIAL CHEMICAL PROBLEMS. I, II; 2–4 cr. Staff.

100. SENIOR THESIS. Yr; 2–3 cr. Staff.

106. INSTRUMENTAL ANALYSIS. I, II; *cr. Special analytical techniques including micro scopic and other instrumental methods. Prerequisite: Chemistry 11b. Mr. Meloche, Mr. Shain.

107. HISTORY OF CHEMISTRY. Sem; 2 cr. Prerequisite: Chemistry 11, 120 or consent of instructor. Mr. Ihde.

108. ADVANCED QUALITATIVE ANALYSIS. Sem; 2–5 cr. Prerequisite: Chemistry 1b.

113. WATER ANALYSIS. I; 1 cr. An eight-week course devoted to the sanitary chemical analysis of water and sewage. Prerequisite: Chemistry 11 or consent of instructor. Mr. Schuette.

116. CONTEMPORARY ORGANIC ANALYSIS. I; 2 cr. Prerequisite: Chemistry 119 or consent of instructor. Mr. Schuette.

118. IRON AND STEEL ANALYSIS. I, II; 2–5 cr. Prerequisite: Chemistry 11 or 14. Mr. Meloche.

119. ORGANIC ANALYSIS. I; 3 cr. Functional groups and the semi-micro determination of elements. Prerequisites: Chemistry 11a and 120. Lecture and laboratory. Mr. Schuette.

120. ORGANIC CHEMISTRY. Sem; 3 cr. Introductory lecture course. Prerequisite: Chemistry 1b, 2b or 4b. Courses 120 and 121 should be taken concurrently. Mr. McElvain, Mr. Klein, Mr. Johnson, Mr. Wilds, Mr. van Tamelen, Mr. Goering.

121. ORGANIC CHEMISTRY. Sem; 2 cr. Introductory laboratory course. Prerequisite: Credit or concurrent registration in Chemistry 120. Lab. 6 hrs. Mr. Klein, Mr. van Tamelen, Mr. Goering and staff.

122. ORGANIC CHEMISTRY. Sem; 3 cr. Intermediate lecture course. Prerequisite: Chemistry 120. Courses 122 and 123 should be taken concurrently. Mr. McElvain, Mr. Johnson, Mr. Wilds, Mr. van Tamelen, Mr. Goering, Mr. Klein.

123. ORGANIC CHEMISTRY. Sem; 2 cr. Intermediate laboratory course. Prerequisite: Credit or concurrent registration in Chemistry 122. Lab. 6 hrs. Mr. Klein, Mr. van Tamelen, Mr. Goering and staff.

124. Advanced Organic Chemistry. I; 3 cr. Prerequisite: Chemistry 122. Mr. Johnson, Mr. Wilds.

125. Advanced Organic Chemistry Laboratory. Yr; 1–5 cr. Organic preparations and techniques. Intended primarily for a student not ready to begin research. Prerequisite: Chemistry 123. Mr. McElvain, Mr. Klein, Mr. Johnson, Mr. Wilds, Mr. Goering, Mr. van Tamelen.

126. Characterization of Organic Compounds. I; 4 cr. A study of homologous reactions, separation and identification of organic compounds. Designed as an aid to research involving organic compounds. Prerequisites: Chemistry 122 and 123. Conference and laboratory. Mr. McElvain, Mr. Goering.

130. Physical Chemistry. Yr; 3 cr. Prerequisites: Chemistry 1 and 11; Physics 1 or 31, calculus, or consent of instructor. Courses 130 and 131 should be taken concurrently. Mr. Daniels, Mr. Williams, Mr. Alberty, Mr. Bender, Mr. Cornwell, Mr. Ferry.

131. Physical Chemistry Laboratory. Yr; 1–3 cr. Prerequisite: Credit or concurrent registration in Chemistry 130. Lab. 3–9 hrs. Mr. Alberty, Mr. Bender, Mr. Cornwell, Mr. Curtiss, Mr. Ferry.

133. Photochemistry. II; 2 cr. Prerequisite: Chemistry 130. Mr. Daniels.

134. Advanced Survey of Physical Chemistry. I; 3 cr. Prerequisites: Chemistry 130 and 131. Mr. Bender.

135. Chemical Thermodynamics. II; 3 cr. Prerequisites: Chemistry 130 and 131.

136. Chemical Kinetics. I; 2 cr. Prerequisite: Chemistry 130. Mr. Daniels.

137. Introduction to Quantum Mechanics. I; 3 cr. Prerequisites: Physics 106b and differential equations, or consent of instructor. Mr. Curtiss.

146. Chemistry of Foods and Their Adulteration. II; 2 cr. Critical study of foods from the standpoint of (1) fundamental basis of nutritional value and (2) character and legal status of adulteration. Prerequisite: Chemistry 120. Mr. Schuette.

147. Chemistry of Foods and Their Adulteration. II; 1–3 cr. A laboratory course to accompany, if desired, Chemistry 146. Prerequisites: Chemistry 11a and 146, or concurrent registration in Chemistry 146. Lab. 3–9 hrs. Mr. Schuette.

149. Colloid Chemistry. I; 3 cr. Prerequisites: Chemistry 130 and 131. Mr. Williams.

153. Instrumental Analysis. I, II; *cr. Prerequisite: Chemistry 131. Mr. Meloche, Mr. Shain.

155. Advanced Quantitative Analysis. II; 2 cr. Prerequisites: Chemistry 11 and senior standing. Mr. Hall.

156. Inorganic Chemistry. II; 3 cr. Prerequisite: Senior standing. Mr. Larsen, Mr. King.

157. Advanced Inorganic Chemistry. I; 2 cr. The compounds and reactions of the common elements. Prerequisite: Graduate standing or consent of instructor. Mr. Holt.

158. Theoretical Inorganic Chemistry. II; 2 cr. Prerequisites: Chemistry 130 and 157 or consent of instructor. Staff.

159. Advanced Inorganic Chemistry. I; 2 cr. The chemistry of the less familiar elements. Prerequisite: Chemistry 158 or consent of instructor. Mr. Larsen.

160. Inorganic Preparations. I, II; 2–5 cr. Prerequisite: Chemistry 11b. Staff.

161. The Phase Rule. II; 2 cr. Prerequisite: Chemistry 130. Mr. Sorum.

165. Radiochemistry. II; 3 cr. Prerequisite: Chemistry 130 or consent of instructor. Mr. Willard.

180. Advanced Independent Study. I, II; *cr. Open only to superior students. (See Section 18, page 43.)

200–206. Research in Chemistry. Yr; *cr. Staff.

223. Advanced Organic Chemistry. II; 3 cr. Prerequisite: Chemistry 124. Mr. McElvain, Mr. Johnson, Mr. Wilds.

224. Advanced Organic Chemistry. I; 1–2 cr. Prerequisite: Chemistry 223. Mr. Link, Mr. Goering.

225. Advanced Organic Chemistry. II; 2 cr. Prerequisite: Chemistry 223. Mr. van Tamelen, Mr. Klein.

230. Advanced Physical Chemistry. Yr; 4 cr. Prerequisite: Chemistry 130b. Mr. Ferry, Mr. Bender, Mr. Alberty, Mr. Hirschfelder, Mr. Daniels.

234. Statistical Mechanics. II; 3 cr. Prerequisite: Chemistry 230 or consent of instructor. Mr. Curtiss, Mr. Hirschfelder.

235. The Transport Properties and the Equation of State of Fluids. Yr; 2 cr. Prerequisites: Elementary thermodynamics, differential equations. Mr. Curtiss.

238. Advanced Quantum Chemistry. II; 3 cr. Prerequisite: Chemistry 137 or Physics 212a or Chemistry 230a with consent of instructor. Mr. Hirschfelder, Mr. Curtiss.

239. Seminar in Physical Chemistry. Yr; 0 cr. Prerequisite: Chemistry 130. Staff.

247. Seminar in Organic Chemistry. Yr; 0 cr. Mr. McElvain, Mr. Klein, Mr. Johnson, Mr. Wilds, Mr. Goering, Mr. van Tamelen.

249. The Physical Chemistry of the Proteins. II; 2 cr. Prerequisite: Chemistry 149 or consent of instructor. Mr. Williams, Mr. Alberty.

250. The Chemistry of High Polymers. II; 3 cr. Prerequisites: Chemistry 130 and 131. Mr. Ferry.

252. Seminar in Analytical Chemistry. Yr; 1 cr. Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche.

254. Seminar in Foods and Sanitation. II; 1 cr. Mr. Schuette.

263. Seminar in Inorganic Chemistry. Yr; 0 cr. General Chemistry Staff.

265. Selected Topics in Inorganic Chemistry. Sem; 2 cr. Equilibria and mechanisms in solution reactions. Mr. King.

CHINESE

(See Comparative Philology and Linguistics, page 114.)

CLASSICS

Professors Agard, *chairman*, MacKendrick; Associate Professor Fowler; Assistant Professors Heironimus, Howe; Instructor Milham.

Attainment Examinations. See Section 16, page 40. The normal preparation for the intermediate examination in Greek includes Greek 1 and 10; in Latin, Latin 1, 10, and 11. For the proficiency examination in Greek it includes Greek 1, 10, 102, and 106 or 108; in Latin, Latin 1, 10, 11, 102, and 103 or 104.

Major. In Greek, 24 credits, exclusive of Greek 1; in Latin, 25 credits beyond Latin 1b (or two years of high-school Latin), 17 credits beyond Latin 11 (or four years of high-school Latin). For admission to a Greek or Latin major a student must have secured a grade-point average of at least 1.5 in his college Greek or Latin courses, and must present 8 credits in a second foreign language. For the teaching major and minor see School of Education.

GENERAL COURSES IN CLASSICS

The purpose of these courses is to give students who have had little or no Latin or Greek an understanding of the relation of classical culture to our own. Knowledge of the languages is not required, and no foreign language credit is given.

37. LATIN AND GREEK WORDS IN ENGLISH. II; 2 cr. An analysis of the meaning of English words, including the vocabulary of science, in terms of Greek and Latin derivation. Miss Milham.

38. ORIGINS OF GREEK AND LATIN MEDICAL TERMS. I, II; 3 cr. Mr. Howe.

41. GREEK LIFE AND LITERATURE. II; 2–3 cr. Greek literature in translation, with adequate regard to its social background. For 3 credits, additional reading and a final paper. Open to freshmen. Mr. Agard.

42. ROMAN LIFE AND LITERATURE. II; 2–3 cr. Latin literature in translation, with adequate regard to its social background. For 3 credits, additional reading and a final paper. Open to freshmen. Mr. MacKendrick.

51. CLASSICAL MYTHOLOGY. II; 2 cr. A survey of classical myths and their influence on later literature and art. Open to freshmen. Mr. Agard.

112. THE CLASSICAL BACKGROUND OF ENGLISH LITERATURE. II; 2–3 cr. A critical comparison of selected masterpieces from English and Classical literature in translation. Prerequisite: One of English 30, 32, 33, 40 or equivalent. Mr. MacKendrick.

122. CLASSICAL ART AND ARCHAEOLOGY. II; 3 cr. The contribution of archaeology to an understanding of classical life, and a critical analysis of Greek and Roman art. Prerequisite: Sophomore standing. Mr. Agard.

133. EARLY CHRISTIANITY AND THE GRAECO-ROMAN WORLD. I; 2–3 cr. Prerequisite: Sophomore standing. Mr. Howe.

CLASSICAL HUMANITIES TUTORIALS

15. ROMAN HISTORY AND LATIN LITERATURE. Yr; 3 cr. Open to freshmen in the Classical Humanities course. Staff.

16. GREEK ART AND LITERATURE. Yr; 3 cr. Prerequisite: Sophomore standing in the Classical Humanities course. Mr. Agard.

GREEK

1. ELEMENTARY GREEK. Yr; 4 cr. Study of forms and syntax, translation of easy Greek prose. Mr. Agard.

10. HOMER, PLATO, NEW TESTAMENT. Yr; 3 cr. Selections from Homer's *Iliad,* Plato's *Dialogs,* the *New Testament.* Prerequisite: Greek 1. Mr. Agard.

100. SENIOR THESIS. Yr; 2 cr. Staff.

101. GRADUATE RAPID READING. Yr; 3 cr. Prerequisite: Consent of instructor. Mr. Agard.

102. GREEK DRAMA AND LYRIC POETRY. Yr; 3 cr. Euripides' *Medea,* Sophocles' *Antigone,* and selections from Aeschylus, Aristophanes, and the lyric poets. Prerequisite: Greek 10. Mr. Howe.

103. GREEK PROSE COMPOSITION. I; 2 cr. Prerequisite: Consent of instructor. Mr. Heironimus.

105. ARISTOPHANES. I; 3 cr. Close reading of four plays, with attention to Aristophanes' lyric genius and his political opinions. Prerequisite: Greek 102. Mr. MacKendrick.

106. HERODOTUS AND THUCYDIDES. Yr; 3 cr. Close reading and critical comparison: history as art and history as science. Prerequisite: Greek 102 or concurrent registration. Mr. MacKendrick.

107. ATTIC ORATORS. Yr; 3 cr. Selected masterpieces from Antiphon to Hypereides, with

emphasis upon the contribution of rhetoric to the intellectual life of the Fourth Century. Prerequisite: Greek 102. Mr. MacKendrick.

108. PLATO. Yr; 3 cr. The *Republic:* its pre-Socratic background and its relation to Athenian institutions. Prerequisite: Greek 102 or concurrent registration. Mr. MacKendrick.

109. ARISTOTLE. Yr; 3 cr. Wallace's *Selections,* the *Ethics,* and the *Politics,* as a critique of Plato and as contributions to the life of the *polis.* Prerequisite: Greek 102 or concurrent registration. Mr. MacKendrick.

180. DIRECTED READING. Upper-group majors may secure a limited number of credits for reading under the guidance of a member of the department. See Section 16, page 40.

191. GREEK DIALECTS. 2 cr. Mr. Fowler. Offered I, 1953–54 and in alternate years. See COMPARATIVE PHILOLOGY AND LINGUISTICS.

200. INDIVIDUAL RESEARCH. Yr; *cr. Staff.

201. PROSEMINAR. I; 1 cr. Staff.

210. GREEK EPIGRAPHY. II; 2–3 cr. Mr. Edson.

211. GREEK DRAMA. Yr; 3 cr. Mr. Agard.

226. GRAMMAR OF THE GREEK LANGUAGE: PHONOLOGY AND MORPHOLOGY. 2 cr. Mr. Fowler. Offered I, 1952–53 and in alternate years. See COMPARATIVE PHILOLOGY AND LINGUISTICS.

230. GREEK SEMINAR. Yr; 2 cr. Staff.

LATIN

1a. ELEMENTARY LATIN. I; 4 cr. Study of forms and syntax, with simple translation, equivalent to a year of high-school Latin. Miss Milham.

1b. CAESAR. II; 4 cr. Translation of easy prose, including selections from the *Gallic War;* analysis of English derivatives. Prerequisite: Latin 1a or one year of high-school Latin. Miss Milham.

8. RAPID READING. 4 cr. This course is planned for students who have had two years of high-school Latin, but have not studied Latin for several years. It combines an intensive review of Latin grammar and vocabulary with extensive reading from several authors. This course is also recommended as a non-credit review for graduate students who are preparing for Latin reading examinations. Miss Milham.

10. VERGIL. I; 4 cr. Selections from the *Aeneid.* Prerequisite: Latin 1b or two years of high-school Latin. Open the students who have read Cicero, but not to students who have read Vergil. Miss Milham.

11. CICERO'S ORATIONS. II; 4 cr. Cicero as a politician and literary critic. Special consideration is given students who have not studied Latin recently. Prerequisite: Latin 1b or two years of high-school Latin. Open to students who have read Vergil, but not to students who have read Cicero. Miss Milham.

100. SENIOR THESIS. Yr; 2 cr. Staff.

101a. INTERMEDIATE LATIN COMPOSITION. I; 2 cr. A survey of Latin syntax and idioms. Prerequisite: Latin 102 or concurrent registration. Mr. Heironimus.

101b. ADVANCED LATIN COMPOSITION. II; 3 cr. Prerequisite: Latin 101a. Mr. Heironimus.

102. GENERAL SURVEY. Yr; 3 cr. Selections from Plautus, Terence, Lucretius, Catullus and Horace, the Elegists, and Silver Latin, illustrating the social, political, and intellectual life of the Republic and Early Empire. Prerequisites: Latin 10 and 11 or four years of high-school Latin. Mr. MacKendrick.

103. PLINY AND MARTIAL. I; 3 cr. Letters of Pliny and epigrams of Martial, illustrating various phases of Roman life. Prerequisite: Latin 21. Mr. Heironimus.

104. SALLUST AND LIVY. II; 3 cr. Selections illustrating the national experience of the Roman people. Prerequisite: Latin 21. Mr. Heironimus.

105. CICERO'S ORATIONS: ADVANCED COURSE. Sem; 3 cr. Cicero in relation to the politics of his age. Lectures, translation, oral reports. The orations read will vary from year to year. For 1953–54: *Pro Cluentio, Commentariolum Petitionis, Pro Caelio, de provinciis consularibus.* Prerequisite: Latin 104 or concurrent registration. Mr. MacKendrick.

107. CICERO'S PHILOSOPHICAL WORKS. II; 3 cr. The *Somnium Scipionis, Tusculans* I, *De Natura Deorum* and *De Officiis* I–II in their relation to Cicero's political theory and practice. Lectures, translations, oral reports. Prerequisite: Latin 104 or concurrent registration. Mr. MacKendrick.

108. CICERO'S LETTERS. I; 3 cr. Prerequisite: Latin 104.

109. ROMAN DRAMA. II; 3 cr. Prerequisite: Latin 104.

110. LUCRETIUS. I; 3 cr. The *De Rerum Natura;* its relation to ancient philosophy. Prerequisite: Latin 104. Mr. Howe.

111. VERGIL. I; 3 cr. Emphasis on *Eclogues, Georgics,* and *Aeneid* VII–XII: Alexandrianism, the Augustan National Program, and the literary epic. Prerequisite: Latin 104 or concurrent registration. Mr. MacKendrick.

115. ROMAN BIOGRAPHY. I; 3 cr. Suetonius' *Caesar* and *Augustus,* the *Agricola* of Tacitus, biographies by Nepos, the *Historia Augusta.* Prerequisite: Latin 104. Mr. Heironimus.

116. CAESAR: ADVANCED COURSE. II; 3 cr. The *Gallic* and *Civil Wars,* illustrated, with reference to their political background. Prerequisite: Latin 104 or consent of instructor. Mr. MacKendrick.

118. ROMAN SATIRE. II; 3 cr. Satires of Horace, Persius and Juvenal. Satire as a literary genre; social conditions at Rome during the Empire. Prerequisite: Latin 104. Mr. Heironimus.

119. TACITUS. II; 2–3 cr. Prerequisite: Latin 104. Mr. Howe.

130. MEDIEVAL LATIN. I; 2 cr. Mr. Heironimus.

131. RENAISSANCE LATIN. II; 2 cr. Selections from representative authors of various countries, ranging from Petrarch to Milton. Translation, collateral reading, and reports. Prerequisites: Latin 10 and 11 or 4 years of high-school Latin. Mr. Heironimus.

180. DIRECTED READING. (See GREEK 180.)

190. ITALIC DIALECTS. Sem; 2 cr. The languages of the Italic branch of Indo-European, exclusive of Latin. Oscan and Umbrian; grammar; detailed study of inscriptions. Brief survey of the other dialects. Offered II, 1952–53 and in alternate years. Mr. Fowler.

200. INDIVIDUAL RESEARCH. Yr; •cr. Staff.

201. PROSEMINAR. I; 1 cr. Staff.

210. LATIN EPIGRAPHY. II; 2 cr. Mr. MacKendrick.

225. GRAMMAR OF THE LATIN LANGUAGE: PHONOLOGY AND MORPHOLOGY. Sem; 2 cr. The position of Latin in the Indo-European family of languages; the origins of the sounds of Latin, and of the forms, with reference to syntax. Offered II, 1953–54 and in alternate years. Mr. Fowler.

231. SURVEY OF LATIN LITERATURE. Yr; 3 cr. Mr. Heironimus.

233. LATIN SEMINAR. Yr; 2 cr. Staff.

TEACHERS' COURSE

THE TEACHING OF LATIN. See School of Education.

COMPARATIVE LITERATURE

PROFESSORS ORSINI, *chairman*, FULCHER, MACKENDRICK, MITCHELL, HAUGEN; ASSOCIATE PROFESSOR ALBERSON; ASSISTANT PROFESSOR BLOCK.

Subjects in comparative literature fall into two general classes: those in which the readings are mainly in English translation, and those in which an easy reading knowledge of one or more foreign literatures is required. Undergraduates majoring in the department must be able to do a portion of this work in at least one language other than English. There is also provision for graduate work in comparative literature, as outlined in the bulletin of the Graduate School. None of the subjects in this department is open to freshmen.

MAJOR. The major in Comparative Literature is planned for those students who may be interested in the critical appreciation of literature or who may have literary ambitions, it will be found to be elastic enough to suit individual needs. The minimum requirements of the major are 46 credits, including the following:

(a) 21 credits in courses in the Department of Comparative Literature, including Course 7 or Course 9 or its equivalent. Course 165 is strongly recommended. In the senior year 2 to 4 credits may, in the judgment of the adviser, be taken as independent work. The result of this independent work is to be shown by a thesis or documented paper. Courses 100 and 181 are available for such work.

(b) 14 credits in literature (not language or composition) courses in at least two other departments, one of which may be English. Not less than 9 of these credits shall be taken in one foreign language, ancient or modern. Courses in the language departments below the following numbers are not accepted as part of the major: Latin 10, Vergil; Greek 10, Homer, Plato, New Testament; English 37, Shakespeare (English 40 is not accepted toward the major); French 21, Elementary survey; German 20, Classical and modern writers; Scandinavian 21, Survey of Norwegian literature; Spanish 21, Elementary survey; Italian 21, Elementary survey.

(c) 12 credits in related courses in at least two of the following departments: art history, philosophy, history.

It is further required that the completed work show a degree of continuity; that is to say, the elections will necessarily be in the same or related periods of literary history, or will include the same or similar literary types. The exact grouping of courses for a major will be determined individually for each student.

7. MASTERPIECES OF WESTERN LITERATURE. Yr; 3 cr. A literary approach to the great works of ancient and modern times in translation. Prerequisite: Sophomore standing. Mr. Block.

9. WORLD LITERATURE IN TRANSLATION. Yr; 3 cr. Homer to the 20th century. Prerequisite: Sophomore standing. Mrs. Alberson.

67. DRAMA FROM IBSEN TO PRESENT. Yr; 2 cr. In translation. Offered 1953–54 and in alternate years. Prerequisite: Sophomore standing. Mr. Mitchell.

68. THE NOVEL IN THE MODERN WORLD. Yr; 2 cr. The English, Continental, and American novel, 1875–1930 in translation. Offered 1952–53 and in alternate years. Prerequisite: Sophomore standing. Mr. Fulcher.

In the following courses, 100 to 184, junior standing is required for majors, and one foreign language is necessary; for others, special arrangement may be made.

100. THESIS. Yr; 2 cr. Students register with the consent of instructor and chairman of department.

101. LEGENDARY LITERATURES OF ASIA AND EUROPE. Yr; 3 cr. The legendary literatures paralleled by selections from modern literature as a means of studying the psychology of ethnic groups. Mrs. Alberson.

102. RENAISSANCE EPIC AND ROMANCE. II; 3 cr. A study of the epic and related forms as

the romance and pastoral poetry, their development in Latin, Italian, Portuguese, and French and their culmination in Ariosto, Tasso, Camoëns, Spencer and Milton. Mrs. Alberson.

111. The Historical Novel. I; 3 cr. A study of typical historical novels.

112. Classical Backgrounds of English Literature. II; 3 cr. A critical comparison of selected masterpieces from English and Classical literature in translation. Prerequisite: One of English 30, 32, 33, 40 or equivalent. Offered 1953 and in alternate years. Mr. MacKendrick.

119. The Nineteenth Century. II; 3 cr. The leading authors of Europe and America in the 19th century.

145. Italian Renaissance Background to European Literature. Yr; 2 cr. The great writers and their influence: Petrarch, Boccaccio, Lorenzo de Medici, Politian, Castiglione, Machiavelli, Ariosto. Mr. Orsini.

146. Drama and Stage During the European Renaissance. Yr; 2–3 cr. The relationship between stage conditions and the drama, as it developed from ancient times to Renaissance Comedy and Tragedy. Mr. Orsini.

165. Literary Criticism. Yr; 3 cr. The search for a critical theory and a discussion of literary types. Readings in representative critics. Mr. Orsini.

170. Literary Type: Tragedy. I; 3 cr. A critical study. At least one foreign language required.

171. Comedy. II; 3 cr. Critical study. Prerequisite: At least one foreign language required.

173. Literary Type: Biography. I; 3 cr. The history of the development of biography; followed by a comparative study of the varieties of modern biographical writing. Mrs. Alberson.

174. Autobiography. II; 3 cr. A study of the world's great autobiographies. Mrs. Alberson.

176. The Romantic Movement in France, Germany and England. Yr; 3 cr. From Rousseau to Goethe and Chateaubriand. Ability to read German or French necessary. Mr. Block.

178. The Contemporary Scene. Yr; 3 cr. A study of the literary movements in Europe and America since the First Great War. Ability to read at least one foreign language required. Mr. Block.

180. Special Readings. Yr; 2 or more cr. Individual studies in selected fields for exceptional students under the direction of the instructor. Students must consult the chairman before registering. See Section 16, page 40.

181. Proseminar. Yr; 2 or more cr. Individual studies for seniors. Prerequisite: Consent of instructor. Mrs. Alberson.

189. Literary Criticism in the Renaissance. II; 3 cr. Mr. Hughes.

200. Independent Studies. Yr; *cr.

209. Great Books of World Literature. Yr; 2 cr. A study of the ideas and philosophies found in the great books of the world exclusive of English. Ten books a semester will be chosen for study. This course is planned for graduate students and is not open to those who have had Comparative Literature 9 or its equivalent. Privilege of attending lectures in Comparative Literature 9 is granted if desired. Mrs. Alberson.

271. Seminar: Problems of Comparative Literature. Yr; 2–3 cr. Mr. Orsini.

LITERATURES IN TRANSLATION

The following courses deal with individual foreign literatures in English translation. They are offered by the departments of French, German, Italian, Spanish, Scandinavian and

Slavic Languages for students not having a command of the foreign language who may wish to acquaint themselves with the best in those literatures. As such they are highly recommended and they carry credit as electives. They do not carry credit in the language departments; neither do they carry credit toward a major or a minor in Comparative Literature. For Greek and Latin literature in translation, see CLASSICS.

31a. SURVEY OF NINETEENTH-CENTURY RUSSIAN LITERATURE. I; 2–3 cr. Background, development and the principal works of Russian literature exclusive of the drama from Pushkin to Tolstoy. Prerequisite: Sophomore standing. Mr. Zawacki.

31b. SURVEY OF NINETEENTH-CENTURY RUSSIAN LITERATURE. II; 2–3 cr. A continuation of Comparitive Literature 31a, but may be taken as a separate course. Prerequisite: Sophomore standing. Mr. Zawacki.

32. MASTERPIECES OF POLISH LITERATURE. Sem; 2–3 cr. The principal works of Polish literature, their literary importance and social significance. Prerequisite: Sophomore standing. Mr. Zawacki.

40. MASTERPIECES OF RUSSIAN DRAMA. Sem; 2–3 cr. The principal dramas in Russian literature, their social function and their literary significance. Prerequisite: Sophomore standing. Mrs. Gasiorowski.

41. GREEK LIFE AND LITERATURE. (See GENERAL CLASSICS 41.)

42. ROMAN LIFE AND LITERATURE. (See GENERAL CLASSICS 42.)

48a. CONTEMPORARY RUSSIAN LITERATURE. I; 2–3 cr. The background and the representative works of Russian literature from 1880 to 1917. Prerequisite: Sophomore standing. Mrs. Gasiorowski.

48b. CONTEMPORARY RUSSIAN LITERATURE. II; 2–3 cr. Russian literature from 1917 to the present, a continuation of Comparative Literature 48a, but may be taken as a separate course. Prerequisite: Sophomore standing. Mrs. Gasiorowski.

50. FRENCH MASTERPIECES IN TRANSLATION. Yr; 2 cr. Prerequisite: Sophomore standing. No language required. Mr. Harris.

51. CLASSICAL MYTHOLOGY. (See GENERAL CLASSICS 51.)

53. ITALIAN MASTERPIECES IN TRANSLATION. Yr; 2 cr. Lectures, class discussion, assigned readings. The first semester is devoted to Dante, Petrarch, and Boccaccio; the second semester begins with the Renaissance authors and ends with Pirandello. No language prerequisite. Prerequisite: Sophomore standing. Mr. Rossi.

55. SPANISH AND PORTUGUESE MASTERPIECES IN TRANSLATION. Yr; 2 cr. Prerequisite: Sophomore standing.

56. LATIN-AMERICAN LITERATURE IN ENGLISH TRANSLATION. Sem; 2 cr. Mr. Rosaldo.

65. CHINESE IMAGINATIVE LITERATURE. Yr; 3 cr. Miss Chou.

70. SCANDINAVIAN CLASSICS. Yr; 2–3 cr. Mr. Haugen. (See SCANDINAVIAN LANGUAGES 70.)

71. LIFE AND LITERATURE IN THE VIKING AGE. Sem; 2 cr. Mr. Haugen.

75. GERMAN CLASSICS IN TRANSLATION. Yr; 2 cr. Selected masterpieces of German literature in English. Lectures, assigned readings, discussions, and topics. First semester, the *Nibelungenlied* to Schiller; second semester, Goethe to modern times. Offered 1950–51. Prerequisite: Sophomore standing. Mr. Naumann.

77. NORWEGIAN LITERATURE FROM RENAISSANCE TO REALISM. (See SCANDINAVIAN LANGUAGES 77.) Mr. Haugen.

91. TRENDS IN RUSSIAN CULTURE AND LITERATURE. Sem; 2–3 cr. The development of Russian culture within the framework of Russian literature. Prerequisite: Sophomore standing. Mrs. Gasiorowski.

131. IBSEN AND STRINDBERG. Sem; 2 cr. (See SCANDINAVIAN LANGUAGES 131.) Mr. Haugen.

135. SCANDINAVIAN CLASSICS. Yr; 2–3 cr. (See SCANDINAVIAN LANGUAGES 135.) Mr. Haugen.

143. CERVANTES AND THE SPANISH GOLDEN AGE. Yr; 3 cr. Life and the works of Cervantes; historical developments in sixteenth- and seventeenth-century Spain relating to literature; influence of Cervantes in foreign literatures. Offered 1951–52. Mr. Singleton.

COMPARATIVE PHILOLOGY AND LINGUISTICS

PROFESSORS CASSIDY, HANLEY, HARRIS, HAUGEN, HEFFNER, JOOS, KASTEN; ASSOCIATE PROFESSORS BOTTKE, FOWLER, *chairman*, ZAWACKI; ASSISTANT PROFESSOR CHOU.

MAJOR IN LINGUISTICS

Requirements:

1. Two years' study (or the equivalent) of each of two foreign languages and one year's study of a third foreign language, of which
   a) one must be a non-Indo-European language, and
   b) no two may be in the same immediate language-group (i.e., not two Romance languages, not two Slavic languages).
2. A speaking and writing knowledge of one language equivalent to that gained in a third-year college course in conversation and composition (e.g., French 25; German 25; Latin 103; Greek 103).
3. A minimum of 20 credits chosen from those listed by the department, with the following courses required:

	Credits
English 185 or German 191	3
Linguistics 120	3
Linguistics 121	3
Linguistics 161	3
Linguistics 187	3
	15

Comparative Philology is primarily a graduate study. Requirements for the Ph.D. degree are listed in the bulletin of the Graduate School.

Courses with appropriate numbers are open to undergraduates.

LINGUISTICS

LINGUISTICS 120. THE LANGUAGES OF THE WORLD. I; 3 cr. Types of language; the geographical distribution of language groups; the relation of linguistics to other divisions of knowledge. Mr. Fowler and staff.

LINGUISTICS 121. PHONEMICS. II; 3 cr. Exercises in phonemic analysis followed by ten hours of practical work with a native speaker of a foreign language. Mr. Fowler.

LINGUISTICS 122. MORPHEMICS. II; 3 cr. Prerequisite: Linguistics 121. Exercises in morphemic analysis followed by concerted work on a descriptive statement of the structure of English. Mr. Fowler.

LINGUISTICS 161. COMMUNICATION THEORY. Sem. II; 3 cr. The functioning of language in social behavior; interrelations between its social stimulus function and its phonetic, grammatical and semantic peculiarities; theory of imperfect communication. Mr. Joos.

LINGUISTICS 187. THE BASES OF PHONETIC THEORY. Sem; 3 cr. Harmonic analysis acoustic phonetics. Analysis within the correspondences between all aspects of speech: articulatory, acoustic, perceptional, and phonemic. Lectures, discussion, laboratory, readings, term papers. Prequisites: English 185 or German 191, and consent of instructor. Mr. Joos.

CHINESE

COMPARATIVE PHILOLOGY AND LINGUISTICS 2a. Sem; 4 cr. First semester Chinese.

COMPARATIVE PHILOLOGY AND LINGUISTICS 2b. Sem; 4 cr. Second semester Chinese.

COMPARATIVE PHILOLOGY AND LINGUISTICS 12a. Sem; 3 cr. Third semester Chinese.

COMPARATIVE PHILOLOGY AND LINGUISTICS 12b. Sem; 3 cr. Fourth semester Chinese.

COMPARATIVE PHILOLOGY AND LINGUISTICS 65. CHINESE IMAGINATIVE LITERATURE. Sem; 3 cr. Poetry, drama, and fiction from the early and the late periods. Miss Chou.

COMPARATIVE PHILOLOGY

COMPARATIVE PHILOLOGY 201. THE COMPARATIVE GRAMMAR OF THE INDO-EUROPEAN LANGUAGES: PHONOLOGY. Sem; 2 cr. Distribution, classification of the languages of the Indo-European group. Alphabets; the comparative methods of study; probable sounds and their representatives in the several languages. To be given I, 1953–54, omitted 1952–53. Mr. Fowler.

COMPARATIVE PHILOLOGY 202. THE COMPARATIVE GRAMMAR OF THE INDO-EUROPEAN LANGUAGES: MORPHOLOGY. Sem; 2 cr. The probable forms and, with reference to syntax, their development in Sanskrit, Greek, Latin, Gothic; with attention to other languages, according to students' interests. Prerequisite: Comparative Philology 201. To be given II, 1953–54; omitted 1952–53. Mr. Fowler.

CLASSICS

LATIN 190. ITALIC DIALECTS. Sem; 2 cr. The languages of the Italic branch of Indo-European, exclusive of Latin. Oscan and Umbrian; grammar; detailed study of inscriptions. Brief survey of the other dialects. To be given II, 1952–53, and in alternate years. Mr. Fowler.

LATIN 225. THE GRAMMAR OF THE LATIN LANGUAGE: PHONOLOGY AND MORPHOLOGY. Sem; 2 cr. The position of Latin in the Indo-European family of languages; the origins of the sounds of Latin, and of the forms, with reference to syntax. To be given II, 1953–54, and in alternate years.

GREEK 191. GREEK DIALECTS. Sem; 2 cr. The languages of the Greek branch of the Indo-European family of languages; their characteristics; their grammar; study of selected inscriptions. To be given I, 1953–54, and in alternate years.

GREEK 226. THE GRAMMAR OF THE GREEK LANGUAGE: PHONOLOGY AND MORPHOLOGY. Sem; 2 cr. The position of Greek in the Indo-European family of languages; the origins of the sounds of Greek, and of the forms, with reference to syntax. To be given I, 1952–53, and in alternate years.

CELTIC PHILOLOGY

COMPARATIVE PHILOLOGY 131. OLD IRISH. Sem; 3 cr. Omitted 1950–51.

INDIC PHILOLOGY

In addition to the following courses, further advanced work in Sanskrit may be arranged with the chairman of the department.

COMPARATIVE PHILOLOGY 140. ELEMENTARY SANSKRIT. Sem; 3 cr. Mr. Fowler.

COMPARATIVE PHILOLOGY 141. ELEMENTARY SANSKRIT (continued). Sem; 3 cr. Mr. Fowler.

COMPARATIVE PHILOLOGY 240. VEDIC SANSKRIT. Sem; 2 cr. Selections from the Rig-Veda. Mr. Fowler.

COMPARATIVE PHILOLOGY 241. THE UPANISHADS. Sem; 2 cr. Mr. Fowler.

ENGLISH

ENGLISH 120a–b. OLD ENGLISH. Yr; 3 cr. Course 120a (required of candidates for the M.A.): The elements of Old English grammar, with selected readings. Course 120b: Readings in Old English lyric and heroic poetry. Mr. Cassidy.

ENGLISH 121. MIDDLE ENGLISH. Sem; 3 cr. The language and literature of England from the Norman Conquest to Chaucer. Mr. Hanley.

ENGLISH 123. HISTORY OF THE ENGLISH LANGUAGE. Sem; 3 cr. Standards of usage and pronunciation; development of the English vocabulary. If taken by candidates for the teachers' certificate, it should be taken in the junior year. Mr. Hanley.

ENGLISH 185. INTRODUCTION TO PHONETICS. Sem; 3 cr. Study of the production of speech sounds with some practice in the use of phonetic transcription. Mr. Hanley.

ENGLISH 186. ADVANCED PHONETICS. Sem; 3 cr. Special studies in phonetics adjusted to the tastes and interests of students electing the course. Students who elect 185 and 186 as preparation for later advanced work in the English language in America will be assigned 1 credit of extra work each semester. Mr. Hanley.

ENGLISH 227. HISTORY OF THE ENGLISH LANGUAGE. Yr; 2 cr. Mr. Hanley.

ENGLISH 235. INTRODUCTORY SEMINAR: ENGLISH LANGUAGE IN AMERICA. Yr; 2 cr. Studies using the Linguistic Atlas of the United States and the large collection of historical material available at the University of Wisconsin. Mr. Hanley.

FRENCH AND ITALIAN

FRENCH 141. HISTORY OF THE FRENCH LANGUAGE. Yr; 2 cr. Lectures and assigned readings. Prerequisite: French 22. Mr. Harris.

FRENCH 240. OLD FRENCH. Yr; 2 cr. Introductory seminar. Historical grammar and reading of Old French texts. Mr. Harris.

FRENCH 244. OLD PROVENÇAL. Yr; 2 cr. Mr. Harris.

FRENCH 273. ROMANCE PHILOLOGY. Yr; 2 cr. Mr. Harris, Mr. Kasten.

ITALIAN 171. INTRODUCTION TO ITALIAN PHILOLOGY. Sem; 2 cr. Derivation of the Italian language from Vulgar Latin; elementary phonology and morphology; reading of texts. Mr. Bottke.

GERMAN

GERMAN 150. HISTORY OF THE GERMAN LANGUAGE. Sem; 2 cr. The development of the German language; its sounds, forms, and vocabulary; its standardization. Mr. Joos, Mr. Heffner.

GERMAN 151. INTRODUCTION TO MIDDLE HIGH GERMAN. Sem; 3 cr. Middle High German grammar; readings in the *Nibelungenlied*. Mr. Joos, Mr. Heffner.

GERMAN 191. PHONETICS. Sem; 3 cr. General phonetics, with special reference to the teaching of German. Mr. Joos, Mr. Heffner.

GERMAN 255. OLD HIGH GERMAN. Sem; 3 cr. Readings, phonology, morphology, dialects. Mr. Heffner, Mr. Joos.

GERMAN 258. OLD SAXON. Sem; 3 cr. *Heliand* and *Genesis*. Mr. Heffner, Mr. Joos.

GERMAN 260. PHILOLOGICAL PROSEMINAR. Sem; 2 cr. Studies in the history of the German language. Investigations of short specimen texts; introduction to methods of philological and linguistic research. Mr. Heffner.

GERMAN 261. HISTORICAL GRAMMAR OF THE GERMAN LANGUAGE. Sem; 3 cr. Phonological and morphological consideration of High German. Mr. Heffner.

GERMAN 268. INTRODUCTION TO THE STUDY OF GERMANIC PHILOLOGY. Sem; 3 cr. Gothic: the general characteristics of the Germanic languages, with special reference to phonology.

GERMAN 269. INTRODUCTION TO THE STUDY OF GERMANIC PHILOLOGY. (continued). Sem; 3 cr. The general characteristics of West Germanic, Gothic, North Germanic, English, and High German; a general introduction to Germanic morphology. Mr. Heffner.

GERMAN 270. PHILOLOGICAL SEMINAR. Sem; 2 cr. Mr. Heffner, Mr. Joos.

SCANDINAVIAN LANGUAGES

SCANDINAVIAN 163. OLD NORSE. Yr; 3 cr. Reading of texts from the Sagas and Eddas with comparative study of the linguistic structure and literary style. Mr. Haugen.

SCANDINAVIAN 264. HISTORY AND STRUCTURE OF THE SCANDINAVIAN LANGUAGES. Sem; 3 cr. Introduction to Scandinavian linguistics, with selective readings. Open to graduate students with a reading knowledge of at least one Germanic language besides English. Offered 1953–54 and in alternate years. Mr. Haugen.

SLAVIC LANGUAGES

RUSSIAN 170. OLD CHURCH SLAVONIC. Sem; 2 cr. Mr. Folejewski.

SPANISH AND PORTUGUESE

SPANISH 128. SPANISH HISTORICAL GRAMMAR. Yr; 2 cr. An introduction to Spanish philology. To be given 1953–54. Mr. Kasten.

SPANISH 255. PHILOLOGICAL SEMINAR: OLD SPANISH. Yr; 2 cr. To be given 1952–53. Mr. Kasten.

SPANISH 258. SEMINAR IN HISTORICAL SPANISH SYNTAX AND LEXICOGRAPHY. Sem; 2 cr. Chronological study of representative texts. Mr. Kasten.

SPANISH 273. ROMANCE PHILOLOGY. Yr; 2 cr. Mr. Kasten.

CONSERVATION

(See Biological Aspects of Conservation, page 76.)

CONTEMPORARY TRENDS

103. CONTEMPORARY TRENDS. II; 3 cr. A nontechnical consideration of the sciences, emphasizing atomic energy, and the social sciences, stressing national and international problems. Lectures and assigned reading. Prerequisite: Senior standing or consent of instructor. Mr. McCamy and Committee.

ECONOMICS

PROFESSORS EARLEY, ELLSWORTH, GLAESER, GROVES, LESCOHIER, MORTON, PERLMAN, THATCHER, WITTE, *chairman;* ASSOCIATE PROFESSORS BRONFENBRENNER, MORGAN, TRIPP, YOUNG; ASSISTANT PROFESSORS CAMERON, ROTWEIN; INSTRUCTORS BRIDGMAN, WILMOT; LECTURER BRANDEIS.

MAJOR

For a major in Economics a minimum of 30 credits is required, including the following:

1. Economics 1a and 1b (General economics) and Economics 130 (Economic statistics).
2. At least *three* courses in the following "core-program" of work in intermediate economics (9 credits):

Economics 105 —Money and banking
Economics 124a—Public finance—taxation

Economics 142 —Public utilities
Economics 150 —Economic theory
Economics 156 —International trade
One course in Field III (Economic history and institutions)
One course in Field VI (Labor)

3. Additional optional credits to complete the minimum requirements of a total of *30 credits* in economics. Students not writing theses must complete *three* courses in any one of the fields of specialization, I–VIII, described on subsequent pages, into which the work of the department is divided.

Four optional credits may be met by the writing of a thesis if a student is invited to do so by the faculty in charge of the field of concentration. These may be written in any one of the fields of specialization, I–VIII. A minimum of two related courses in the field selected is required as a background for the thesis. High-school mathematical preparation is required.

Students must earn as many grade-points as credits in the courses taken in the major in order to be eligible for graduation.

APPLICATION OF ECONOMICS TO SPECIAL COURSES

SCHOOL OF COMMERCE. Many of the courses in economics are also listed by the School of Commerce and carry credit for degrees from that School. For information about the courses and requirements of the School of Commerce, consult its bulletin or Dean Fayette H. Elwell.

AGRICULTURAL ECONOMICS. The work in Agricultural Economics is offered in the College of Agriculture by the Department of Agricultural Economics, of which Professor Raymond J. Penn is chairman. The courses listed in Field II, however, may be taken for economics credit by Letters and Science students, outside of the Twenty-Credits Rule.

INDUSTRIAL RELATIONS. No program leading to a special degree in industrial relations is offered in any department of the University. The courses listed in Field VI are not vocational, but have value as preparation for practical work in dealing with labor and industrial relations problems in business, labor, and government. For information about courses in industrial relations offered in other departments of the University, consult the Director of the Industrial Relations Center of the University.

MUNICIPAL FINANCE AND ADMINISTRATION. A major in Municipal Finance and Administration has been established in the Division of the Social Studies. This major is designed as preparation for positions in municipal and county offices in which specific knowledge of governmental organizations, finance and accounting is necessary. Dean Elwell of the School of Commerce is in charge of this major.

TRAINING IN ECONOMIC STATISTICS. A sequence of courses in economics, commerce, agricultural economics, sociology and mathematics has been arranged for those who desire to prepare for statistical positions, both during the undergraduate and graduate work. A list of required and suggested courses may be obtained from Assistant Dean E. A. Gaumnitz of the School of Commerce, who is in charge, or from the Office of the Department of Economics.

COURSES OF INSTRUCTION IN ECONOMICS

INDEPENDENT WORK

100. SENIOR THESIS. Yr; 2 cr. Staff.

180. INDEPENDENT WORK IN ECONOMICS. I, II, or Yr; *cr. See page of this bulletin for requirements and procedure. Staff.

200. GRADUATE THESIS. Yr; *cr. Staff.

280. INDEPENDENT WORK. I, II, or Yr; *cr. Prerequisites: Graduate standing and consent of major professor. Staff.

INTRODUCTORY COURSES

1a. General Economics. I, II; 4 cr. Fundamental economic institutions and problems of the American economy and modern economic society; principles of production, exchange, value and price, economic policies. Prerequisite: Sophomore standing. Mr. Wilmot, et al.

1b. General Economics. I, II; 4 cr. Wages, interest, rent; profits; price changes, including inflation and deflation; cycles of prosperity and depression; consumption; public expenditures, taxation, and debts; government regulation; economic systems such as capitalism, socialism, and communism. Prerequisite: Economics 1a. Mr. Wilmot, et al.

I. ECONOMIC THEORY

102. Historical and Institutional Economists. II; 3 cr. A historical survey of the development of economics from the Greeks to the present time with emphasis upon the historical and institutional writers. Prerequisites: Senior standing and two courses in economics. Given alternately with Economics 118. Mr. Glaeser.

118. Institutional Economics. II; 3 cr. (See Group III, Economic History and Institutions.)

131. Wage Determination. II; 3 cr. (See Group VI, Labor.)

150. Economic Theory. I, II; 3 cr. Nature, purposes of economics. Relation of theory to facts, institutions, investigation. Survey of contemporary consumption, production, pricing, resources allocation, distribution theory. Undergraduates and graduates have different sections. Prerequisites: For undergraduates, two courses in economics. Mr. Earley, Mr. Rotwein.

173. Economics of Consumption. II; 3 cr. Consumer choice and the economic order. Consumption and saving and their effects upon income and employment. Monopoly and advertising and the consumer. Prerequisite: Economics 1b or consent of instructor. Mr. Rotwein.

181. Business Cycles. I, II; 3 cr. Principles applicable to the study of the business cycle; examination of leading theories and proposed remedies. Prerequisite: Economics 1a; Economics 105 recommended. Mr. Morgan.

182. Economic Control. I; 3 cr. Factors affecting the long-run stability of the economic system; stabilization through measures of economic literature, control and planning. Prerequisite: Economics 1a; Economics 105 recommended. Mr. Ellsworth.

183. Distribution of Wealth. I, II; 3 cr. Theory of wages, interest, rent, and profits under pure and imperfect competition. Statistical data on distribution. "Exploitation" and "maldistribution" problems. Prerequisite: Economics 150 or concurrent registration. Mr. Bronfenbrenner.

184. The Theory of Imperfect Competition. II; 3 cr. Price and output under noncompetitive conditions. Analysis of effects of product differentiation and related problems. Prerequisites: Two courses in economics. Mr. Rotwein.

192. Money, Income, and Prices. I; 3 cr. (See Group IV, Finance.)

193. Full Employment Policies. 3 cr. (See Group IV, Finance.)

194. Wealth and Income. 2 or 3 cr. (See Group VIII, Statistics.)

197. Mathematical Economics. I; 3 cr. Mathematical techniques used in economic analysis. Historical illustrations of their application. Prerequisite: Graduate standing or two years of mathematics. Mr. Bronfenbrenner.

201. Development of Economics. Yr; 2 cr. A critical survey of economic thought from the mercantilists to recent writers with emphasis upon the "classical tradition" in the broad sense of that term. Prerequisite: Graduate standing. Mr. Earley.

204. Economic Method. Yr; 2 cr. The structure of economic thought; its logic, psychol-

ogy, aim, purpose, and content. Application of operational methods and procedures to economic problems. Prerequisite: Graduate standing. Mr. Morton.

205. BANKING AND MONETARY THEORY. Yr; 2 cr. (See GROUP IV, FINANCE.)

221. LAND ECONOMIC THEORY. II; 2 cr. (See GROUP II, AGRICULTURAL ECONOMICS.)

229. SEMINAR IN ADVANCED AGRICULTURAL ECONOMICS. II; 3 cr. (See GROUP II, AGRICULTURAL ECONOMICS.)

250. SEMINAR IN ECONOMIC THEORY. Yr; 2 cr. Critical discussion of debatable topics in the field of economic theory. Prerequisite: Graduate standing. Staff.

253. SEMINAR IN INTERNATIONAL ECONOMICS. Yr; 2 cr. (See GROUP V, INTERNATIONAL ECONOMICS.)

281. BUSINESS CYCLE THEORY. II; 2 cr. Critical examination of recent theoretical literature; individual research in selected aspects of current theoretical interest. Prerequisite: Graduate standing. Mr. Ellsworth.

297. ECONOMETRICS. 3 cr. (See GROUP VIII, STATISTICS.)

II. AGRICULTURAL ECONOMICS

4. INTRODUCTION TO THE ECONOMICS OF AGRICULTURE. II; 3 cr. A general introduction to the economics of agriculture; economic problems and principles in its organization; the place of agriculture in modern life; general relation of government to agriculture. Prerequisite: Economics 1a. Mr. Parsons.

106. BASIC ECONOMIC DATA IN AGRICULTURE. I; 3 cr. A survey of major agricultural data bodies from federal and state sources; their origins, characteristics, elements of organization and processing and sources. Prerequisite: Economics 1b or Economics 4. Mr. Ebling.

107. AGRICULTURAL DATA SYSTEMS AND METHODS. II; 3 cr. A critical analysis and evaluation of the various systems and methods used in providing data on agriculture; historical development of systems and methods. Prerequisite: Economics 106 or consent of instructor. Mr. Ebling.

111. ADVANCED FARM MANAGEMENT. I; 3 cr. Economic analysis of practical farm operations with case studies; attention to farm planning and basic theoretical concepts. Prerequisite: Senior standing. Mr. Day.

117. OUTLINES OF LAND ECONOMICS. I; 3 cr. Economic principles underlying utilization and conservation of land or natural resources. Prerequisites: Economics 1a and junior standing. Mr. Loomer, Mr. Penn.

125. MARKETING AGRICULTURAL PRODUCTS. I; 3 cr. Principles and practices of agricultural marketing; market prices and costs; case studies. Prerequisite: Economics 1a. Mr. Schaars.

126. ECONOMICS OF AGRICULTURAL PROCESSING INDUSTRIES. II; 3 cr. Economic theory of production, pricing and market control applied to agricultural processing; government regulations and public policy; case studies. Prerequisite: A course in marketing or the equivalent. Mr. Clodius.

127. CO-OPERATION. I, II; 3 cr. Analysis of marketing organizations, methods and theory underlying producer and consumer co-operatives at home and abroad. Prerequisite: A course in marketing, junior standing, or consent of instructor. Mr. Bakken, Mr. Schaars.

128. MARKETING DAIRY PRODUCTS. I; 3 cr. Economic factors involving marketing milk and milk products; trade channels, market organizations, sales, pricing plans, costs, regulation, consumer demand. Prerequisite: A course in marketing. Mr. Cook.

129. CO-OPERATIVE MANAGEMENT PROBLEMS. II; 2 cr. Consideration of business structure of co-operative associations; problems involving organization, membership relations, financing, trade and sales practices, administrative policies. Prerequisite: Economics 127 or consent of instructor. Mr. Schaars.

152. FARMER MOVEMENTS. I; 3 cr. History of farmers' efforts to improve their status through organizations designed to control markets and influence legislation. Prerequisite: Economics 1a or consent of instructor. Mr. Penn.

155. PRICES OF AGRICULTURAL PRODUCTS. II; 3 cr. Analysis and interpretation of factors affecting agricultural prices; study of price movements; price policy. Prerequisite: Economics 1b. Mr. Halvorson.

162. AGRICULTURAL POLICIES. II; 2 cr. Analysis of governmental aids to agriculture in the United States and abroad. Prerequisite: Senior standing. Mr. Penn.

179. URBAN LAND ECONOMICS. I, II; 3 cr. The institutional background of real property, economics of urbanization, forces of demand for urban land, factors of supply, the building industry, real-estate credit, the real-estate market, cyclical fluctuations, rents and prices, real-estate market analysis, city growth and structure, value and valuation. Prerequisites: Economics 1a and junior standing. Mr. Andrews, Mr. Ratcliff.

210. SEMINAR IN THE ECONOMICS OF AGRICULTURAL PRODUCTION. I; 2 cr. Economic analysis and research procedure applied to the organization of agricultural production in relation to the farm business. Prerequisite: Graduate standing. Mr. Day, Mr. McNall.

211. SEMINAR IN FARM MANAGEMENT. II; 2 cr. History and development of farm management; survey and evaluation of research and research methods. Prerequisite: Graduate standing. Mr. McNall, Mr. Staniforth.

221. SEMINAR IN LAND ECONOMIC THEORY. II; 2 cr. Economics of land utilization, theories of rent, principles of land valuation and taxation. Prerequisite: Graduate standing. Mr. Loomer, Mr. Penn.

225. SEMINAR IN AGRICULTURAL MARKETING. I; 2 cr. Basic problems; organization and methods of marketing research; review of economic literature in marketing; marketing legislation. Offered in 1952–53 and alternate years. Prerequisite: Graduate standing. Mr. Schaars.

226. SEMINAR IN LAND PROBLEMS. Yr; 2 cr. Land tenure and utilization research and policy problems. Prerequisite: Graduate standing. Mr. Loomer, Mr. Penn.

227. SEMINAR IN LEGAL-ECONOMIC ASPECTS OF CO-OPERATIVES I; 2 cr. Relationship of economic and legal problems in co-operative organization, similarities and differences with general corporation law. Prerequisite: Graduate standing. Mr. Bakken, Mr. Stedman.

228. SEMINAR IN THEORY OF MARKETS AND MARKETING. II; 2 cr. Studies of the historical development of markets, modern market institutions such as auctions, clearing houses, exchanges, and boards of trade. Prerequisite: Graduate standing. Mr. Bakken.

229. SEMINAR IN ADVANCED AGRICULTURAL ECONOMICS. II; 3 cr. The field of agricultural economics with respect to its origins and main issues. Prerequisite: Graduate standing. Mr. Parsons.

255. SEMINAR IN PRICE ANALYSIS. II; 2 cr. Application of statistical and other methods involved in analyzing agricultural price and related problems. Prerequisite: Economics 196 or equivalent. Mr. Halvorson.

279. SEMINAR IN URBAN LAND ECONOMICS. Yr; 2 cr. Special management problems and public policy issues relating to land development and land utilization in urban areas. Prerequisite: Graduate standing or consent of instructor. Mr. Ratcliff.

III. ECONOMIC HISTORY AND INSTITUTIONS

118. INSTITUTIONAL ECONOMICS. I; 3 cr. Historical development of the institutional organization of economic society. Special attention given to the bearing of constitutional law upon the changing structure and to the relationship between economic and other social theories. Prerequisites: Graduate standing or senior standing and two courses in economics. Given alternately with Economics 102. Mr. Glaeser.

119. EVOLUTION OF INDUSTRIAL SOCIETY. I; 3 cr. Guilds, mercantile capitalism, industrial

capitalism, finance capitalism, and management capitalism viewed as institutional framework for economic activity. Prrerequisites: Economics 1a and junior standing. Mr. Perlman.

120. Social Security. I; 3 cr. Deals with all aspects of social security, including old-age security, health insurance, workmen's compensation, unemployment insurance, social assistance. Prerequisites: Economics 1a and junior standing or major in social work. Mr. Witte.

133. Financial History of the United States. I; 3 cr. (See Group IV, Finance.)

134. Economic History of the United States. I; 3 or 4 cr. Evolution of the American economy from household manufacturing to large-scale industry. Development of agriculture, transportation and trade. Analysis of merchant, industrial and finance capitalism. Changing role of government in the economy. Prerequisite: Economics 1a. Miss Brandeis.

140a and b. European Economic History Since 1700. Yr; 3 cr. New technologies in industry and transport. The factory system and the working class. Victorian and modern liberalism. Central banking. Cartels. Railroads and regulations. The new power economy. Prerequisites: Two courses in economics. Mr. Cameron.

143. Structure of the American Economy. I, II; 3 cr. Major aspects of economic structure. Problems of consumption, distribution, location, and business organization. Prerequisite: Economics 1a. Mr. Rotwein.

144. Capitalism and Socialism. II; 3 cr. (See Group VI, Labor.)

145. American Labor History. I, II; 3 cr. (See Group VI, Labor.)

146. Government and Business. I, II; 3 cr. General survey of governmental activities affecting business with emphasis upon aspects not dealt with in other courses. Prerequisites: Economics 1a and junior standing. Mr. Witte.

152. Farmer Movements. I; 3 cr. (See Group II, Agricultural Economics.)

158. Large-Scale Enterprise. II; 3 cr. The modern industrial structure; competition and concentration; combinations and cartels; economic and legal restrictions upon size. Prerequisite: Economics 1a. Mr. Wilmot.

160. Economic Problems of Underdeveloped Areas. I; 3 cr. (See Group V, International Economics.)

161. European Economic and Cultural Development. II; 3 cr. A case study of the industrialization of continental Europe. Population, food supply, resources, technology and capital formation, social structure, and government policy. Prerequisites: A course in Modern European History and Economics 1a. Mr. Cameron.

190. Monopolies and Cartels. I; 3 cr. A study of the nature, structure, extent, policies, effects, and control of domestic monopolies, international cartels, and international commodity agreements (except in labor, public utilities and transportation). Prerequisites: Economics 1a and junior standing. Mr. Wilmot.

220. Seminar in Social Security. Yr; 2 cr. The history, present status, current problems, trends in social security in the United States and abroad. Prerequisite: Graduate standing. Mr. Miles, Mr. Witte.

240. Seminar in Modern European Economic History. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Cameron.

246. Role of Government in the Economy. Yr; 2 cr. Historical and current over-all relations between government and business. Prerequisite: Graduate standing. Mr. Witte.

258. Imperfect Competition and the Law. Yr; 2 cr. Related legal and economic problems on the control of monopoly, business practices, and prices. Prerequisites: Graduate standing and consent of instructor. Mr. Stedman, M[illegible]. Earley, Mr. Rotwein.

IV. FINANCE

103. Financial Institutions. I or II; 3 cr. Our financial institutions as an integrated system, including savings banks, trust, savings and loan companies, etc.; consumption finance, agricultural finance, government credit institutions. Inter-relationships. Market structure. Economic functions. Adequacy. Prerequisite: Economics 105. Mr. Earley.

105. Money and Banking. I, II; 3 cr. Monetary and banking principles and practice; price theories; banking systems and their operation. Prerequisite: Economics 1a. Mr. Morton.

110. Investment Principles. I, II; 3 cr. Analysis of the capital market and its principles. Prerequisite: Economics 137. Mr. Fraine.

124a. Public Finance—Taxation. I, II; 3 or 4 cr. Specific taxes which make up the national, state, and local systems with special emphasis upon the practical social problems involved. Prerequisites: Economics 1a and junior standing. Mr. Groves.

124b. Public Finance—Taxes, Debts, Expenditures. I, II; 3 cr. Social security taxes; revenue other than taxes; federal-state-local fiscal relationships; public expenditures; public debts; fiscal policy. Prerequisite: Economics 124a or consent of instructor. Mr. Groves.

133. Financial History of the United States. 3 cr. Monetary and financial institutions and practices from colonial times to the present. Federal, state and municipal finance. Tariff legislation and its financial implications. Prerequisites: Economics 1a and junior standing. Mr. Morton.

137. Corporation Finance. I, II; 3 cr. Corporate organization and control; corporation securities; management of fixed capital, working capital, income; reserve, surplus, dividend policies; investment banking and securities market; failure and reorganization. Prerequisite: Economics 1a. Mr. Graner.

153. International Finance. I; 3 cr. (See Group V, International Economics.)

158. Large-Scale Enterprise. II; 3 cr. (See Group III, Economic History and Institutions.)

188. Federal Tax Policies. II; 3 cr. Problems of over-all fiscal redistribution of wealth and income. Prerequisites: Economics 105 and 124a. Mr. Bronfenbrenner.

191. The Credit System. II; 3 cr. Operations and policies of commercial and central banks. Domestic and international credit relationships. Prerequisite: Economics 105. Mr. Morton or Mr. Earley.

192. Money, Income and Prices. I; 3 cr. Monetary standards, the value of money, monetary equilibrium, employment, output and prices, monetary policy and public finance. Prerequisite: Economics 105. Mr. Morton or Mr. Earley.

193. Full Employment Policies. 3 cr. Monetary, banking, credit and fiscal policies. Monopoly, competition and the national debt. Price rigidities, flexibilities, and policies affecting output and employment. Prerequisite: Economics 1b or 105 or graduate standing. Mr. Morton.

203. Seminar in Economics of Credit Institutions. I or II; 2 cr. Individual research, seminar reports and group discussion of selected economic problems related to the structure and functioning of the financial system. Prerequisites: Graduate standing and one of Economics 103, 191 or 192 or equivalent. Mr. Earley.

205. Banking and Monetary Theory. Yr; 2 cr. Monetary policy; prices, capital formation, and economic activity. Liquidity, solvency, the gold standard, managed currency, stability, inflation and deflation. Prerequisites: Graduate standing, a course in economic theory and the equivalent of Economics 191 or 192. Mr. Morton.

224. Seminar in Public Finance. Yr; 2 cr. Advanced study of public finance problems and literature; research. Subject matter changes from year to year; seminar may be repeated.

Prerequisites: Graduate standing and Economics 124 or consent of instructor. Mr. Groves.

237. SEMINAR IN FINANCE. Yr; 2 cr. Comprehensive and intensive consideration of selected problems of current and permanent import in financial administration. Individual research, class reports, and group discussion. Prerequisite: Consent of instructor. Mr. Fraine.

V. INTERNATIONAL ECONOMICS

105. MONEY AND BANKING. I, II; 3 cr. (See GROUP IV, FINANCE.)

141. ECONOMIC PROBLEMS OF THE FAR EAST. I; 3 cr. Economic history of southeast Asia following contact with western civilization. Present problems of population, development, capital formation, and forms of economic organization. Prerequisites: Economics 1a and junior standing. Mr. Bronfenbrenner.

151. ECONOMIC PROBLEMS OF LATIN AMERICA. I or II; 2 cr. A study of the economic characteristics of the principal Latin American countries, and of the leading economic problems which confront them. Prerequisite: Economics 1a. Mr. Ellsworth, Mr. Morgan.

153. INTERNATIONAL FINANCE. I; 3 cr. Theory and recent experience in currency standards, international banking, exchange fluctuations, and exchange controls. International monetary co-operation, and special topics. Prerequisite: Economics 105; Economics 156 recommended. Mr. Morgan.

156. INTERNATIONAL TRADE. I, II; 3 cr. Development of international trade and finance, and theory applied to them since mercantilist times; major current problems in international economic relations. Prerequisite: Economics 1a. Mr. Ellsworth, Mr. Morgan.

157. INTERNATIONAL ECONOMIC POLICY. II; 3 cr. Problems relating to tariffs, quotas, cartels, and international investment. International collaboration, and the relation between domestic and international policy. Prerequisite: Economics 156. Mr. Ellsworth, Mr. Morgan.

160. ECONOMIC PROBLEMS OF UNDERDEVELOPED AREAS. II; 2 cr. Problems of development of selected areas; agricultural technology, economic institutions and population pressure; consumption, savings and capital formation; principles of economic development. Prerequisites: Senior standing and two courses in economics. Mr. Ellsworth, Mr. Morgan, Mr. Parsons.

253. SEMINAR IN INTERNATIONAL ECONOMICS. Yr; 2 cr. Intensive study of the basic theoretical literature of international trade and finance, and of current international economic problems. Prerequisites: Economics 156 and 157 or consent of instructor. Mr. Ellsworth.

VI. LABOR

119. EVOLUTION OF INDUSTRIAL SOCIETY. I; 3 cr. (See GROUP III, ECONOMIC HISTORY AND INSTITUTIONS.)

120. SOCIAL SECURITY. I; 3 cr. (See GROUP III, ECONOMIC HISTORY AND INSTITUTIONS.)

122. LABOR PROBLEMS. I, II; 3 cr. The problems of labor in the American "market economy" with special regard to the group organizations of labor and management, their interrelations and relations to the government. Prerequisites: Economics 1a and junior standing. Mr. Young.

123. LABOR LEGISLATION. II; 3 or 4 cr. Government regulation of labor conditions: child labor, wage and hour laws; accident and unemployment compensation; old-age insurance; the law of collective bargaining. Prerequisite: Economics 1b or consent of instructor. Miss Brandeis.

131. WAGE DETERMINATION. II; 3 cr. The economic and institutional forces which determine wages; wage theories; wages in relation to other aspects of the economy and social order. Prerequisites: Senior standing and economic or commerce major, or consent of instructor. Mr. Lescohier.

144. CAPITALISM AND SOCIALISM. II; 3 cr. Capitalism, unionism, socialism, fascism, and

individualistic anti-capitalism, each viewed under the headings of conditions, theories, and movements. Prerequisites: Economics 1a and senior standing. Mr. Perlman.

145. American Labor History. I, II; 3 cr. The American labor movement's historical experiment with the temper of the American community, the political and legal institutions, and with the psychology of labor. Labor's contributions to collective democracy. Prerequisites: Economics 1a and junior standing. Mr. Perlman, Mr. Young.

147. Foreign Labor Movements. II; 3 cr. Labor movements of the most important countries. Historical, descriptive and analytical. Prerequisites: Economics 1a and junior standing. Mr. Perlman.

148. The Economics of Collective Bargaining. I, II; 3 cr. Major problems in present-day collective bargaining; practical aspects and economic implications. Prerequisite: Economics 1b or consent of instructor. Mr. Tripp.

172. Industrial Conflict. I; 3 cr. Critical analysis of the issues in industrial conflict, such as seniority, discipline, man-effort, wage conflicts, strikes. Prerequisite: Economics 1b or a labor course or consent of instructor. Mr. Lescohier.

174. The Labor Market. I; 3 cr. Economic and social processes determining employment; unemployment problems; full employment; theory of employment; policies for control of employment and unemployment. Prerequisite: Economics 1a. Mr. Lescohier.

220. Seminar in Social Security. Yr; 2 cr. (See Group III, Economic History and Institutions.)

222. Seminar in Labor. Yr; 2 cr. Research seminar in the problems of organized labor in industry and in labor history. Prerequisite: Graduate standing. Mr. Perlman, Mr. Young.

248. Seminar in Collective Bargaining. Yr; 2 cr. Legal and economic aspects of current issues in collective bargaining. Prerequisite: Graduate standing. Miss Brandeis, Mr. Feinsinger, Mr. Perlman, Mr. Rice, Mr. Tripp, Mr. Witte.

249. Government and Labor. Yr; 2 cr. Basic and current problems in labor legislation and the government's role in industrial relations. Prerequisite: Graduate standing. Mr. Tripp, Mr. Witte.

274. Seminar in the Labor Market. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Lescohier.

VII. PUBLIC UTILITIES

135. Railway Transportation. I; 3 cr. History and development of railway transportation and regulation in the United States. Prerequisite: Economics 1a. Mr. Thatcher.

136. Transportation Problems. II; 3 cr. Emphasis on economic aspects of commercial transportation; railways, highway, water and air carriers—survey of recent and present-day regulatory and operating problems. Prerequisite: Economics 1a. Mr. Thatcher.

142. Public Utilities. I, II; 3 cr. Development of public utilities in the United States. Legal and economic theories of regulation. Development of regulation agencies and their methods. Conservation and multiple-purpose projects. Prerequisite: Economics 1a. Mr. Glaeser.

189. Railway Rates and Traffic. I; 2–3 cr. Freight rate structure, adjustment of rates by the Interstate Commerce Commission, traffic control and management. Prerequisite: Economics 1a. Mr. Thatcher.

266. Seminar in Public Utilities. Yr; 2 cr. Research in the field of local public utilities with special emphasis on federal and state conservation and power projects. Prerequisite: Graduate standing or consent of instructor. Mr. Glaeser.

VIII. STATISTICS

130. Economic Statistics. I, II; 3 cr. Sources of statistical data, tabulation, charting,

averages, dispersion, sampling and probability, index numbers, trends, seasonal variation, economic cycles, correlation. Prerequisite: Economics 1a. Mr. Gaumnitz.

132. STATISTICAL ECONOMICS. I, II; 3 cr. Applications of methods to problems of the students' interest. Study of reports and forecasts of business firms, bureaus, agencies. Prerequisite: A course in statistics. Mr. Gaumnitz.

194. WEALTH AND INCOME. I or II; 2 or 3 cr. Wealth and income and their principal components in the United States; some international comparisons. Relationship to economic welfare. Problems in definition and measurement. Prerequisites: Economics 1b and a course in statistics. Mr. Bronfenbrenner.

196. ADVANCED STATISTICAL TECHNIQUE. I, II; 3 cr. Intermediate and advanced methods of analyzing data. Prerequisite: A course in statistics. Mr. Fox.

197. MATHEMATICAL ECONOMICS. I; 3 cr. (See GROUP I, ECONOMIC THEORY.)

198. BUSINESS CYCLE STATISTICS. II; 2 or 3 cr. Statistical series involved in cycles. Their historical and cyclical records. Isolation of "cycles" in statistical series. Introduction to economic forecasting. Prerequisite: Economics 130. Mr. Bronfenbrenner.

230. SEMINAR IN STATISTICAL RESEARCH. Yr; 2 cr. Co-operative research in one or more economic problems, each member of the class concentrating on a selected phase of the common subject. Prerequisite: Graduate standing. Mr. Gaumnitz.

255. SEMINAR IN PRICE ANALYSIS. II; 2 cr. (See GROUP II, AGRICULTURAL ECONOMICS.)

297. ECONOMETRICS. 3 cr. Statistical formulation and testing of economic theory. Demand curves. Production functions. Keynesian models. Prerequisite: Graduate standing or consent of instructor. Mr. Bronfenbrenner.

IX. SPECIAL COURSES

139. PRINCIPLES OF INSURANCE. I, II; 3 cr. Designed (1) to precede advanced work in insurance and prerequisite thereto, and (2) to acquaint the non-specialist with the economic and social services of the institution of insurance. Prerequisite: Economics 1a. Mr. Center.

154. RISK AND PROFIT. 3 cr. Nature of economic risk; relation to profit. Causation, prediction, probability. Functions and operations of the price system. Capital theory. A functional explanation of variations in business profits. Prerequisite: Economics 1b or 105. Mr. Morton.

166. ECONOMICS OF POPULATION. 3 cr. Changes in the size and location of populations, as related to levels of income and business activity. Prerequisites: Junior standing and Economics 1a or Sociology 1 or 2. Mr. Morgan.

167. POPULATION POLICIES. 2 cr. Population policies in various countries as related to their quantitative and qualitative bases. Migration policies. Prerequisite: Economics 1a or Sociology 1 or 2. Mr. Morgan.

179. URBAN LAND ECONOMICS. I, II; 3 cr. (See GROUP II, AGRICULTURAL ECONOMICS.)

279. SEMINAR IN URBAN LAND ECONOMICS. Yr; 2 cr. (See GROUP II, AGRICULTURAL ECONOMICS.)

The following courses may be taken for credit by Letters and Science students under the Twenty-Credits Rule (see Section 17, page 41) without special permission of the dean. These courses do not count toward the major in economics.

COMMERCE 43. BUSINESS ETHICS.

COMMERCE 109. COMMERCIAL LAW.

COMMERCE 111. INDUSTRIAL MANAGEMENT.

COMMERCE 121. FIRE AND CASUALTY INSURANCE.

COMMERCE 138. LIFE INSURANCE.

COMMERCE 168. HIGHWAY TRANSPORTATION.

COMMERCE 169. AIR TRANSPORTATION.

COMMERCE 171. PERSONNEL MANAGEMENT.

COMMERCE 178. HOUSING PROBLEMS.

COMMERCE 195. PUBLIC UTILITY MANAGEMENT.

ENGLISH

PROFESSORS BUCKLEY, CASSIDY, CLARK, DORAN, ECCLES, FULCHER, HANLEY, HOFFMAN, HUGHES, *chairman,* LACY, POCHMANN, POOLEY, QUINTANA, WALLERSTEIN, WHITE; ASSOCIATE PROFESSORS DOREMUS, RODMAN, WILEY; ASSISTANT PROFESSORS PRESSON, THOMAS, WOODRING; INSTRUCTORS BLANCHARD, CLEVELAND, ENCK, GREENFIELD, JEROME, KING, RUBINSTEIN, SWANDER, WHITLEY.

MAJOR. A minimum of 24 credits in advance of all required courses in freshman and sophomore English. These 24 credits must include (1) one, and only one, of the following: 37, 136, 137; (2) two of the following, one of which must be either Chaucer or Milton: 57, 129, 131, 156, 157, 160, 161, 162; (3) at least one of the following: 112, 114, 132, 133, 134, 135, 138, 139b, 150, 169, 174.

No senior thesis in English is now required, though any student whose grades in English courses taken at the University of Wisconsin average *B* may write a senior thesis. The senior thesis will carry 4 credits, normally spread over two semesters.

Candidates for the English major must have maintained a 1.5 grade-point average in their courses in that subject during the freshman and sophomore years. Students intending to choose English as their major study are urged to complete the introductory course (30, 32, 33 or 40) not later than the close of the sophomore year. Students entering with advanced standing are required to earn 15 credits in English in advanced courses in residence at the University of Wisconsin.

HONORS. Students reading for honors in English will enter upon their work in the first semester of their junior year, under the direction of tutors. They will be expected to devote much of the following summer to assigned general reading and will continue the work through the senior year. Prerequisites: An average of 2.5 grade-points per credit for the first four semesters and the written recommendation of three sophomore instructors. For further information consult the chairman of the department.

WRITING CLINIC. The aim of the Writing Clinic is to provide diagnosis and remedial work for students whose writing is judged unsatisfactory by instructors outside the English Department. Since facilities are limited, instructors are urged to refer such students to the Clinic as early as possible in the semester. Consult Mrs. Jerome, 363 Bascom Hall.

TEACHING MAJOR AND MINOR. See School of Education.

COMPOSITION COURSES

0. SUB-FRESHMAN ENGLISH. I, II; 0 cr. A noncredit course on the pre-college level in fundamentals and writing; open only to students not admitted to English 1a. Mr. Lacy and staff.

1a. FRESHMAN ENGLISH. I, II; 3 cr. All entering freshmen in all colleges are assigned, on the basis of performance in placement tests, to appropriate courses in Freshman English. For the great majority of students this assignment is English 1a. (Students who receive a grade of *A* in English 1a will have completed the Freshman English requirement.) Mr. Lacy and staff.

1b. FRESHMAN ENGLISH. I, II; 3 cr. Prerequisite: English 1a. A passing mark in English 1b completes the Freshman English requirement. But any grade in English 1b is provisional: if subsequently a student is reported deficient or careless in English composition, he may be required to take additional work in that subject. Mr. Lacy and staff.

2. INTERMEDIATE COMPOSITION. I, II; 3 cr. Prerequisite: Completion of Freshman English requirement. The main emphasis is on various types of exposition. Mr. Rodman and staff.

3. INTRODUCTION TO CREATIVE WRITING. I, II; 3 cr. Prerequisite: Completion of Freshman English requirement. Mr. Presson and staff.

9. NONCREDIT COURSE IN PRACTICAL ENGLISH FOR FOREIGN STUDENTS. I, II. For further information consult the instructors, Miss King, Mr. Wiley.

11. FRESHMAN ENGLISH. I, II; 3 cr. Students are assigned to this course on the basis of placement tests. Successful completion of this one-semester course fulfills the Freshman English requirement. Mr. Lacy and staff.

105. CREATIVE WRITING. Yr; 2 or 3 cr. Prerequisite: Consent of instructor. Miss White.

106. CREATIVE WRITING. Yr; 2 or 3 cr. Prerequisite: Consent of instructor. Mr. Fulcher.

107. CREATIVE WRITING. Yr; 2 or 3 cr. Prerequisite: Consent of instructor. Mr. Enck.

INTRODUCTORY LITERATURE COURSES

Students may fulfill the B.A. and B.S. requirements of 6 credits in sophomore literature by taking two semesters of work from the courses hereinafter described—30, 32, 33, 40. To complete the sophomore requirement, a student may offer any combination of semester courses with the exception that 30 and 33 may not in any way be combined.

30. SURVEY OF ENGLISH LITERATURE. Yr; 3 cr. An appreciative study of representative work by the most outstanding English writers, set against historical background. Prerequisite: Completion of Freshman English requirement. Miss Wallerstein, Miss White and staff.

32. CONTEMPORARY LITERATURE. Yr; 3 cr. An approach to literature through significant and representative modern prose and poetry. Prerequisite: Completion of Freshman English requirement. Mr. Fulcher, Mr. Lacy, Mr. Wiley and staff.

33. INTRODUCTION TO ENGLISH LITERATURE. Yr; 3 cr. A non-chronological course in English literature, with emphasis upon some ten great writers. Prerequisite: Completion of Fresh man English requirement. Mr. Cleveland, Mr. Quintana, Mr. Woodring and staff.

40. AMERICAN LITERATURE. Yr; 3 cr. An introductory survey of the major spokesmen of Americanism. Prerequisite: Completion of Freshman English requirement. Mr. Clark, Mr. Pochmann, Mr. Hoffman and staff.

ENGLISH LANGUAGE AND LITERATURE

23. AMERICAN ENGLISH. Sem; 3 cr. The English language in America since the seventeenth century; development of distinctive characteristics of vocabulary, pronunciation, and grammar, and establishment of regional varieties within the United States. Mr. Cassidy.

57. SHAKESPEAREAN DRAMA. Yr; 3 cr. A broad course for undergraduates. Miss White.

57. MILTON. Sem; 3 cr. All of Milton's English poetry is read and some of his prose. Either 57 or 157 (which see) is offered yearly. Mr. Hughes, Mr. Quintana.

68. THE NOVEL IN THE MODERN WORLD. Does not give credit in English. (See COMPARATIVE LITERATURE 68.) Offered 1952–53 and in alternate years. Mr. Fulcher.

99. INDEPENDENT READING. Yr; *cr. Independent reading under adequate direction for undergraduates not candidates for honors. For further information consult the chairman.

100. SENIOR THESIS. Yr; 2 cr. Students must register with the secretary of the department for individual theses.

108. BRITISH DRAMA. 1660–1860. Sem; 3 cr. Plays, playwrights, and theaters from Restoration to sentimental comedy, from heroic to gothic tragedy, from Dryden to Shelley. Mr. Mitchell.

109. BRITISH DRAMA, 1860 TO THE PRESENT. Sem; 3 cr. Melodrama, realism, high comedy

and the social play, including Robertson, Jones, Pinero, Gilbert, Wilde, Shaw, Galsworthy and contemporary playwrights. Mr. Mitchell.

112. HAWTHORNE, MELVILLE, AND MARK TWAIN. Sem; 3 cr. Their literary personalities and range of ideas. Mr. Pochmann.

114. POE, EMERSON, AND WHITMAN. Sem; 3 cr. Study of their ideas and literary theories in relation to their times. Mr. Pochmann.

115. ENGLISH DRAMA BEFORE SHAKESPEARE. Sem; 3 cr. Medieval and Renaissance drama including Marlowe and other predecessors of Shakespeare. Mr. Eccles.

116. ENGLISH DRAMA IN THE TIME OF SHAKESPEARE. Sem; 3 cr. The chief English dramatists, excluding Shakespeare, from 1593 to the closing of the theaters in 1642. Mr. Eccles.

120a–b. OLD ENGLISH. Yr; 3 cr. 120a (required of candidates for the M.A.): The elements of Old English grammar, with selected readings. Mr. Cassidy, Mr. Presson. 120b: Readings in Old English lyric and heroic poetry. Mr. Cassidy.

121. MIDDLE ENGLISH. Sem; 3 cr. The language and literature of England from the Norman Conquest to Chaucer. Mr. Hanley.

122. BEOWULF. Sem; 3 cr. Mr. Hanley.

123. HISTORY OF THE ENGLISH LANGUAGE. Sem; 3 cr. Standards of usage and pronunciation; development of the English vocabulary. If taken by candidates for the teachers' certificate it should be taken in the junior year. Mr. Hanley.

124. HISTORY OF THE ENGLISH LANGUAGE FOR TEACHERS. Sem; 3 cr. Open only to majors in the School of Education, who may take either English 123 or 124. Mr. Cassidy, Mr. Pooley, Mr. Presson.

125. CONTEMPORARIES AND IMMEDIATE SUCCESSORS OF CHAUCER. Sem; 3 cr. Selections from *Piers Plowman*, the Pearl Poet, Gower, Wiclif, Lydgate, and others; maturity of the Middle Ages, and foreshadowings of the Renaissance in England. Mr. Cassidy.

126. THE ENGLISH LANGUAGE, 1100–1500. Sem; 3 cr. Prerequisite: English 120a. A study of selected texts illustrating phonological, morphological, and dialectal developments within the period. Mr. Cassidy.

127. RECENT ENGLISH LITERATURE. Yr; 3 cr. A course dealing with modern English literature from the late Victorian period down to the present. Mr. Fulcher, Mr. Wiley.

128. ADVANCED COMPOSITION. (For English majors in the School of Education.) I, II; 3 cr. This course in advanced composition—with a certain emphasis upon the criticism of original themes—is required of all English majors in the School of Education. Mr. Pooley, Mrs. Thomas.

129. SWIFT AND HIS CONTEMPORARIES. Sem; 3 cr. Three fourths of the course is devoted to a study of Swift; for purposes of comparison, Defoe and Pope are briefly considered. Mr. Quintana.

130. METRIC PRINCIPLES OF ENGLISH POETRY. Sem; 1 to 3 cr. Principles of English versification. A study of the verse or music in English poetry. Principal work done in class. Those who wish to do some writing to try out the verse forms will elect more than 1 credit. Miss Wallerstein.

131. CHAUCER. Sem; 3 cr. *The Canterbury Tales, Troilus and Criseyde.* Study of changing literary, linguistic, and intellectual traditions. Mr. Hughes, Mr. Presson.

132. VICTORIAN PROSE. Sem; 3 cr. Survey of the major English prose writers, 1830–1900, and their relation to the literary history of the period. Mr. Doremus.

133. INTELLECTUAL OPINION IN 19TH-CENTURY ENGLAND, AS REFLECTED IN LITERATURE. Sem; 3 cr. A consideration of the social, religious, and aesthetic implications of various 19th-century intellectual movements in England. Mr. Buckley.

134. ROMANTIC POETRY. Sem; 3 cr. English poetry from Wordsworth to Keats; certain essays—literary and critical—by the writers of the time are also considered. Mr. Buckley, Mr. Woodring.

135. VICTORIAN POETRY. Sem; 3 cr. English literary history 1830–1900 with special attention to poetry and a consideration of various aesthetic and intellectual movements. Mr. Buckley, Mr. Doremus.

136. ELIZABETHAN DRAMA INCLUDING SHAKESPEARE. Yr; 3 cr. Twenty-three plays by Shakespeare and fifteen of the best plays by his contemporaries. Mr. Eccles.

137. SHAKESPEARE. Yr; 3 cr. About half the plays of Shakespeare are read, eight of which are studied in detail. Miss Doran.

138. ROMANTIC CRITICS AND ESSAYISTS. Sem; 3 cr. The major prose-writers of the Romantic Movement (especially Coleridge, Hazlitt, DeQuincey) with particular attention to their critical method and the development of their aesthetic theory. Not offered 1952–53.

139. THE ENGLISH NOVEL. Yr; 3 cr. Richardson to Hardy. Offered 1953–54 and in alternate years. Mr. Fulcher.

140. SPOKESMEN OF AMERICAN IDEALS. Sem; 3 cr. The ideas and ideals of those who were spokesmen, from 1787 to 1900, of the distinctively American and democratic way of life. Mr. Clark.

148. LITERARY ASPECTS OF THE ENGLISH BIBLE. Yr; 3 cr. Epic stories, poetry, etc., in historical background. 148a: Old Testament. 148b: Old Testament (completed), Apocrypha, New Testament. Miss Doran.

150. AMERICAN FICTION. Sem; 3 cr. Studies of Cooper, Hawthorne, Melville, Howells, Mark Twain, Bret Harte, James, Crane, and Frank Norris. Mr. Clark.

156. EARLY SEVENTEENTH CENTURY. Sem; 3 cr. Poetry and prose from 1600 to 1660. John Donne, Ben Jonson, and the poets who stem from them and from Spenser; the chief prose writings in a period of great intellectual change (Bacon, Sir Thomas Browne, Hobbes, etc.); the new poetry. Miss Wallerstein.

157. MILTON. Sem; 3 cr. Either 157 or 57 (which see) is offered yearly. Mr. Quintana.

160. THE SIXTEENTH CENTURY. Sem; 3 cr. A survey of English non-dramatic literature and of the thought embodied in that literature, from Sir Thomas More through Spenser to John Donne. Mr. Hughes.

161. LITERATURE 1660–1745. Sem; 3 cr. The chief writers of the neo-classical period; Dryden, Bunyan, Steele and Addison, Swift, Pope, Defoe. Miss Wallerstein.

162. LITERATURE 1745–1798. Sem; 3 cr. The chief literary figures of this period—Fielding, Johnson, Goldsmith—are studied in some detail. Consideration given to other poets—Gray, Collins, Crabbe, Blake—and to other prose writers like Hume and Burke. Mr. Quintana, Mr. Whitley.

163. INTELLECTUAL OPINION DURING THE ENLIGHTENMENT IN ENGLAND AS REFLECTED IN LITERATURE. Sem; 3 cr. A consideration of the chief intellectual trends in the civilization of England from the mid-17th century to the close of the 18th century. Mr. Quintana.

165. ENGLISH LITERARY CRITICISM. Sem; 3 cr. The outstanding documents in English literary criticism from Sidney's *Apology* to T. S. Eliot's *Selected Essays* are analyzed for their permanent and intrinsic value as well as for their historical interest. Mr. Hughes.

166. AMERICAN LITERARY CRITICISM. Sem; 3 cr. Survey of the development of American critical theory from the Puritans to contemporary times combining analysis of theory with practice in critical writing. Mr. Pochmann.

169. MAJOR AMERICAN POETS. Sem; 3 cr. The development, range of ideas, and poetic theory of Frenau, Bryant, Whittier, Emerson, Poe, Longfellow, Lowell, Holmes, Dickinson, Lanier, Whitman, Lindsay, and Robinson. Mr. Clark.

170. CONTEMPORARY AMERICAN LITERATURE, 1914 TO THE PRESENT. Yr; 3 cr. A survey of modern American literature, with principal attention to the major developments in fiction, poetry, and criticism. Mr. Hoffman.

171. MAJOR DEVELOPMENTS IN CONTEMPORARY AMERICAN POETRY. Sem; 3 cr. A study of certain developments in modern American poetry, including the Imagists and their successors, T. S. Eliot, Hart Crane, and the Fugitive poets and critics. Offered 1952–53 and in alternate years. Mr. Hoffman.

173. THE RISE OF A NATIONAL LITERATURE IN AMERICA, 1775–1836. Sem; 3 cr. The attempt, from the Founding Fathers of the Revolutionary Period through Irving, Bryant, and Cooper, to produce a literature devoted to the American scene and democratic ideals. Offered 1953–54 and in alternate years. Mr. Clark.

174. MAJOR AMERICAN PROSE WRITERS. Sem; 3 cr. The genetic development, range of ideas, literary theory, relevant scholarship, and criticism of Irving, Hawthorne, Poe, Emerson, Thoreau, Lowell, Holmes, and Mark Twain. Mr. Pochmann.

180. READING FOR HONORS. Yr; *cr. Independent reading under direction for undergraduates who are candidates for honors in English. See Section 16, page 40. For further information consult the chairman.

185. INTRODUCTION TO PHONETICS. Sem; 3 cr. Study of the production of speech sounds with some practice in the use of phonetic transcription. Mr. Hanley.

186. ADVANCED PHONETICS. Sem; 3 cr. Special studies in phonetics adjusted to the tastes and interests of students electing the course. Students who elect 185 and 186 as preparation for later advanced work in the English language in America will be assigned 1 credit of extra work each semester. Mr. Hanley.

188. A CRITICAL STUDY OF AN OUTSTANDING FIGURE OF CONTEMPORARY ENGLISH LITERATURE. Sem; 3 cr. The subject of this course differs from year to year. (Offered 1950–51 by Mr. Wiley as "Conrad and Henry James." Offered 1951–52 by Mr. Hoffman as "D. H. Lawrence." Offered 1952–53 by Mr. Fulcher as "G. B. Shaw.")

190. AMERICAN LITERATURE, 1880–1914. Sem; 3 cr. The rise of realism, the West in American literature, the quest for social justice, and other ideas and forms of the period from 1880 to 1914. Mr. Clark.

191. LITERATURE OF COLONIAL AMERICA, 1607–1775. Sem; 3 cr. Survey of American literature from 1607 to 1775: John Smith through Benjamin Franklin, with emphasis on the Puritan heritage and the emergence of democratic and liberal ideals. Mr. Pochmann.

The following courses, exclusively for graduate students are offered from time to time according to demand. For advance information consult the chairman.

200. RESEARCH IN ENGLISH. Yr; *cr. Research in connection with the doctoral thesis. Consult the chairman.

202. MAIN PROBLEMS OF SCHOLARSHIP IN THE LITERATURE OF THE SIXTEENTH CENTURY. Sem; 3 cr. Mr. Hughes.

203. MAIN PROBLEMS OF SCHOLARSHIP IN AMERICAN LITERATURE. Sem; 3 cr. Mr. Clark.

204. MAIN PROBLEMS OF SCHOLARSHIP IN THE LITERATURE OF THE SEVENTEENTH CENTURY. Sem; 3 cr. Miss Wallerstein.

205. MAIN PROBLEMS OF SCHOLARSHIP IN ELIZABETHAN AND JACOBEAN DRAMA. Sem; 3 cr. Mr. Eccles.

206. MAIN PROBLEMS OF SCHOLARSHIP IN THE LITERATURE OF THE EIGHTEENTH CENTURY. Sem; 3 cr. Mr. Quintana.

207. MAIN PROBLEMS OF SCHOLARSHIP IN THE ROMANTIC PERIOD. Sem; 3 cr. Mr. Buckley, Mr. Woodring.

208. Main Problems of Scholarship in the Victorian Period. Sem; 3 cr. Mr. Buckley.

209. Milton. Sem; 3 cr. Mr. Hughes.

210. Seminar in One of the Older Fields in English Literature. Yr; 2 cr.

211. Main Problems of Scholarship in the English Literature of the Twentieth Century. Sem; 3 cr.

227. History of the English Language. Yr; 2 cr. Mr. Hanley.

231. Main Problems of Chaucerian Scholarship. Sem; 3 cr. Mr. Hughes.

232. Seminar in Chaucer. Sem; 2 cr. Mr. Hughes.

233. Seminar in Shakespeare. Yr; 2 cr. Miss Doran, Mr. Eccles, Miss White.

234. Seminar in Nineteenth-Century English Literature. Yr; 2 cr. Mr. Buckley, Mr. Woodring.

235. Introductory Seminar: English Language in America. Yr; 2 cr. Studies using the Linguistic Atlas of the United States and the large collection of historical material available at the University of Wisconsin. Mr. Hanley.

236. Seminar in Seventeenth-Century English Literature. Yr; 2 cr. Miss Wallerstein.

238. Seminar in Eighteenth-Century English Literature. Yr; 2 cr. Mr. Quintana.

240. Seminar in American Literature. Yr; 2 cr. Mr. Clark, Mr. Pochmann.

241. Seminar in Twentieth-Century American Literature. Yr; 2 cr. Mr. Hoffman.

244. Advanced Seminar in English Literature. Yr; 2 cr.

248. Bibliography and Methods of Research. Sem; 3 cr. A course designed to train graduate students in the processes of literary investigation. Miss Doran.

280. Research in English. Yr; *cr. Independent reading under adequate direction, presumably not in connection with the doctoral thesis. Consult the chairman.

TEACHERS' COURSE

The Teaching of English. See School of Education.

FINE ARTS

(See Art History, page 97.)

FOREST PRODUCTS

These courses are given in co-operation with the United States Forest Products Laboratory, as described under that heading, to which students interested in the utilization of wood, chemistry of forest products, etc., are referred for further information. The courses here listed may be elected by juniors and seniors in Letters and Science with the consent of the dean.

101. Properties of Wood. I; 5 cr. Structure and properties of wood, with special reference to its use in light building construction. Staff.

103. Chemistry Applied to Forest Products. II; 2 cr. Industrial chemical processes that use wood and wood waste. Prerequisite: Chemistry 120, 121, 122, 123. Offered 1953–54 and in alternate years. Staff.

119. Fungus Deterioration of Forest Products. I; 2 cr. (Same as Plant Pathology 119.) Offered 1952–53 and in alternate years. Dr. Lindgren.

200. Research in Forest Products. Yr; *cr. Staff.

FRENCH AND ITALIAN

PROFESSORS BANDY, HARRIS, *chairman*, LÉVÊQUE, ROGERS, ROSSI, ZDANOWICZ; ASSOCIATE PROFESSORS BOTTKE, GLAUSER, PALMERI, TUCKER; ASSISTANT PROFESSORS GALPIN, KROFF, MERCIER, MILLIGAN.

Each of the first four semester courses in French and Italian (1a, 1b, 10a, 10b) is the equivalent of one unit (one year) of high-school work. Thus, students may begin the study of the language in college or continue it at any level for which they are prepared. Freshmen and transfer students who continue a language studied in high school or in another college are assigned to courses on the basis of their performance on a placement test (see page 40).

French 15 and Italian 15 are practice courses which are designed to be taken concurrently with the basic second-year course (French 10 or Italian 10).

French 25, 124, 127, 190, and Italian 116 provide intermediate and advanced training in writing and speaking.

French 22 is the third-year course which is prerequisite to advanced courses in French literature. Italian 21 is similarly designed to be introductory to other courses in Italian literature, although students receiving a grade of *A* in fourth-semester Italian should go directly into the advanced courses in literature.

French 48 and 150 provide an introduction to the study of French Civilization. The literature courses numbered above 100 afford training in the various periods and genres of French and Italian literature. Courses numbered above 200 are of the seminar type and are intended for graduate students, but properly prepared seniors may be admitted by special permission. Courses in literature, dealing with centuries and genres, and two seminars in literature, and one on philology, are normally offered every year, other courses from time to time. For courses conducted in French, the title is given in French.

For special course for reading knowledge of French for graduate students, consult Extension Division.

For Attainment Tests (Intermediate and Proficiency), see page 40.

MAJOR. In French, 28 credits in advance of 1b. These must include French 22a and b (6 cr.) or equivalent introductory course in literature, and at least 9 credits of courses numbered above 100, including 4–6 credits in a literature course taken during the senior year. A thesis (4 cr.) may be substituted for this last requirement. In Italian, 24 credits in advance of 1b.

By faculty requirement, students choosing a foreign-language major must present at least 8 credits in a second foreign language.

A certificate of Oral Proficiency in French is awarded to those who pass the qualifying examination or who demonstrate the necessary command of the spoken language at the French House. It is required of all teaching majors and minors.

Those who expect to continue work for advanced degrees should note that knowledge of another foreign language is required for the M.A., and that for satisfactory work in Romance philology some knowledge of Latin is indispensable. Both Latin and German, as well as another Romance language, are required for the Ph.D. and should be acquired as early as possible.

TEACHING MAJOR AND MINOR. See School of Education.

MAJOR IN FRENCH AREA STUDIES. Designed for those with linguistic interest who desire a broad background to fit themselves for vocational use of French in fields other than teaching or international relations. For the latter they would normally take the Major in International Relations with Specialization in French Area Studies (see page 75). The general requirements will be those of the B.A. (Social Studies), with intermediate knowledge of a second foreign language. Supplementary training will almost always be necessary along the line of special professional interest, and may involve typing, stenography, accounting, or other business subjects. Students who do not offer two years of French from high school will have little opportunity for free electives, but the program proposed is well diversified.

French, 28 credits beyond 1b: French 22, Elementary survey, 6 credits; 8 credits of composi-

tion and conversation, including at least one semester in 124 or 127; French 150, French civilization, 4 credits; French 120, Advanced French translation, 2–3 credits; passing grade on the Oral Proficiency Test.

Residence or meals at the French House is strongly recommended, and may, upon recommendation of the chairman, replace 2 credits of courses in conversation.

Besides the regular requirements in English and science and another foreign language, the following are especially recommended for general background:

History, 12 credits. (History 3a–3b, European civilization, or 2a–2b, Modern European history; 136, French history, 6 credits; History 138, 139, 145 or 113 if 136 not available.)

Political Science, 6–9 credits. (Political Science 7, American government and politics; 121a and b, Foundations of foreign policy; 118, International law; 128, Comparative government.)

Economics 1a, General economics, 4 credits; 105, Money and banking, 3 credits.

Philosophy, 6 credits. (Philosophy 1, Introduction to philosophy; 107, French philosophers.)

Art History, 6 credits. (Art History 54, Renaissance to modern art; 106, Modern European painting.)

Geography, 6 credits. (Geography 7, Economic geography; 107, Geography of the Mediterranean region; 147, Geography of the Mediterranean borderlands.)

Journalism 120, 2 credits, Interpreting foreign news.

FRENCH HOUSE. *La Maison Francaise,* intended especially for training in speaking French, is maintained by the department. It is open to women students for room and board, and both men and women rooming outside may take their meals there. Young French women reside in the house to aid in conversation and preside at the tables where French only is spoken. Prospective teachers of French and all others desirous of acquiring practice in the spoken language are urged to room or board at the French House. With approval of the departmental faculty, a part of the prescribed training in conversation, necessary for the teachers' certificate, may be done in this House. Requests for further information and applications for rooms should be directed to the Chairman, Department of French and Italian, and sent well in advance, both for summer session and regular year.

ITALIAN TABLE. An Italian table is conducted several times a week at *La Maison Francaise* whenever there is sufficient demand. Inquiries should be addressed to Professor Rossi.

CLUBS. French and Italian Clubs at the University give students the opportunity to hear talks and see films about the country whose language they are studying, and to converse in the language in which they are interested. Modern and classical plays are presented in public from time to time.

FRENCH

LANGUAGE

1a. FIRST-SEMESTER FRENCH. I, II; 4 cr. For students who have had no previous training in the language. Oral practice, grammar, reading. A. "Intensive" sections emphasize the oral approach. They meet eight hours a week including four hours of oral practice in small groups, which partly replaces home study. M. Lévêque and staff. B. Other sections meet four times a week and require proportionately more home study. Mr. Milligan and staff.

1b. SECOND-SEMESTER FRENCH. I, II; 4 cr. Continuation of French 1a. A. Eight hours a week. B. Four hours a week. Prerequisite: French 1a or one year of high-school French. M. Lévêque, Mr. Milligan and staff.

10a. THIRD-SEMESTER FRENCH. I, II; 3–4 cr. Careful study of selections from standard French prose writers and material about France; grammar review with oral practice; outside reading for content only. Those who elect the course for 4 credits have two additional hours per week of oral practice in small groups. Prerequisite: French 1b or two years of high-school French. Mr. Bottke and staff.

10b. FOURTH-SEMESTER FRENCH. I, II; 3–4 cr. Continuation of French 10a. Prerequisite: French 10a or three years of high-school French. Mr. Bottke and staff.

15a. CONVERSATION AND COMPOSITION (Elementary Level). I, II; 2 cr. Development of oral facility based on situations met in every-day life. To be taken only concurrently with French 10a or 10b, except by special permission. Prerequisite: French 1b or two years of high-school French. Mr. Kroff and staff.

15b. CONVERSATION AND COMPOSITION (Elementary Level). I, II; 2 cr. Continuation of French 15a. Not open to students who have completed French 10b or passed the intermediate attainment test, except by special permission. Prerequisite: French 15a or consent of course chairman. Mr. Kroff and staff.

25a. CONVERSATION AND COMPOSITION (Intermediate Level). I, II; 2 cr. Development of facility in oral and written French. Based on selections about French civilization. Prerequisite: French 10b with grade of *B*, one semester of French 15, or consent of chairman of the course. Mr. Kroff and staff.

25b. CONVERSATION AND COMPOSITION (Intermediate Level). I, II; 2 cr. Continuation of French 25a. Prerequisite: French 25a or grade of *A* in French 15. Mr. Kroff and staff.

48. FRANCE OF TODAY. II; 2 cr. Survey of principal cultural, political and social developments in contemporary France, as reflected in current newspapers, magazines and books. Lectures, assigned readings, reports. Recommended for students in international relations, history and journalism. Open to others with permission of instructor. Prerequisites: French 10b and sophomore standing. Mr. Kroff.

80. SUPERVISED INDIVIDUAL READING. Yr; 2 cr. Of third-year grade. For "upper-group" majors in other departments who wish to study in their major field, using French texts. The work must be planned with the major professor and have the approval of the Chairman of the Department of French and Italian and of the Dean.

120. TRANSLATION OF DIPLOMATIC AND TECHNICAL FRENCH. Yr; 2–3 cr. Training in accurate rendering of typical material in different fields. Recommended for those preparing for government service. Prerequisite: Three years of college French or consent of instructor. Mr. Zdanowicz.

124. COURS MOYEN DE CONVERSATION ET DE COMPOSITION. Yr; 2 cr. Révision rapide et orale de la syntaxe et d'un vocabulaire pratique. Exercices d'application. Causeries fondées sur des textes contemporains. Rédactions. Prerequisites: French 25a and b or consent of instructor. Mlle Mercier.

127. COURS SUPÉRIEUR DE CONVERSATION ET DE COMPOSITION. Yr; 2 cr. Exercices de syntaxe et de vocabulaire pratique. L'art de s'exprimer sur des sujets variés, au moyen de rédaction et de causeries. Lecture de revues et journaux contemporains. Prerequisite: French 124 or consent of instructor. Mlle Mercier.

190. FRENCH PHONETICS. I, II; 2 cr. Theory of French sounds; phonetic transcription; practice in pronunciation. Required of teaching majors and minors. Prerequisite: Three years of college French. Mr. Bottke.

191. DICTION FRANÇAISE. II; 2 cr. Interprétation orale de textes en prose et en vers. Esthétique de la langue parlée: rythme, harmonie des sons, articulation, intonation et voix. Prerequisite: French 190 or consent of instructor. Mlle Mercier.

227. COURS DE TRADUCTION ET DE STYLE. Yr; 1 cr. Traduction d'anglais en français de fragments d'oeuvres littéraires et d'ouvrages d'actualité. M. Lévêque.

METHODS

101. MATERIALS AND METHODS OF RESEARCH. Yr; 1 cr. Training in the collecting, organizing and editing of research materials. Recommended for first-year graduate students. Mr. Tucker.

126. EXPLICATION DE TEXTES. (See under LITERATURE.)

For a course on training teachers of foreign language see EDUCATION 187.

PHILOLOGY

141. History of the French Language. Yr; 2 cr. Lectures, assigned readings, and analysis of texts of each century from the *Strassbourg Oaths* to the present. Prerequisite: French 22. Mr. Harris.

240. Old French. Yr; 2 cr. Introductory seminar. Historical grammar and close study of the *Chanson de Roland,* the *Lais* of Marie de France, *Aucassin et Nicolete,* etc. Mr. Harris.

244. Old Provençal. Yr; 2 cr. Historical grammar and close study of the principal *troubadours.* Mr. Harris.

273. Romance Philology. Yr; 2 cr. Mr. Harris, Mr. Kasten.

LITERATURE

Both semesters of French 22 (or equivalent) are prerequisite to all other courses in French literature. French 22b may be taken before French 22a.

22a. Elementary Survey of French Literature (17th and 18th century authors). I, II; 3 cr. Masterpieces in the novel, drama, poetry and essay. Lectures, discussion, exercises in translation and interpretation. Prerequisite: French 10b or equivalent. Mr. Tucker and staff.

22b. Elementary Survey of French Literature (19th and 20th century authors). I, II; 3 cr. Masterpieces in the novel, drama, poetry and essay. Lectures, discussion, exercises in translation and interpretation. Prerequisite: French 10b or equivalent. Mr. Tucker and staff.

50. French Masterpieces in Translation. Yr; 2 cr. Lectures, assigned reading and discussion of outstanding works in various *genres* from the Middle Ages to the present. Does not give credit in French. (See Comparative Literature 50.) Mr. Harris.

100. Thesis. Yr; 2 cr. Majors who elect to write a thesis will consult the chairman of the department.

126. Explication de Textes. Yr; 1 cr. Reading of texts, prose and poetry, with a careful study of the contents, author, background, etc. Designed to accompany French 165 and French 166, but may be taken separately. Mr. Bandy.

132. French Literature of the Eighteenth Century. Yr; 2 cr. Literary and philosophical trends of the Age of Enlightenment with special emphasis on Montesquieu, Voltaire, Diderot and Rousseau. Mr. Tucker.

133. Victor Hugo. I; 2 cr.

134. Balzac. II; 2 cr. Not offered 1952–53.

*136a. French Novel. Sem; 3 cr. The French novel during the first half of the 19th century, with special emphasis on Stendhal and Balzac. Mr. Rogers.

*136b. French Novel. Sem; 3 cr. The French novel during the second half of the 19th century, with special emphasis on Flaubert and Zola. Mr. Rogers.

137. Molière. I; 2 cr. Mr. Zdanowicz.

139. La Littérature Française du XVIIe Siècle. Yr; 3 cr. Le premier semestre est consacré à l'étude des oeuvres antérieures au règne personnel de Louis XIV; le deuxième à celle des écrivains de l'âge du Grand Roi. M. Lévêque.

143. Le Théâtre Française du XIX Siècle. I; 3 cr. L'évolution du théâtre moderne et ses rapports avec les tendances intellectuelles et sociales de l'époque. Les oeuvres de Hugo, Musset et Becque seront particulièrement étudiées. Mr. Kroff.

144. Le Théâtre en France de 1900 a nos Jours. II; 3 cr. Analyse des pièces caractéristiques des tendances nouvelles. Etude de l'évolution de la mise en scène. Actrices et acteurs principaux. Mlle Mercier.

* Note: French 136a, 136b and 148 will be given in successive semesters beginning II, 1952–53.

145. FRENCH LITERATURE OF THE SIXTEENTH CENTURY. Yr; 2 cr. Offered in 1952–53. Mr Zdanowicz.

*148. FRENCH NOVEL. Sem; 3 cr. The 20th-century French novel, with special emphasis on Proust and Gide. Mr. Rogers.

150. HISTOIRE DE LA CIVILISATION FRANÇAISE. Yr; 2 cr. Etude du développement politique, social, intellectual, artistique et littéraire de la nation française, des origines à l'époque contemporaine. M. Lévêque.

157. LA POÉSIE FRANÇAISE DES XIXe ET XXe SIÈCLES. Mr. Glauser.

165. MASTERPIECES OF FRENCH LITERATURE (1100–1750). I; 2 cr. A close study of outstanding works from the *Chanson de Roland* (in modern French) to the *Contes Philosophiques* of Voltaire. Lectures, readings, discussion, reports. Mr. Milligan.

166. MASTERPIECES OF FRENCH LITERATURE (after 1750). II; 2 cr. A close study of outstanding works from the *Nouvelle Héloïse* of Rousseau to the *Symphonie Pastorale* of Gide. Lectures, readings, discussion, reports. Mr. Milligan.

180. ADVANCED INDEPENDENT READING. Yr; *cr. For upper-group students in lieu of a regular course. Plan of work must be approved by Chairman of the Department of French and Italian, and by the student's major professor. Reports and examination. Consult chairman.

200. INDIVIDUAL RESEARCH IN FRENCH. Yr; *cr. Superior graduate students, with special permission, may do individual research, under supervision, in some definite field. Staff, on consultation with chairman of department.

226. SEMINAR. LA CRITIQUE LITTÉRAIRE EN FRANCE. Yr; 2 cr. Mr. Glauser.

233. SEMINAR. CHATEAUBRIAND AND HIS CONTEMPORARIES. Yr; 2 cr. Mr. Galpin.

239. SEMINAR. LES MORALISTES DU DIX-SEPTIÈME SIÈCLE. Yr; 2 cr. Pascal, La Rochefoucauld, La Bruyère. M. Lévêque.

242. SEMINAR. OLD FRENCH EPIC POETRY. Yr; 2 cr. The origin and development of the *Chanson de Geste*. Special study of one of the epic cycles. Mr. Harris.

243. SEMINAR. OLD FRENCH ROMANCES. Yr; 2 cr. Studies in Arthurian literature: The Tristan legend or Chrétien de Troyes. Mr. Harris.

250. SEMINAR. THE RENAISSANCE IN FRANCE. Yr; 2 cr. A study of the development of the Renaissance spirit and its manifestations in France, with special study of some representative 16th-century author. Mr. Zdanowicz.

252. SEMINAR. ANCIENT FRENCH DRAMA. Yr; 2 cr. A survey of the medieval French drama from its beginning, with special attention to the 14th-century Miracle Plays and to the 15th-century Farces. Mr. Harris.

253. SEMINAR. FRENCH LITERATURE. Yr; 2 cr. The growth of Classicism and its general spirit, with special study of some representative author each semester. Mr. Zdanowicz.

255. SEMINAR. TWENTIETH-CENTURY FRENCH LITERATURE. Yr; 2 cr. Representative authors of the 20th century.

256. SEMINAR. ROMANTICISM. Yr; 2 cr. Mr. Bandy.

257. SEMINAR. BAUDELAIRE AND POE. Yr; 2 cr. Mr. Bandy.

ITALIAN

LANGUAGE

1a. FIRST-SEMESTER ITALIAN. I, II; 4 cr. For students who have not studied Italian. Offered by both the grammar-reading method and the conversational method. Mr. Rossi and staff.

1b. SECOND-SEMESTER ITALIAN. I, II; 4 cr. Prerequisite: Italian 1a or one year of high-school Italian. Mr. Rossi and staff.

10a. THIRD-SEMESTER ITALIAN. I; 3 cr. Intensive class reading of modern Italian plays, novels, and short stories; study of idioms, conversational exercises. Mr. Rossi.

10b. FOURTH-SEMESTER ITALIAN. II; 3 cr. Continuation of Italian 10a. Mr. Rossi.

15. ELEMENTARY COMPOSITION AND CONVERSATION. Yr; 2 cr. Grammar review with oral and written exercises. Supplementary course to be taken with Italian 10a and 10b, or with consent of instructor. Mr. Galpin.

80. SUPERVISED INDIVIDUAL READING. Yr; 2 cr. Of third-year grade. For upper-group students in other departments who wish to study in their major field, using Italian texts. The work must be planned with the major professor and have the approval of the chairman of the department and of the dean.

116. ADVANCED COMPOSITION AND CONVERSATION. Yr; 2 cr. Prerequisite: Italian 15 with grade of *B*. Mr. Rossi.

171. INTRODUCTION TO ITALIAN PHILOLOGY. I; 2 cr. Derivation of the Italian language from Vulgar Latin; elementary phonology and morphology; reading of texts. Mr. Bottke.

172. EARLY ITALIAN WRITERS. II; 2 cr. The Italian literature before Dante. Mr. Bottke.

LITERATURE

Two years of Italian in college, or the equivalent, are prerequisite to advanced courses in Italian, except by special permission of the instructor.

21. ELEMENTARY SURVEY. Yr; 3 cr. Translation, assigned reading, study of literary aspects of work read, and literary history. Mr. Rossi.

53. ITALIAN MASTERPIECES IN TRANSLATION. Does not give credit in Italian. (See COMPARATIVE LITERATURE 53.) Mr. Rossi.

100. SENIOR THESIS. Yr; 2 cr. Mr. Rossi.

102. MODERN ITALIAN LITERATURE. Yr; 2 cr. Especially Carducci, D'Annunzio, Pascoli, Fogazzaro, Verga, and Pirandello. Conducted in Italian. Mr. Galpin.

122. IL RISORGIMENTO. Yr; 3 cr. Studio degli scrittori che ispirarono la lotta per la rinascita italiana nel Settecento e Ottocento. Mr. Rossi.

123. IL TEATRO ITALIANO. Yr; 3 cr. Lo sviluppo del teatro italiano dalle origini al presente. Da tenere nel 1953–54. Mr. Rossi.

131. LINEAMENTI DE LETTERATURA ITALIANA. Yr; 3 cr. Studio dei maggiori scrittori italiani dal Duecento al Novecento. Da tenere nel 1952–53. Mr. Rossi.

136. MODERN ITALIAN NOVEL. Yr ;2 cr. First semester: *I Promessi Sposi* and the romantic school. Second semester: Nievo to the present. Mr. Galpin.

152. IL RINASCIMENTO. Yr; 3 cr. Dal Petrarca all'*Arcadia,* con particolare rilievo dato ai poemi cavallereschi, al Machiavelli e al Guicciardini. Da tenere nel 1954–55. Mr. Rossi.

160. DANTE'S *Divina Commedia.* Yr; 3 cr. Lectures on Dante's life and times, reading of the *Divine Comedy,* comment, discussions, reports. Mr. Rossi.

161. IL TRECENTO. Yr; 2 cr. Especially Petrarch, Boccacio, and the minor works of Dante. Mr. Galpin.

180. ADVANCED INDEPENDENT READING. Yr; *cr. For upper-group students in lieu of a regular course. Plan of work must be approved by chairman of the department, and by student's major professor. Reports and examination. Consult chairman.

200. INDIVIDUAL RESEARCH. Yr; *cr. Graduate students with special permission may do research in some approved field. Mr. Rossi.

FRESHMAN FORUM

FRESHMAN FORUM. Yr; 1 cr. A weekly lecture and forum discussion of current problems and opportunities in many fields. Open only to freshmen. Staff.

GEOGRAPHY

PROFESSORS CLARK, FINCH, HARTSHORNE, *chairman*, ROBINSON, TREWARTHA; ASSOCIATE PROFESSORS ALEXANDER, STERLING, STONE; ASSISTANT PROFESSORS FINLEY (also Extension), HAMMOND, OLMSTEAD; INSTRUCTOR WINSOR (also Education).

In its study of the distribution, variations and interrelations of the natural and cultural features of the world, geography contributes toward an understanding of nations and regions. The character of any region is the result produced in a particular natural environment by the particular people or peoples who have lived there through successive periods of time. Their utilization of its distinctive resource potentialities at any time depends on their specific culture, on the previous development of the region and on the relations of the region with other areas of the world.

The geography of any region therefore involves a complex association of features of the natural environment, such as landforms, soils and climate and of cultural features, such as farms, cities and states. The field of geography therefore overlaps the natural and social sciences.

The courses are grouped below in terms of:

I. CULTURAL GEOGRAPHY, courses in the Social Studies division, carrying credit for social studies. Students planning to take any of the first group of regional courses (101–119) or any of the undergraduate courses in historical geography are not required to take any previous course but are advised to take one of the introductory courses in physical or cultural geography.

The courses in this group emphasize cultural features, resulting from man's utilization of earth resources.

A. Courses in Regional Geography study the full complex of interrelated features as found in particular regions of the world.

B. Courses in Systematic Cultural Geography focus attention on particular cultural features, economic or political, in their distribution and variations in relation to other earth features over the world.

C. Courses in Historical Geography are concerned with the geography of past periods and with geographical changes through time.

II. PHYSICAL GEOGRAPHY (NATURAL ENVIRONMENT), courses in the Physical Science division, carrying credit in natural science. In these courses study is focused on the elements of the natural environment of man in the different areas of the world—particularly climates and landforms, but also soils, mineral resources and natural vegetation. Note that while all these courses may be taken to satisfy the natural science requirement for the bachelor's degree, only 2a–b or 17 may be taken to fulfill the laboratory requirement.

III. TECHNIQUES, METHODOLOGY AND TEACHING

A. Cartography and Air Photo Analysis. Courses in this group are of interest to students in the social sciences as well as the earth sciences and to specialists in geography.

B. Graduate Research Training. These courses are designed primarily for graduate students in geography.

C. Teaching Methods. Courses designed for prospective teachers of geography or of social studies including geography.

IV. INDEPENDENT, INDIVIDUAL WORK. Advanced reading, specialized research, or theses preparation.

INTRODUCTORY PROGRAM IN GEOGRAPHY. For an introduction to the field of geography, the student may select from the following courses, all of which are open to freshmen: 2a–b, 3,

4, 5, 6, 7, and 17. (2a is prerequisite to 2b; 5 or 17 may not be combined with 2a or 2b; 3–4 may not be combined with 6.)

For the student who plans to take only one or two courses in cultural geography, Geography 6 is recommended as a general survey of world regional geography; Geography 7 as a more specialized survey of the principal world types of resource utilization, designed primarily for students planning to major in such fields as Commerce, Economics, International Relations and Journalism. Either can be profitably combined in a year sequence with Geography 5 (or 17), a survey of the physical geography and resources of the earth in terms of their potentialities for human use.

The student who desires a more thorough study of the natural environment because of a general interest in earth science, or to provide a foundation for specialization in geography, or in order to fulfill the laboratory requirement in natural science, may elect the two-semester course 2a–b. Course 17 is a briefer survey of the topics covered in more detail in course 2a–b; Geography 5 is identical with Geography 17 except that it omits laboratory work, and thus does not satisfy the requirement in laboratory natural science; Geography 5 does, however, carry natural science credit.

MAJOR. An undergraduate major requires a minimum of 30 credits. The elementary courses in physical (2a–b or 5 or 17) or in cultural (3–4 or 6, and 7) geography will normally be followed by a selection of regional and topical courses together with such special courses in geographic techniques, including cartography, as the student may elect.

HISPANIC STUDIES AND AMERICAN INSTITUTIONS AS FIELDS OF CONCENTRATION. Students interested in these major fields should consult pages 61 and 68.

I. CULTURAL GEOGRAPHY

Included within the Division of Social Studies

A. Courses in Regional Geography

3. GEOGRAPHY OF THE AMERICAS. I; 3 cr. Survey of the countries of the Western Hemisphere; their resource bases, population, and features of land utilization. Emphasis on the United States. Geography 3 and 4 together comprise a year's unit of work. Open to freshmen. Not open to students who have had Geography 6, 83, 102, or 103.

4. GEOGRAPHY OF THE EASTERN HEMISPHERE. II; 3 cr. Survey of the countries and regions of Europe, Asia, Africa and Australasia. Resources, population, and economic development. Geography 3 and 4 together comprise a year's unit of work. Open to freshmen. Not open to students who have had Geography 6.

6. SURVEY OF WORLD GEOGRAPHY. 3 cr. A study of the physical, economic and demographic elements of the world, their distribution, regional and national groupings, and interrelationships. Open to freshmen. Not open to students who have had Geography 3 or 4. Mr. Olmstead and staff.

101. GEOGRAPHY OF EUROPE (excluding Mediterranean countries and the Soviet Union). 3 cr. Prerequisite: Sophomore standing. Mr. Hartshorne.

102. GEOGRAPHY OF SOUTH AMERICA. 3 cr. Types and problems of land utilization in each of the principal regions of South America, interpreted in terms of the cultural, economic and physical environments. Prerequisite: Geography 3 or 7, or junior standing. Mr. Sterling.

103. GEOGRAPHY OF ANGLO-AMERICA. I, II; 3 cr. A study of regional differentiation, physical and cultural, in the U. S., Canada and Alaska. Emphasis on the United States. Prerequisite: Sophomore standing. Mr. Finch, Mr. Olmstead.

104. GEOGRAPHY OF WISCONSIN. 2 cr. Prerequisite: Sophomore standing.

107. GEOGRAPHY OF THE MEDITERRANEAN AND NEAR EAST. 3 cr. Patterns of population, resources and land use in the countries bordering the Mediterranean Sea, in southern

Europe, Southwest Asia and North Africa. Prerequisite: Geography 4 or 7, or junior standing. Mr. Sterling.

108. GEOGRAPHY OF THE SOVIET UNION. 3 cr. Prerequisite: Junior standing. Mr. Hartshorne.

110. GEOGRAPHY OF THE FAR EAST. 3 cr. Resources and land-use characteristics of the Far Eastern countries. Emphasis upon Japan and China. Prerequisite: Junior standing. Mr. Trewartha.

111. GEOGRAPHY OF MIDDLE AMERICA. 3 cr. The population, resources and land utilization of Mexico, Central America and the West Indies. Prerequisite: Geography 3 or 7, or junior standing. Mr. Sterling.

112. CONTEMPORARY PROBLEMS OF LATIN AMERICA. 3 cr. Problems involved in Latin-American attempts to improve living standards by modernizing rural land use and land tenure, increasing and diversifying primary production, settling undeveloped areas, and expanding transportation and manufacturing. Prerequisite: Geography 3 or 7, or junior standing. Mr. Sterling.

119. GEOGRAPHY OF THE NORTHERN LANDS. 3 cr. A regional analysis of the significance of the Subarctic and Arctic parts of North America, Europe, and Asia to the present and future world population distribution. Prerequisite: Sophomore standing. Mr. Stone.

153. GREAT LAKES-TO-ATLANTIC REGION OF NORTH AMERICA. 3 cr. Analysis of original resource base, settlement and development of land use, and current land-use problems in the area north of the Ohio and Potomac and east of the Mississippi. Prerequisite: Junior standing. Mr. Olmstead.

ADVANCED COURSES IN REGIONAL GEOGRAPHY

The following course numbers are given to intensive studies of particular phases or regions of the geography of the continents, more advanced than those undertaken in the regional courses of the 100-group. They are open to graduate students, and, by permission, to advanced undergraduate majors in the department, and to qualified majors in allied fields. None of these is offered regularly.

201. NORTHWESTERN OR CENTRAL EUROPE. Mr. Hartshorne.

202. LATIN AMERICA. Mr. Sterling.

203. NORTH AMERICA. Mr. Hammond, Mr. Olmstead, Mr. Stone.

210. JAPAN AND CHINA. Mr. Trewartha.

211. MEXICO. Mr. Sterling.

SEMINARS IN REGIONAL PROBLEMS

The following course numbers are given to graduate seminars in which students will work on problems concerning a particular area of the world. None is offered regularly.

251. SEMINAR ON THE GEOGRAPHY OF EUROPE. 2–3 cr. Mr. Hartshorne.

252. SEMINAR ON THE GEOGRAPHY OF LATIN AMERICA. 2–3 cr. Mr. Sterling.

253. SEMINAR ON THE GEOGRAPHY OF ANGLO-AMERICA. 2–3 cr. Mr. Finch, Mr. Olmstead, or Mr. Stone.

260. SEMINAR ON THE GEOGRAPHY OF THE FAR EAST. 2–3 cr. Mr. Trewartha.

264. SEMINAR: PROBLEMS IN THE GEOGRAPHY OF AFRICA. 2–3 cr.

290. INTERDEPARTMENTAL SEMINAR IN LATIN-AMERICAN PROBLEMS. II; 2 cr. An interdisciplinary inquiry into the factors influencing the use of resources in various regions in Latin America. Prerequisites: Graduate standing and 5 credits in courses in the Latin-American field in the co-operating departments, or consent of the committee in charge. Mr. Sterling and members of other co-operating departments.

B. Courses in Systematic Cultural Geography

7. ECONOMIC GEOGRAPHY. 3 cr. A world survey of resource utilization; types of agriculture, extractive and manufacturing industries, transportation and trade, in relation to the distribution of population, human techniques, and resource potentials. Open to freshmen. Mr. Sterling and staff.

21–121. FOUNDATIONS AND PROBLEMS OF INTERNATIONAL RELATIONS. (Same as POLITICAL SCIENCE 121a–b.) Yr; 3 cr. each sem. The geographic, economic and political foundations of national power and national policies in the more important states and problem areas; efforts to deal with problems of conflicting national policies through international economic and political institutions. Prerequisite: Sophomore standing. Mr. Hartshorne, Mr. Pfankuchen.

123. AGRICULTURAL GEOGRAPHY. I; 3 cr. A study of the distribution, variations and significance of the major types of agriculture. Prerequisite: Junior standing. Mr. Olmstead.

125. POLITICAL GEOGRAPHY: WORLD SURVEY. 3 cr. The areal characteristics and territorial problems of states, including internal regional relations, border disputes, and colonial areas. Emphasis on Europe and North America. Prerequisite: Junior standing. Mr. Hartshorne.

126. GEOGRAPHY OF TRANSPORTATION. 3 cr. Description and analysis of the major transportation means in terms of their routes, traffic, terminals, and carriers; analysis of major transportation regions. Emphasis on the United States with some attention to foreign regions. Prerequisite: Junior standing. Mr. Alexander.

127. GEOGRAPHY OF MANUFACTURING. 3 cr. Description and analysis of the location of representative manufacturing industries; analysis of major areas of manufacturing. More emphasis on the United States than on foreign regions. Prerequisite: Junior standing. Mr. Alexander.

128. CONSERVATION OF NATURAL RESOURCES. I, II; 3 cr. The distribution and use of the world's natural resource reserves, conservation techniques applied to them, and problems of public policy that arise in the effective management of our resources (water, forests, soils, fish, wildlife, scenery, minerals, and population). Prerequisite: Sophomore standing. Mr. Finley and staff.

129. URBAN GEOGRAPHY. 3 cr. Description and analysis of the locations and regional functions of cities. Analysis of representative American and foreign cities. Prerequisite: Junior standing. Mr. Alexander.

NOTE: A supplementary course in cultural geography dealing with distribution of mineral resources is offered in the Department of Geology. (See GEOLOGY 150—Economic aspects of geology.)

271. SEMINAR IN POPULATION GEOGRAPHY. 2–3 cr. Mr. Trewartha.

272. SEMINAR IN SETTLEMENT GEOGRAPHY. 2–3 cr. Staff.

273. SEMINAR IN PROBLEMS OF AGRICULTURAL GEOGRAPHY. 2–3 cr. Mr. Olmstead.

275. SEMINAR IN PROBLEMS OF POLITICAL GEOGRAPHY. 2–3 cr. Mr. Hartshorne.

276. SEMINAR IN PROBLEMS OF TRANSPORTATION GEOGRAPHY. 2–3 cr. Mr. Alexander.

277. SEMINAR IN PROBLEMS OF MANUFACTURAL GEOGRAPHY. 2–3 cr. Mr. Hartshorne, Mr. Alexander.

279. SEMINAR IN PROBLEMS OF URBAN GEOGRAPHY. 2–3 cr. Mr. Alexander.

C. Courses in Historical Geography

122. INTRODUCTION TO HISTORICAL GEOGRAPHY. I; 3 cr. The physical and human geography of selected areas of the Old World in significant periods of prehistory and early history of man. Prerequisite: Sophomore standing. Mr. Clark.

146. HISTORICAL GEOGRAPHY OF THE UNITED STATES AND CANADA. II; 3 cr. The changes in the lands themselves and in the geographical bases of economies through four centuries. Prerequisite: Sophomore standing. Mr. Clark.

147. HISTORICAL GEOGRAPHY OF THE MEDITERRANEAN BORDERLANDS. 3 cr. The changes in natural and cultural geography and in the use and significance of resources from Greco-Roman times until the beginning of overseas expansion. Prerequisite: Sophomore standing. Mr. Clark.

222. HISTORICAL GEOGRAPHY OF THE OVERSEAS EXPANSION OF EUROPEAN CULTURE. 2–3 cr. Studies of change in the use of land and natural resources in selected areas of European colonization and settlement. Prerequisite: Graduate standing or consent of instructor. Mr. Clark.

296. SEMINAR IN HISTORICAL GEOGRAPHY. 2–3 cr. Problems on a particular theme in the field—the theme changing each year offered. Prerequisite: Graduate standing. Mr. Clark.

II. PHYSICAL GEOGRAPHY (NATURAL ENVIRONMENT)

Included within the Division of Physical Sciences

2a. PHYSICAL GEOGRAPHY: THE NATURAL ENVIRONMENT. I, II; 5 cr. Introduction to maps. Characteristics, distribution and geographical significance of the earth's surface relief and of water and mineral resources. Open to freshmen. Mr. Hammond and staff.

2b. PHYSICAL GEOGRAPHY: THE NATURAL ENVIRONMENT. I, II; 5 cr. Characteristics, distribution and geographical significance of types of climate, vegetation and soils. Integration of the individual elements of the natural environment by regions. Prerequisite: Geography 2a. Open to freshmen. Mr. Clark and staff.

NOTE: Course 2a–b is a two-semester course replacing former courses 1 and 2. Neither semester is open for credit to students who have had either course 1 or course 2 in the past, or courses 5, 17 or I.L.S. 32.

5. PHYSICAL EARTH AND ITS RESOURCES. I, II; 3 cr. Characteristics, significance, and location of types of climate, vegetation, landforms, soils, mineral and water resources. Open to freshmen. Mr. Robinson and staff.

17. SURVEY OF PHYSICAL GEOGRAPHY. I, II; 4 cr. Identical and concurrent with course 5 except that it has two hours of laboratory a week, grants 4 instead of 3 credits and can be counted for natural science laboratory credit. Mr. Robinson and staff.

NOTE: Students who have credit for course 1 or 2, as offered in previous years, or course 2a or 2b may not take for credit course 5 or 17. Those with credit for I.L.S. 32 (Earth Science) may not receive credit for Geography 2a, 2b, 5 or 17.

140. CLIMATOLOGY. 3 cr. The elements of climate, classification of climates, and the distribution of climatic types over the earth. Emphasis on the world pattern. Prerequisite: Junior standing or consent of instructor. Mr. Trewartha.

141. CLIMATES OF THE CONTINENTS. 3 cr. Descriptive and explanatory analysis of the climatic characteristics of each of the continents. Emphasis on deviations from the world pattern. Prerequisite: Geography 140 or consent of instructor. Mr. Trewartha.

144. OCEANOGRAPHY. (See METEOROLOGY 144.) Mr. Bryson.

160. LANDFORM ANALYSIS. I; 3 cr. The characteristics, representation, and significance of surface configuration. Types of terrain and their distribution over the earth. Prerequisites: Junior standing and consent of instructor. Mr. Hammond.

161. LANDFORMS OF THE CONTINENTS. II; 3 cr. Regional analysis of the surface configuration of North America and at least one other continent, emphasizing those aspects of terrain especially significant in affecting utility of the land. Prerequisite: Geography 160. Mr. Hammond.

170. GEOGRAPHY OF SOILS. 3 cr. The soil as a major geographical element. Soil characteristics, soil-forming factors, and soil types, with emphasis upon pattern utility. Utilization practices and their effects. Attention centered upon North America. Prerequisite: Junior standing. Mr. Hammond.

291. SEMINAR IN CLIMATOLOGY. 2–3 cr. Mr. Trewartha.

III. COURSES IN TECHNIQUES, METHODOLOGY AND TEACHING

A. Cartography and Air Photo Analysis

131. Cartography and Graphics. 3 cr. The elements of cartography with emphasis on graphic presentation. Study and laboratory practice in presenting geographic, statistical, and other data on maps and charts for reproduction. Prerequisite: Sophomore standing. Mr. Robinson.

132. The Use and Evaluation of Maps. 3 cr. The development of competence in map use and appreciation; historical background; the great surveys; progress, coverage and quality of world mapping; the sources and handling of maps. Prerequisite: Junior standing. Mr. Robinson.

134. Air Photo Interpretation. I, II; 3 cr. A study of the techniques of using aerial photographs as source materials for research in the social and physical sciences. Field work is required. Prerequisite: Sophomore standing. Mr. Stone.

181. Advanced Cartography. 3 cr. Advanced study of cartographic methodology including projectional analysis, symbolization, lettering, color and reproduction. Laboratory work in advanced construction techniques. Prerequisite: Geography 131 or consent of instructor. Mr. Robinson.

184. Advanced Air Photo Interpretation. II; 3 cr. Advanced study of the techniques of using air photographs for research in a specific area. Field work is required. Prerequisite: Course 134 or consent of instructor. Mr. Stone.

B. Graduate Research Training

235. Geographic Field Techniques. II; 4 cr. Office analysis and field tests of: (1) Planning for field work and (2) Methods of reconnaissance and detailed mapping of physical and cultural features. Prerequisite: Consent of instructor; Geography 134 recommended. Mr. Stone.

236. Library, Archival and Statistical Techniques of Geographic Research. I; 3 cr. Staff.

238. History of Geographic Thought. II; 2 cr. The evolution of concepts concerning the nature, scope, and methodology of geography since classical times; major emphasis on the modern period. Mr. Hartshorne.

C. Teaching Methods

90. (See Education 90. Teaching of Geography. 2–5 cr. in Education.)

186. (See Education 186. Practice Teaching on the College Level. 1–2 cr. in Education.)

190. (See Education 190. Studies in Curriculum and Instruction in Geography. 3 cr. in Education.)

IV. INDEPENDENT, INDIVIDUAL WORK

100. Senior Thesis. Yr. Staff.

180. Special Work in Geography. Yr; 1–3 cr. Open only to upper-group majors in the department by consent of instructor. See Section 16, page 40. Staff.

200. Graduate Research and Thesis. Yr. Staff.

250. Seminar in Geography. Yr; 2–3 cr. Staff.

280. Special Work in Geography. Yr. Staff.

GEOLOGY

PROFESSORS CAMERON, EMMONS, LAUDON, THOMPSON, TYLER, *chairman*, WOOLLARD; ASSOCIATE PROFESSOR JUDSON; ASSISTANT PROFESSORS BAILEY, GATES, THWAITES.

The study of geology is ordinarily pursued for one of two purposes—to broaden and deepen the understanding and appreciation of the natural physical world in which we live and travel or to acquire a scientific understanding of the principles of earth behavior and history with a view to exploiting such knowledge as a professional career in any of the several branches of the study. The outlets for such training embrace the search for minerals including petroleum, by geologic and geophysical means, biologic and physical and chemical research in earth materials, industrial applications and teaching in those several fields.

As a cultural study, geology enhances the value of travel in that the natural physical surroundings are regarded as dynamic, changing aspects of our environment. The non-professional student also acquires a new yardstick for the measurement of our national mineral resources and learns to evaluate them as political entities in international affairs. The philosophy gained from a study of more than two billion years of earth history and its relationship to the orderly development of life enjoys a universal appeal which is reflected from the press to classic literature. Knowledge gained through a study of historical geology is fundamental background for studies in anthropology, archaeology, ethnology, and the biologic sciences.

The professional geologist is advised to secure a broad training in the many phases of geology as an undergraduate and to choose his field of specialization within the profession as a graduate student. He may anticipate a considerable choice of occupational activities according to his inclinations, including laboratory research, field research, exploratory field reconnaissance or teaching. He will also have liberal opportunity to apply his training in the allied sciences—mathematics, physics, chemistry and biology. Students who hope to use their professional geologic training in exploratory field reconnaissance should be of sound physique and prepared to endure the privations of travel in remote parts of the world.

MAJOR. For a major the requirements include high-school mathematical preparation, a minimum of 30 credits in geology or a maximum of 40 credits, and formal course work in field training provided by the department or equivalent training elsewhere. (In the latter case, approval must be secured in advance from the department and from the Dean of the College.) For students wishing a survey of the field for general cultural purposes, courses 1, 7, 8, 17 and 22 are suggested. Course 1, General geology, is the principal introductory course. Short courses in mineralogy and geology (7 and 17) are offered without prerequisites to students not intending to take further work in these subjects. Students who take these short courses may enter advanced courses by special arrangement. No substitutions may be made in the major without departmental recommendation.

GENERAL GEOLOGY

1a. GENERAL GEOLOGY. I, II; 5 cr. A study of the geologic processes in operation on and beneath the surface of the earth. Students who have taken Geology 17 may receive but 2 credits for the work of the first semester. Lecture, laboratory, and field trips. Mr. Laudon, Mr. Judson.

1b. GENERAL GEOLOGY. I, II; 5 cr. A study of the physical history of the earth in relationship to the orderly development of life throughout geologic time. Lecture, laboratory, and field trips. Prerequisite: Geology 1a. Mr. Laudon.

9a. ENGINEERING GEOLOGY. I; 3 cr. Elementary general geology with emphasis on engineering applications. Lecture and laboratory. Required of civil and mining engineers. Mr. Woollard.

9b. ENGINEERING GEOLOGY. II; 3 cr. Regional geology with emphasis on mineral occurrences. Lecture and laboratory. Required of mining engineers. Prerequisite: Geology 9a. Mr. Woollard.

11. MAPPING. II; 3–4 cr. Theory and use of instruments used by geologists including some work with aerial photographs; one week at Devils Lake. 4 credits includes additional work on aerial photographs. 1 credit for those who have already taken course for 3 credits. Mr. Thwaites.

17. SURVEY OF GEOLOGY: THE EARTH'S STORY. I, II; 3 cr. Open to all students excepting those who have taken Geology 1 or 9. Field trips with supplementary laboratory work. Mr. Judson.

100. SENIOR THESIS. Yr; 2–3 cr. Optional.

124. FIELD GEOLOGY. I; 3 cr. Designed to give experience in solving stratigraphic and structural problems in the field. Student parties are assigned areas in which special problems are to be interpreted from field evidence. Prerequisite: Geology 11. Mr. Thompson.

131. FIELD GEOLOGY. Summer; 4 cr. Designed to give experience in solving stratigraphic, structural, sedimentologic and paleontologic problems in the field. Can be substituted for Geology 124. Prerequisite: Geology 11. Mr. Laudon.

132. ADVANCED FIELD GEOLOGY. Summer; 4–8 cr. Student is assigned a field problem and required to develop his own analysis. Problem supervised by a staff member who is specialist in particular field chosen. Prerequisites: Geology 124 or 131 and consent of instructor. Mr. Laudon.

135. HISTORY OF GEOLOGIC THOUGHT. I; 1 cr. A survey of the major concepts in geology from the earliest to modern times. Prerequisites: Geology 1 or 9, or 17; senior standing or consent of instructor. Mr. Judson.

163. UNDERGROUND WATER. II; 3 or 4 cr. A course covering factors controlling the occurrence and distribution of ground water, its quality and chemistry, amount and yield, methods of exploration and development, relation to geology, terrain and climate. Lecture and independent investigation. Prerequisite: Geology 1, 9 or 17. Mr. Woollard.

180. ADVANCED INDEPENDENT READING. Prerequisite: Consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Staff.

STRUCTURAL, METAMORPHIC AND ECONOMIC GEOLOGY

114. STRUCTURAL GEOLOGY. I; 5 cr. Earth structures are analyzed from the genetic and applied aspects. The laboratory consists of three-dimensional problems involving structural concepts. Prerequisite: Geology 1 or 9. Mr. Tyler.

115. METAMORPHIC GEOLOGY. II; 5 cr. A study of destructive and constructive processes including weathering, diagenesis and anamorphism. Rock suites illustrating the processes are studied in the laboratory. Prerequisites: Geology 1 or 9, and 6 or 7. Mr. Tyler.

117. PRINCIPLES OF PRE-CAMBRIAN GEOLOGY. I; 2 cr. The distribution, structure, stratigraphy and historical aspects of pre-Cambrian rocks. Given 1953–54 and in alternate years. Prerequisite: Geology 114. Mr. Tyler.

125a. CONDUCTED FIELD TRIP. II; 1 cr. In the semester following course 117, a ten-day trip is taken to the Lake Superior district. Mr. Tyler.

126b. CONDUCTED FIELD TRIP. II; 1 or 2 cr. A conducted field trip to selected mining district of the central United States. The trip is preceded by a seminar in which the characteristics of the deposits to be visited are discussed. Prerequisite: Geology 151. Mr. Cameron.

150. ECONOMIC ASPECTS OF GEOLOGY. I; 2 cr. An analysis of the distribution of mineral resources, present and future problems of mineral supply and conservation, and mineral resources in relation to national and international policy. Mr. Cameron.

151. PRINCIPLES OF ECONOMIC GEOLOGY. I; 3–4 cr. The composition, structure, occurrence origin and economic investigation of the more important groups of mineral deposits; problems of mineral deposition. Prerequisites: Geology 1, 9, or 6 (or concurrent registration in Geology 8 or 108) and Geology 114. Mr. Cameron.

152. Non-Metalliferous Deposits. II; 3 cr. A course covering the deposits of the more important industrial minerals and rocks, including coal; their origin and their economic and geologic characteristics. Prerequisite: Geology 151. Mr. Cameron.

153. Metalliferous Deposits. II; 3 cr. The geologic characteristics, occurrence, and origin of the deposits of the principal metals, and their economic features. Prerequisite: Geology 151. Mr. Cameron.

159. General Geophysics. I; 3 cr. A course in earth science covering the broader aspects of geophysics and its relation to earth structure and geology. Prequisites: Geology 1 or 9, Mathematics 1b, and Physics 1. Mr. Woollard.

160. Geophysical Exploration. II; 3 or 4 cr. An introductory course covering the principles of the various geophysical methods used in subsurface exploration, methods of geologic interpretation and factors governing the selection of methods to be used. Lecture and field investigations. Prerequisites: Geology 1 or 9, Mathematics 3, Physics 1 (or equivalent). Mr. Woollard.

254. Seminar in Structural Geology. Yr; *cr. Advanced consideration of earth mechanics including epirogeny and orogeny. Mr. Tyler.

255. Seminar in Geophysics. I; 3 cr. A course dealing with the geological interpretation of geophysical data. Prerequisite: Geology 160. Mr. Woollard.

259. Investigation of Mineral Deposits. Yr; *cr. Mr. Cameron.

260. Seminar in Metallic Ore Deposits. Yr; *cr. Mr. Cameron.

HISTORICAL GEOLOGY, STRATIGRAPHY, PALEONTOLOGY, SEDIMENTATION

22. Introduction to Paleontology. II; 3 cr. A general study of fossil invertebrates and their stratigraphic distribution. All phyla of invertebrates are studied in their relative biologic order. Prerequisite: Geology 1 or 9. Mr. Thompson.

112. Stratigraphy and Advanced Historical Geology. Yr; 4 cr. (Mining engineers may take for 3 cr.) I. Source areas and distribution of sediments as related to paleogeography and structure, methods of correlation. Prerequisites: Geology 1 or 9, 6 or 7. II. Advanced historical geology. Prerequisites: Geology 112a; some paleontology is highly desirable.

121. Invertebrate Paleontology. Yr; 3 cr. A study of the biologic and stratigraphic relationships of fossil invertebrates, with special emphasis on the evolutionary trends of the invertebrates as interpreted from fossil evidence. Prerequisite: Geology 1 or 9. Mr. Thompson.

122. Micropaleontology. Yr; 3 cr. A study of microscopic animal and plant fossils, with special emphasis on their biology, taxonomy, evolution, and stratigraphic distribution. Prerequisite: Geology 121 or consent of instructor. Mr. Thompson.

123. Petroleum Geology. Yr; 3 cr. I. Origin, migration, accumulation and geologic distribution of petroleum. II. Subsurface methods: electric and lithologic logs, structure contour maps, drilling, coring, testing, well completion. Prerequisite: Geology 112.

125b. Conducted Field Trip. II; 2 cr. A ten-day field trip to the Rockies, Appalachians, Ouachita-Arbuckle area, or Gulf Coastal Plain. Preceded by a seminar. Prerequisite: Geology 112 or consent of instructor.

129a. Paleozoic Stratigraphic Paleontology. I; 3 cr. A study of Paleozoic index fossils. Prerequisite: Geology 1b. Mr. Laudon.

129b. Mesozoic and Cenozoic Stratigraphic Paleontology. II; 3 cr. A study of Mesozoic and Cenozoic index fossils. Prerequisite: Geology 129a. Mr. Laudon.

133. Sedimentation. Yr; 3 cr. The principles of sedimentation including derivation,

transportation and deposition of sediments with emphasis upon environmental factors. Prerequisites: Geology 1 or 9, 6 or 7 and junior standing. Mr. Tyler.

136. PRINCIPLES OF EROSION. II; 2 cr. Principles of erosion, particularly in relation to erosion of the soils of agricultural areas, and the ultimate economic, social and political consequences of erosion. Prerequisite: Junior standing. Mr. Tyler.

233. STUDIES OF SEDIMENTS. II; 2 cr. A study of the mineral composition of sediments with special emphasis upon heavy accessory minerals. Offered 1952–53 and in alternate years. Prerequisite: Geology 108. Mr. Tyler.

256. SEMINAR IN STRATIGRAPHY. Yr; 2 cr. Subject area to be selected each semester.

257. SEMINAR IN PALEONTOLOGY. Yr; *cr. Mr. Thompson.

MINERALOGY AND PETROLOGY

6. GENERAL MINERALOGY. Yr; 5 cr. A discussion of crystallography, mineral properties and characteristics and mineral species—their occurrence, geological significance, political distribution and uses. Prerequisite: Chemistry 1 or a high-school course in chemistry. Mr. Emmons, Mr. Gates.

7. SHORT COURSE IN MINERALS. I; 3 cr. Open to all students. (May be taken for science credit.) Mr. Gates.

8. LITHOLOGY. II; 2 cr. Igneous and metamorphic rocks. Prerequisite: Geology 6 or 7. Open to graduate students but does not carry graduate credit. Mr. Emmons.

106. GEMS AND PRECIOUS STONES. II; 1 cr. Does not carry credit in *laboratory* science. Prerequisite: Junior standing. Mr. Emmons.

107. X-RAY CRYSTALLOGRAPHY. Yr; 3 cr. I. Fundamentals. Symmetry elements, point groups, space lattices, space groups, properties of X-rays, interaction of X-rays with crystals, the powder method, Laue method, rotation and oscillation methods, the reciprocal lattice, moving film methods, application of X-ray techniques to geologic problems. II. The structure of crystals. Atomic sizes, bond types, co-ordination groups, elementary structure analysis, crystal chemistry, alloy systems, homopolar compounds, simple ionic compounds, silicate structures, hydrates, order and disorder, defect structures, relation of crystal structure to physical properties. Prerequisite: Geology 6 or 7. Mr. Bailey.

108. PETROLOGY. Yr; 5 cr. I. The principles of crystal optics and their application to immersion study. II. The principles of petrology and the study of rocks in thin sections. Students who are taking Geology 108 as a second course in petrology may prefer to substitute Geology 139 for the laboratory in Geology 108. Prerequisite: Geology 6 or 7. Mr. Emmons.

126a. CONDUCTED FIELD TRIP. II; 1 cr. A trip will be taken to some classic area, primarily for the study of igneous and metamorphic rocks and pre-Cambrian structures. Prerequisite: Geology 6 or concurrent registration, consent of instructor. Mr. Gates.

139. UNIVERSAL STAGE STUDIES. II; 2 or 3 cr. Petrographic uses of the Five Axis Universal Stage including double variation immersion procedure. Prerequisite: First semester of Geology 108 or consent of instructor. Mr. Gates.

141. LABORATORY INVESTIGATION OF THE ORE MINERALS. I; 3 cr. Microscopic and chemical techniques used in the identification of ore minerals and their applications to mineral dressing and to the study of ore deposits. Prerequisite: Geology 6 or consent of instructor. Mr. Cameron.

253. SEMINAR IN IGNEOUS PETROGENY. Yr; 1 cr. A discussion of current thought in the evaluation of igneous and igneous-appearing rocks. Prerequisite: Geology 108. Mr. Emmons.

261. SEMINAR IN X-RAY CRYSTALLOGRAPHY. Yr; 2 cr. Prerequisite: Geology 107. Mr. Bailey.

GLACIAL GEOLOGY AND PHYSIOGRAPHY

109. GEOMORPHOLOGY (ADVANCED PHYSIOGRAPHY). I; 3 cr. Study of landforms with particular emphasis on the physical principles of the processes which produce them, including some mathematical analysis. Prerequisite: Geology 1, 9 or 17, or Geography 2. Mr. Thwaites.

119. PLEISTOCENE GEOLOGY. II; 3 cr. The events of the Pleistocene, their chronology and relation to prehistoric man. Prerequisite: Geology 143 or consent of instructor. Mr. Judson.

130. PHYSIOGRAPHY OF THE UNITED STATES. Yr; 3 or 5 cr. I. Eastern. II. Western. First semester not prerequisite to second. Origin and history of the landforms of physiographic provinces of the United States. I. One field trip. Prerequisite: Geology 1, 9, or 17, or Geography 2. Mr. Thwaites.

143. GLACIAL GEOLOGY. II; 3 cr. Sediments and landforms caused by continental glaciation; history of glaciation in the United States; emphasis on application to field work. Four field trips. Prerequisite: Geology 1, 9, or 17, or Geography 2. Mr. Thwaites.

GERMAN

PROFESSORS GAUSEWITZ, HEFFNER, *chairman*, HENEL, JOOS, WORKMAN; ASSOCIATE PROFESSOR RIEGEL; ASSISTANT PROFESSORS NAUMANN, SEIFERT, VORDTRIEDE.

The *Attainment Tests* in German are described on page 40. *Proficiency* in German shall be shown by demonstrating, in course and by a final comprehensive examination, (a) adequate comprehension of representative passages from classic and modern authors, (b) a systematic as well as a practical command of German grammar, (c) the ability to carry on simple conversation in German, (d) some knowledge of the literature and culture of the German-speaking peoples, (e) a fair degree of familiarity with the works of some single major German author. Students who wish to prepare for this proficiency test in courses (beyond 10b or the intermediate examination) should take courses 20, 21, 25a, 101, and any of the author courses (105–109) of Group B below. Students who wish to prepare themselves by independent reading as well as by course work should consult the chairman of the department.

The *Elementary Courses* represent work normally done in the first and second years and are graded to meet the needs of high-school graduates with different degrees of preparation. One year of high-school work is considered equivalent to one semester (4 credits) of college work; but freshmen, as well as students who transfer from other colleges, are given credit for work done elsewhere and assigned to the various courses here on the basis of placement examinations (see page 40).

First- and second-semester German are offered in two groups of sections, the traditional and the conversational. In the traditional sections the emphasis is on the learning of correct pronunciation, the standard minimum vocabulary for reading, and the fundamentals of grammar as required for the reading of German. These sections meet four times per week and students are expected to make appropriate preparation at home for these recitations. In the conversational sections the initial emphasis is on the oral use of German in practical situations, with the establishment of correct pronunciation and correct linguistic patterns by the frequent repetition and variation of typical conversations. From these conversations the minimum functional grammar is derived by analysis, and as the course progresses, more time is given to reading practice. These sections meet eight times weekly, four times in groups of approximately twenty students, four times in groups of half that number. The work of these small groups largely replaces home assignments. Both the traditional and the conversational sections prepare students for entry into German 10a, which is the third-semester reading course. Special sections of all elementary courses are organized for students who appear to possess a special aptitude for language study as shown by their records, placement examinations and aptitude tests. Students who participate successfully in these special sections usually are able to pass the *Intermediate* knowledge test in their third semester, and may in any event enter the courses of Group B one semester earlier than might otherwise be the case (see the announcement of course 20 below).

The *Literary Courses* are listed in four groups of progressive degrees of advancement. Students are advised not to enter the courses of Group B until they have had at least 6 credits from the courses of Group A, or have the equivalent of this training. At least 3 credits from Group B are prerequisite for entry into the courses of Group C or the courses in German Philology 150 and 191. Students who intend to specialize in the study of German literature are advised to do related work in such fields as English and comparative literature, in medieval and modern history, especially the history of Germany, in the history of art, the history of philosophy. Majors in German are required to study a second foreign language (see below) and should try to pursue the study of at least one other foreign literature, ancient or modern.

The *Philology Courses* are intended primarily for undergraduate majors and graduate students. Courses 150 and 191 are required of students preparing to teach German. The courses in Middle High German, 151 and 152, are open to advanced undergraduates who obtain the consent of the instructor; they are normally required of candidates for the degree of Master of Arts.

MAJOR. Students who wish to present a major in German (not a teaching major) must have at least 27 credits in advance of course 10a. These credits must include courses 25 (unless 112 is substituted), 150, the second semester of 131, and 6 additional credits in literary courses from Group C.

A certificate of Oral Proficiency in German is awarded to those who pass the oral proficiency test. This certificate is required of all teaching majors.

All students offering a foreign-language major are required to present 8 credits or to pass the intermediate knowledge test in a second foreign language. Those who intend to work for the degree of M.A. or Ph.D. with a major in German should note that they will be required to show a reading knowledge of French.

For the requirements for a teaching major or minor see the announcement of the School of Education.

ELEMENTARY COURSES

1a. FIRST-SEMESTER GERMAN. I, II; 4 cr. For students with no previous knowledge of German. Two groups of sections (see page 149). *Traditional sections,* four class hours per week, home study assignments. *Conversational sections,* four class hours per week plus four laboratory-drill sessions, which largely replace home study. Students who begin German in one of these groups should enroll in the corresponding group in their second semester.

1b. SECOND-SEMESTER GERMAN. I, II; 4 cr. Two groups of sections: *traditional sections,* four class hours per week; *conversational sections,* four class hours plus four laboratory-drill sessions per week, as in course 1a. Prerequisite: German 1a or one year of high-school German, with placement test.

10a. THIRD-SEMESTER GERMAN. I, II; 3 cr. Practice in reading German prose and poetry. Prerequisite: German 1b or two years of high-school German, with placement test.

10b. FOURTH-SEMESTER GERMAN. I, II; 3 cr. Practice in reading German prose and poetry. Students with a grade-point average of 2.0 or better in German may with profit elect German 20 instead of German 10b. Prerequisite: German 10a or three years of high-school German, with placement test.

15. ELEMENTARY CONVERSATIONAL GERMAN. I, II; 2 cr. This course is not open to students who have taken German 1b in the conversational sections. Prerequisite: German 1b in traditional sections or its equivalent.

16. INTERMEDIATE CONVERSATIONAL GERMAN. I, II; 2 cr. Prerequisite: German 15 or German 1b in conversational sections.

PRACTICE COURSES

25a. INTERMEDIATE COMPOSITION AND CONVERSATION. Sem; 3 cr. Grammar review and conversation. Prerequisite: German 10b or German 20.

25b. INTERMEDIATE COMPOSITION AND CONVERSATION. Sem; 3 cr. Prerequisite: German 25a. Courses 25a and 25b are required of all majors and minors, unless German 112 is substituted.

28. SCIENTIFIC GERMAN. Sem; 3 cr. Especially for students of chemistry. Prerequisite: German 10b or equivalent. With consent of instructor this course may be taken for a second semester.

29. SCIENTIFIC GERMAN. Sem; 2 cr. Especially for students of medicine. Prerequisite: German 10b or equivalent. With consent of instructor this course may be taken for a second semester.

80. SUPERVISED INDIVIDUAL READING. Sem; 2 or 3 cr. For upper-group students who have passed the intermediate examination or two years of college German with distinction and desire further practice in reading, not in German literature, but in subject matter related to their major field of study, e.g., history, philosophy, economics, other literatures, or the sciences. Texts of general and not-too-technical character are to be agreed upon in consultation with the student's major professor. Each individual arrangement requires the approval of the dean of the college and the chairman of the German department. Maximum credits six.

112. ADVANCED COMPOSITION AND CONVERSATION. Sem; 2 cr. For students who have a good command of German grammar and fair conversational ability. Strongly recommended to teaching candidates and to candidates for the M.A. degree.

212. EXERCISES IN GERMAN STYLE. Sem; 2 cr. Analysis of distinguished modern German prose; free composition.

SUPPLEMENTARY COURSES

75. GERMAN CLASSICS IN TRANSLATION. Yr; 2 cr. Does not give credit in German. (See COMPARATIVE LITERATURE 75.)

110. DEUTSCHES VOLKSTUM: DICHTUNG UND KUNST. Sem; 3 cr. A study of characteristic periods and movements of the cultural development of Germany. Considerable outside reading. Especially recommended to prospective teachers of German.

210. BACKGROUNDS OF GERMAN LITERATURE. Sem; 2 cr. Assigned readings and weekly discussion-group meetings on the relations of German literature to German art, music, and philosophy.

SERVICE COURSE

181. GERMAN FOR RESEARCH. Sem; 1 cr. (2 hrs. laboratory.) For Ph.D. candidates in all fields (except in German) who need practice in scholarly translation from German into English. May be repeated once for credit. Prerequisite: German 30 or 1b (or equivalent).

GERMAN LITERATURE

GROUP A

Introductory Courses

The courses of Group A are intended to provide a transition from language learning to the study of literature. German is used to some extent as the language of the classroom and emphasis will be increasingly upon literary matters as the language difficulty diminishes.

20. CLASSICAL AND MODERN WRITERS. Sem; 3 cr. This course may be substituted for German 10b and together with course 21 will qualify students for courses in Group B. Prerequisites: 10a and a grade-point average of at least 2.0 in German.

21. CLASSICAL AND MODERN WRITERS. Sem; 3 cr. Students who complete courses 20 and 21 with grades of *C* or better are granted 3 credits toward the satisfaction of their language requirement (not toward graduation) for the course 10b which they skipped. They thus

become eligible for courses in Group B one semester earlier than if they elect German 10b instead of German 20. Prerequisite: German 20.

22. PROSE WRITERS OF THE 19TH AND 20TH CENTURIES. Sem; 3 cr. Prerequisite: German 10b or its equivalent.

23. PROSE WRITERS OF THE 19TH AND 20TH CENTURIES. Sem; 3 cr. Prerequisite: German 22.

24. SHORTER MASTERPIECES. Sem; 2 cr. This course is intended as a terminal course in German for those who require only 16 credits. Prerequisite: 14 credits in German.

GROUP B

The courses of Group B are open to students who have 6 credits from the courses of Group A with a grade-point average of at least 1.5. At least 3 credits from Group B are prerequisite for entry in the courses of Group C. Students who wish to enter these courses on the basis of work done elsewhere should consult the chairman of the department.

101. ELEMENTARY SURVEY. Sem; 3 cr. Lectures and readings on the history of German literature; study of characteristic works. Not intended for students required or otherwise planning to take course 131.

102. THE CLASSICAL PERIOD. Sem; 3 cr. May be repeated in sequence, with consent of instructor.

103. THE NINETEENTH CENTURY. Sem; 3 cr. May be repeated in sequence, with consent of instructor.

104. CONTEMPORARY GERMAN LITERATURE. Sem; 3 cr.

105. SCHILLER. Sem; 3 cr.

106. GRILLPARZER. Sem; 3 cr.

107. HEBBEL. Sem; 3 cr.

108. KELLER. Sem; 3 cr.

109. HAUPTMANN. Sem; 3 cr.

GROUP C

For Undergraduates and Graduates

These courses are open to undergraduates who have at least 3 credits from the courses of Group B and to graduate students. Undergraduate majors in German are required to have at least 9 credits from courses of Group C. Three of these credits must be from the second half of course 131.

123. TRAGIC DRAMA IN EUROPE, 1770–1850. Sem; 3 cr. (See COMPARATIVE LITERATURE 123.)

131. SURVEY OF GERMAN LITERATURE. Yr; 3 cr. Lectures in German with outside reading of representative works from the oldest records to the present. Required of teaching majors and of candidates for the M.A.

132. GOETHE. Sem; 3 cr. A general study of Goethe's life and works, exclusive of *Faust*.

133. GOETHE'S FAUST. Sem; 3 cr.

134. GERMAN LYRIC POETRY, 1750 TO THE PRESENT. Sem; 3 cr. This course traces the development of modern German lyric poetry.

135. NINETEENTH-CENTURY GERMAN PROSE FICTION. Sem; 3 cr. Deals principally with the *Novelle*.

136. TWENTIETH-CENTURY GERMAN PROSE FICTION. Sem; 3 cr. A study of the German *Novelle* in the twentieth century, with excursions into other prose forms.

137. SCHILLER'S DRAMAS. Sem; 3 cr. A study of the development of German Classicism as

embodied in Schiller's dramas; the theory, structure, and dramaturgy of the classical drama in Germany.

142. NINETEENTH-CENTURY GERMAN DRAMA AND LYRIC. Sem; 3 cr.

143. TWENTIETH-CENTURY GERMAN DRAMA AND LYRIC. Sem; 3 cr.

180. SPECIAL READING. Advanced study in a special field of literature or language under the guidance of a member of the department. Credit and conference hours to be arranged. Candidates should consult the chairman of the department.

GROUP D

Primarily for Graduates

200. INDIVIDUAL RESEARCH. Investigation not related to a particular course or seminar, carried on in consultation with a member of the department. Credit and conference hours to be arranged. Candidates should consult the chairman of the department.

201. HUMANISM, RENAISSANCE, AND REFORMATION (1400–1600). Sem; 3 cr. The break with the medieval world in the age of Luther, Hutten, Murner, Brant, Fischart, and their contemporaries.

202. BAROQUE LITERATURE IN GERMANY (1600–1700). Sem; 3 cr. The Renaissance spirit and religious fervor in their polarity. Studies in Opitz, Fleming, Gryphius, Grimmelshausen, and their contemporaries.

203. RATIONALISM, ROCOCO, AND "STURM UND DRANG" (1700–1789). Sem; 3 cr. The foundations of modern German literature. Studies in Gottsched, Klopstock, Wieland, Lessing, and Herder. Special emphasis upon their aesthetic and literary criticism.

205. SCHILLER. Sem; 3 cr. Especially devoted to Schiller's essays in aesthetics and cultural philosophy.

206. ROMANTICISM IN GERMAN LITERATURE. Sem; 3 cr. The theorists and the creative writers. The Schlegels, Tieck, Novalis, Hölderlin, and the later Romanticists.

240. GERMAN LITERARY THEORY AND CRITICISM. Sem; 3 cr. History of German criticism, with attention to other European critical writers.

246. BIBLIOGRAPHY AND METHODS. Sem; 1 cr. Required of all candidates for the M.A. or Ph.D. Normally taken with course 247.

247. PROSEMINAR IN GERMAN LITERATURE. Sem; 2 cr. Investigations of limited compass, to prepare for advanced work in the seminars.

*248. SEMINAR IN GERMAN LITERATURE. Sem; 2 cr.

*249. SEMINAR IN GERMAN LITERATURE. Sem; 2 cr.

GERMAN PHILOLOGY

For Undergraduates and Graduates

150. HISTORY OF THE GERMAN LANGUAGE. Sem; 2 cr. Lectures on the development of the German language, its sounds, forms, vocabulary, and its standardization. Required of all undergraduate majors.

151. INTRODUCTION TO MIDDLE HIGH GERMAN. Sem; 3 cr. *Das Nibelungenlied,* Middle High German grammar.

152. READINGS IN MIDDLE HIGH GERMAN. Sem; 3 cr. Courtly epic and Minnesang, with emphasis on *Parzival* and Walther von der Vogelweide.

191. PHONETICS. Sem; 3 cr. A general introduction to phonetics, with particular reference to the teaching of German.

Primarily for Graduates

250. INDIVIDUAL RESEARCH IN GERMAN AND GERMANIC PHILOLOGY. Credit and conference hours to be arranged. Candidates should consult the chairman of the department.

255. OLD HIGH GERMAN. Sem; 3 cr. Readings: Phonology, morphology, dialects.

258. OLD SAXON. Sem; 3 cr. *Heliand* and *Genesis.*

260. PHILOLOGICAL PROSEMINAR. Sem; 2 cr. Studies in the history of the German language. Investigations of short specimen texts and introduction to the methods of philological and linguistic research.

261. HISTORICAL GRAMMAR OF THE GERMAN LANGUAGE. Sem; 3 cr. Phonological and morphological consideration of High German.

268. INTRODUCTION TO THE STUDY OF GERMANIC PHILOLOGY. Sem; 3 cr. Gothic: the general characteristics of the Germanic languages, with special reference to phonology.

269. INTRODUCTION TO THE STUDY OF GERMANIC PHILOLOGY (continued). Sem; 3 cr. The general characteristics of West Germanic, Gothic, North Germanic, English and High German. A general introduction to Germanic morphology.

*270. PHILOLOGICAL SEMINAR. Sem; 2 cr.

HISTORY

PROFESSORS BEALE, CURTI, EASUM, EDSON, HARRINGTON, *chairman,* HESSELTINE, HIGBY, HILL, JENSEN, KNAPLUND, PHILLIPS, POST, REYNOLDS, SACHSE; ASSOCIATE PROFESSORS BOARDMAN, CARSTENSEN, FARMER; ASSISTANT PROFESSORS CAMERON, GREENE, KROEBER, LIVELY; INSTRUCTOR PETROVICH; LECTURER LINDGREN.

When history is offered as one of the required studies in the general course leading to the degree of Bachelor of Arts (see page 44), the requirement must be satisfied by a continuous 3-credit course extending through two semesters.

For a statement regarding the new requirement in United States History and Institutions, see page 48.

The courses in history are divided into three groups: (a) Courses numbered under 100 carry only undergraduate credit. The introductory courses 3, 5, and 10 (see details below) are the courses open to freshmen. (b) Courses numbered in the 100-series continue in the direction of greater specialization the work begun in the introductory courses; they may be elected by students who have the necessary preparation. (c) Courses numbered above 200 are open only to graduate students.

MAJOR FIELDS OF CONCENTRATION. (a) European History, (b) American History, (c) History of Culture, (d) Hispanic Studies (see page 68).

Students with a major in social sciences electing to work in history will elect one of these fields of concentration, and offer not less than 30, or 33, or 35 credits in history, the number depending upon the students' preparatory school training in history. Students entering with two or more units in history are required to take not less than 30 credits on the college level; those with one unit, 33 credits; those entering college with no history, 35 credits. These courses should include History 2 or 3b,* or 138 or 139, one other introductory course (History 3,* 5, or 10), History 4 (6 credits), and at least 15 credits in advanced history courses (*i.e.,* numbered 100–199) taken in residence at the University of Wisconsin, 9 credits of which must be confined to European History or American History, except as specified below for Field of Concentration (c).

Courses 12 (3 credits) and 22 (4 credits) of the Department of Integrated Studies are accepted for purposes of the history major as satisfying the requirement of History 3a–3b or 2a and are reckoned as Medieval History; their credits are computed within the block of 30–33–35 credits required for the history major.

* The subjects of these seminars vary from semester to semester and are announced by bulletin board and in the time table.

Field of Concentration (c) requires either (I) History 3 or 5 (6 or 8 credits), History 10 (6 credits), and History 2 (6 credits) or History 4 (6 credits); or (II) History 3 (6 or 8 credits) and History 10 (6 credits) or History 4 (6 credits), and advanced history courses up to the minimum of 30 credits. It also requires an attainment examination in Latin and in one modern language, and contemplates a supervised selection of courses in non-historical subjects within the field of concentration. It is preferable for majors in this field to select their major in their sophomore year.

Of the 15 credits in advanced courses, 2 credits in each semester of the senior year may, in the judgment of the adviser, be assigned to the preparation of a thesis (History 100-A) or a thesis course (History 100-B) in the field of concentration. In addition to the courses in history, the major in Fields of Concentration (a) and (b) requires Economics 1a. Political Science 25 and Geography 1–2 are recommended.

A major in social sciences who elects (a), (b), or (c) as his field of concentration may be admitted to advanced independent work at the beginning of his junior year provided that (1) he has a 2.5 grade-point average for his first two years; (2) he has completed the required freshman and sophomore work in history; and (3) he is recommended for independent work by three of his sophomore instructors of whom one must be a member of the Department of History.

JOINT MAJOR IN HISTORY AND HISTORY OF SCIENCE. This joint major will consist of 18 credits in introductory courses: History 2, 3, 5, or 10, 6 credits; History 4, 6 credits; History of Science 1, 6 credits; and 18 credits in advanced courses, no less than 6 in either field (history or history of science); total, 36 credits.

TEACHING MAJOR AND MINOR. See bulletin of the School of Education.

I. INTRODUCTORY COURSES

OPEN TO FRESHMEN

Students who take History 3 cannot elect History 2; they may take History 5 for 2 credits a semester.

*3a–b. EUROPEAN CIVILIZATION, 800 TO THE PRESENT. Yr; 3 or 4 cr. Introduction to the political, economic, social, and cultural history of modern western civilization. Mr. Post, Mr. Reynolds, Mr. Farmer, Mr. Boardman, Mr. Petrovich, and staff.

5a–b. ENGLISH AND BRITISH HISTORY. Yr; 3 or 2 cr. Political, constitutional, economic, and social development; relations between England, the other parts of the British Isles, and the continent of Europe; imperial expansion. Period covers prehistoric times to the present. Either History 5a–b or History 5a–6 may constitute a continuous year course. Mr. Sachse and staff.

6. ORIGINS OF AMERICAN INSTITUTIONS. II; 3 or 2 cr. Foundations of political institutions, development of religious and political ideas, development of American constitutions, economic institutions and their development. May be taken in conjunction (but not simultaneously) with History 3a or 5a to complete a continuous year course. Prerequisite: History 3a, 5a, or sophomore standing. Mr. Jensen.

10. ANCIENT HISTORY. Yr; 3 cr. Survey of the history of civilization from the beginnings in Egypt and Babylonia to the year 500, with emphasis on institutional and social development. Mr. Edson.

NOT OPEN TO FRESHMEN

*2a–b. MODERN EUROPEAN HISTORY. Yr; 3 cr. A survey of the principal developments in the history of Europe from 1492 to the present. Prerequisite: Sophomore standing. Mr. Easum and staff.

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* Students who take History 3 cannot elect History 2; they may take History 5 for 2 credits a semester; History 1, when and if offered. Courses 2, 5, and 10 are open to freshmen and sophomores for 3 credits per semester, and to upperclassmen for 2 credits. Upperclassmen may register in them for 3 credits if a term paper or its equivalent is undertaken. Underclassmen who have already taken another of these courses or who take two concurrently may elect one of them for 2 credits.

4a–b. AMERICAN HISTORY, 1607 TO THE PRESENT; THE ORIGIN AND GROWTH OF THE UNITED STATES. Yr; 3 cr. Survey of American social, political, and economic development. Prerequisite: Sophomore standing. Staff.

12a. REPRESENTATIVE AMERICANS, 1623–1865. I; 3 cr. A biographical approach to American history. Evaluation of the contributions of leading Americans to the nation's development; the colonial era, the revolutionary and early national periods, the sectional controversy, and the Civil War. Offered concurrently with History 112a. Prerequisite: Sophomore standing or consent of instructor. Mr. Hesseltine.

12b. REPRESENTATIVE AMERICANS, 1865–1953. II; 3 cr. A biographical approach to American history. Evaluation of the contributions of leading Americans to the nation's development during the Age of Big Business, the Progressive Era, the New Deal, and two World Wars. Offered concurrently with History 112b. Prerequisite: Sophomore standing or consent of instructor. Mr. Hesseltine.

37. ORIGINS AND HISTORY OF WORLD WAR II. I; 3 cr. Background and history of World War I. Problems of peace-making and international organization. Rise of Fascism, National Socialism, and Japanese imperialism. Breaking the peace. Second World War. Prerequisite: Sophomore standing. Offered concurrently with History 137. Not open to students with credit for History 139b. Offered 1952–53. Mr. Easum.

II. TRAINING COURSES AND SPECIAL WORK

100-A. SENIOR THESIS. Yr; 2 cr.

100-B. THESIS COURSE. Yr; 2 cr. Prerequisites: Senior standing; major in history.

180. SPECIAL WORK. Upperclass history major students of known capacity, may, by agreement with the major professor, arrange for special out-of-class work, for which credit may be allowed, during the recesses of the University, on the basis of 1 credit for each week, or its equivalent, devoted exclusively to the special project. Open only to upper-group majors in the department by consent of instructor. See Section 18, page 43.

186. GENERAL HISTORY: REVIEW AND INTERPRETATION. Yr; 2 cr. A survey of points of view and analytic appraisals of movements in European and American history. Prerequisite: Senior candidate for the Teachers' Certificate with major or minor in history or candidate for the master's degree in the Teaching of History. Mr. Phillips and other senior members of the History Department.

200. GRADUATE THESIS. Yr; *cr. Staff.

252. HISTORICAL METHOD. I; 2 cr. Historiography, historical bibliography, sources and criticism. Graduate students in their first year are expected to take this course. Mr. Farmer and others.

280. SPECIAL WORK. Properly qualified graduate students may, by agreement with the major professor, undertake special out-of-class work, generally upon research problems, for which credit may be allowed on the basis of 1 credit for each week, or its equivalent, devoted exclusively to the special project. During the recesses of the University this special work is available only to graduate students who have the master's degree or its equivalent.

THE TEACHING OF HISTORY AND THE SOCIAL STUDIES. See EDUCATION 84, bulletin of the School of Education.

PRACTICE TEACHING IN HISTORY ON THE COLLEGE LEVEL. See EDUCATION 286, bulletin of the School of Education.

ADVANCED COURSE IN THE TEACHING OF HISTORY AND THE SOCIAL STUDIES. See EDUCATION 185, bulletin of the School of Education.

III. ANCIENT AND MEDIEVAL HISTORY

123. ECONOMIC HISTORY OF THE ANCIENT WORLD. (See VI, ECONOMIC AND SOCIAL HISTORY.)

126. A History of Rome. Yr; 3 cr. I: The Republic; II: The Empire. A view of Roman history from the beginning of the Roman state to the fall of the Empire in the West. Prerequisite: Junior standing or consent of instructor. Not offered 1953–54. Mr. Edson.

127. A History of Greek Civilization. Yr; 3 cr. Greek history from prehistoric times to the end of the Hellenistic Age. Prerequisite: Junior standing or consent of instructor. Not offered 1952–53. Mr. Edson.

128. Expansion of Europe to 1607. II; 3 cr. Medieval social, economic, and political experiences in colonization; the Iberian expansion. Prerequisite: Junior standing. Offered second semester 1951–52. Mr. Verlinden.

131. Medieval Civilization. I or II; 3 cr. The nature and direction of the civilization of the twelfth and thirteenth centuries. Prerequisite: Junior standing or consent of instructor. Mr. Post.

132. History of Italy to the Eighteenth Century. I or II; 3 cr. History of the Italian people, emphasizing their contributions in the economic, cultural, and political fields, from the later Roman Empire to the eighteenth century. Prerequisite: History 3 or junior standing. Mr. Reynolds.

133. Economic Life in Europe. (See VI, Economic and Social History.)

134. The Renaissance. II; 3 cr. Various elements contributing to the development of European civilization in the fourteenth and fifteenth centuries. Prerequisite: Junior standing or consent of instructor. Mr. Post.

135. Later Roman and Byzantine Empires. Yr; 3 cr. Accession of Diocletian (284) to capture of Constantinople by the Turks (1453). External relations of the Empire, constitutional, ecclesiastical, social, economic, and intellectual history. Prerequisite: History 10, 3a, or consent of instructor. Not offered 1952–53.

136. History of Medieval France. I or II; 3 cr. Rise of the national state and its civilization under the monarchy, 987–1483. Prerequisite: Junior standing or consent of instructor. Mr. Post.

141. English Constitutional History. Yr; 3 cr. Government and law of England from earliest times to the present. Prerequisites: History 5; or History 2 or 3 and junior standing. Offered 1953–54 and in alternate years. Mr. Sachse.

164. History of Exploration and Geographical Discoveries, 1200–1700. I or II; 3 cr. Literature on medieval and early modern explorations in Asia, Africa, and the New World. Economic and political consequences of the "expansion of Europe." Prerequisite: Junior standing or consent of instructor. Mr. Reynolds.

165. History of Commerce. (See VI, Economic and Social History.)

168. History of the Far East. (See IV, Modern History.)

169. Civilization of China. I; 3 cr. Political, social, and cultural developments from earliest beginnings to the eighteenth century. Prerequisite: History 2, 3b, or junior standing. Offered 1953–54 and in alternate years. Mr. Boardman.

210. Proseminar in the Political Institutions and Political Thought of the Classical World. Yr; 3 cr. Prerequisite: Graduate standing. A reading knowledge of French or German is highly desirable. (Candidates for the doctorate in Ancient History or Classics are not eligible for this proseminar. Their attention is called to History 254.) Mr. Edson.

211. Studies in Recent American History, 1919 to the Present. Sem; 3 cr. Topics like uneasy prosperity, the Great Depression, the New Deal, growth of labor power, minority group problems, Good Neighbor Policy, entry into World War II, America in the Pacific, retreat from isolation, world struggle for power. Prerequisites: Master's degree and consent of instructor. Mr. Lively.

253. Latin Paleography. I or II; 2 cr. Elements of paleography, with practical exercises in reading of manuscripts. Prerequisite: Graduate standing. Mr. Post.

254. Seminar in Ancient History. Yr; 2 cr. Special problems in Greek and Roman history will be studied in alternate years. Prerequisites: Graduate standing or consent of instructor and reading knowledge of appropriate foreign languages. Mr. Edson.

256. Seminar in Medieval History. Yr; 2 cr. Studies in intellectual history of the thirteenth century. Prerequisites: Graduate standing and reading knowledge of Latin, French, and German. Mr. Post.

257. Seminar in Medieval History. Yr; 2 cr. Studies in the economic history of the Middle Ages. Prerequisites: Graduate standing and reading knowledge of Latin, French, Italian, or German. Mr. Reynolds.

268. Seminar in the History of the Far East. (See IV, Modern History.)

275. Seminar in Modern Eastern Europe. Yr; 2 cr. Studies in problems in Modern Russian or Balkan History. Prerequisites: Graduate standing and consent of instructor.

IV. MODERN HISTORY

130a. History of Spain to 1598. I; 3 cr. Evolution of Spanish culture during ancient and Visigothic times; Moslem Spain; the Christian Reconquest; the Spanish kingdoms; independence of Portugal; unification and empire. Prerequisite: Junior standing. Mr. Kroeber.

130b. History of Spain Since 1598. II; 3 cr. Decline, collapse of the empire in Europe and America; Napoleonic period; social, economic, cultural, political aspects of life under the monarchy, and since 1931. Prerequisite: Junior standing. Mr. Kroeber.

132. History of Italy to the Eighteenth Century. (See III, Ancient and Medieval History.)

137. Origins and History of World War II. I; 3 or 4 cr. Background and history of World War I. Problems of peace-making and international organization. Rise of Fascism, National Socialism, and Japanese imperialism. Breaking the peace. Second World War. Prerequisite: Junior standing or History 2, 3, or 5. Offered concurrently with History 37, first semester 1952–53; not offered simultaneously with or open to students with credit for History 139b. Mr. Easum.

138a. The French Revolution and the Napoleonic Period, 1789–1815. I; 3 cr. Effect of the French Revolution and the Napoleonic period on the institutions and conditions of Europe. Prerequisite: Junior standing or consent of instructor. Offered 1953–54. Mr. Higby.

138b. History of Europe, 1815–1871. II; 3 cr. Effects of the rise of nationalism, liberalism, and the new economic forces upon Europe and European society. Prerequisite: Junior standing or consent of instructor. Offered 1953–54. Mr. Higby.

139a. The Age of Imperialism, 1871–1918. I; 3 cr. A study of the expansion and rivalries of the nations of Europe during this period. Prerequisite: Junior standing or consent of instructor. Offered 1952–53. Mr. Higby.

139b. Recent and Contemporary European History, 1918–1953. II; 3 cr. The First World War and its aftermath. Prerequisite: Junior standing or consent of instructor; not open to students with credit for History 37–137. Offered 1952–53. Mr. Higby.

140a–b. European Economic History Since 1700. (See VI, Economic and Social History.)

142a. The Emergence of Modern Britain: England Under the Tudors and Early Stuarts, 1485–1660. I; 3 cr. Cultural, economic, political, and social issues and developments; foreign relations; the background of empire. Prerequisite: History 5 or junior standing. Offered 1952–53 and in alternate years. Mr. Sachse.

142b. The Emergence of Modern Britain: England Under the Later Stuarts and

HANOVERIANS, 1660–1815. II; 3 cr. Cultural, economic, political, and social issues and developments; foreign relations; the industrial revolution; the old empire; Anglo-American relations. Prerequisite: History 5 or junior standing. Offered 1952–53 and in alternate years. Mr. Sachse.

143. THE BRITISH EMPIRE SINCE 1815. Yr; 3 cr. Imperial expansion and imperial policy. Growth of the Dominions; relations with India; the dependent Empire. The Empire and Commonwealth in our own age. Prerequisite: History 5 or junior standing. Offered 1952–53. Mr. Knaplund.

144. SIXTEENTH-CENTURY CIVILIZATION. II; 3 cr. The conflict of secular and religious forces, 1500–1600. Prerequisite: Junior standing or consent of instructor. Not offered 1952–53. Mr. Post.

145. EUROPEAN SOCIAL AND INTELLECTUAL HISTORY, 1600–1789. Yr; 3 cr. First semester: Social conditions and their influence on thought and belief. Second semester: Main movements in thought and taste in the 17th and 18th centuries. Prerequisite: History 3b, 2a, or junior standing. Offered 1952–53 and in alternate years. Mr. Farmer.

146. HISTORY OF THE GERMAN PEOPLE. Yr; 3 cr. First semester: Survey of medieval German history; a study of the Renaissance, Reformation, and Thirty Years' War. Second semester: 1648–1871, with special attention to the rise of Prussia and unification of Germany. Prerequisite: History 2, 3, 5, or 10, or junior standing. Mr. Easum.

147. MODERN BRITAIN, 1815 TO THE PRESENT. Yr; 3 cr. Economic, social, and political history of the British Isles. Foreign relations and foreign policy. Prerequisite: History 5 or junior standing. Offered 1953–54. Mr. Knaplund.

148. HISTORY OF SOUTHEAST EUROPE, 1453 TO THE PRESENT. Yr; 3 cr. The Ottoman and Hapsburg Empires, the rise of the Balkan countries, internal developments and external pressures, from the end of the Byzantine Empire to the present. Prerequisite: Junior standing or consent of instructor. Not offered concurrently with History 135. Mr. Petrovich.

149. HISTORY OF RUSSIA. Yr; 3 cr. The origins and evolution of the Russian State; political, economic, and social history; relations with foreign countries. From the ninth century to the present. Prerequisite: Junior standing or consent of instructor. Mr. Petrovich.

151a. EUROPEAN SOCIAL AND INTELLECTUAL HISTORY, 1789–1870. I; 3 cr. The conflicting cultures of the aristocratic reaction, individualist liberalism and the democratic movement; romanticism and scientific materialism. Prerequisite: History 2b, 3b, or junior standing. Offered 1953–54 and in alternate years. Mr. Farmer.

151b. EUROPEAN SOCIAL AND INTELLECTUAL HISTORY SINCE 1870. II; 3 cr. The liberal faith in the ascendant and in retreat; socialism, authoritarian nationalism and the new liberalism; the uncertain faith in science and progress. Prerequisite: History 2b, 3b, or junior standing. Offered 1953–54 and in alternate years. Mr. Farmer.

156. HISTORY OF AUSTRALIA AND NEW ZEALAND. II; 3 cr. Early settlements. Growth of self-government. Economic and social policies and progress. Dominion status. Foreign relations. Emphasis on period since 1891. Prerequisite: History 5 or junior standing. Mr. Knaplund.

164. HISTORY OF EXPLORATION AND GEOGRAPHICAL DISCOVERIES, 1200–1700. (See III, ANCIENT AND MEDIEVAL HISTORY.)

168. HISTORY OF THE FAR EAST. Yr; 3 cr. Survey of the culture, history, and institutions of the Far Eastern countries from earliest times to the present. Prerequisite: History 2, 3b, or consent of instructor. Mr. Boardman.

170. CHINA IN THE 19TH AND 20TH CENTURIES. II; 3 cr. Examination of the process of social change and revolution in modern China. Prerequisite: Junior standing or consent of instructor. Mr. Boardman.

172. JAPAN SINCE THE MEIJI RESTORATION. II; 3 cr. Foreign relations, political, social,

and economic developments during the period 1868–1952. Prerequisite: Junior standing or consent of instructor. Offered 1952–53. Mr. Boardman.

175a. History of Modern France: The Old Regime. I; 3 cr. Evolution of French institutions and civilization, 1483–1789. Prerequisite: Junior standing or consent of instructor. Mr. Hill.

175b. History of Modern France: Since the Revolution. II; 3 cr. The development of French institutions and civilization, 1789 to the present. Prerequisite: Junior standing or consent of instructor. Mr. Hill.

178. Recent German History. Yr; 3 cr. First semester: The Hohenzollern Empire: its constitution, history, colonial enterprises, and world position. Second semester: Wartime and postwar Germany, Weimar Republic, and the Third Reich. Prerequisites: History 2, 3, or 146, and junior standing. Not offered concurrently with History 146. Mr. Easum.

187. History of Scandinavian Countries. Yr; 3 cr. The political, economic, and social history of the Scandinavian countries from the earliest times to the present. Prerequisite: History 3 or History 2, or junior standing. Mr. Lindgren.

207. Modern European History, 1492–1789. Yr; 3 cr. Lectures, reports, and discussions. Expansion of Europe; Protestant revolt; Catholic reformation; rise of absolutisms; benevolent despots; and growth of revolutionary spirit. Prerequisite: Graduate standing. Mr. Higby.

240. Seminar in Modern European Economic History. (See VI, Economic and Social History.)

258. Seminar in the History of the British Empire. Yr; 2 cr. Aspects of British imperial history. Prerequisite: Graduate standing. Mr. Knaplund.

259. Seminar in Seventeenth-Century England. Yr; 2 cr. Attention will be devoted to economic, intellectual, political, and social problems of this period. Prerequisite: Graduate standing. Mr. Sachse.

265. Seminar in Central European History. Yr; 2 cr. Studies in modern German history and German international relations, with special attention to Germany's position as a Central European state. Prerequisites: Graduate standing and reading knowledge of German. Reading knowledge of French is highly desirable. Mr. Easum.

267. Seminar in Modern European History. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Higby.

268. Seminar in the History of the Far East. Yr; 2 cr. Prerequisite: Graduate standing. Reading knowledge of French, Chinese, or Japanese is desirable. Mr. Boardman.

275. Seminar in Modern Russian and East European History. Yr; 2 cr. Will be given in rotation or as occasion arises. Prerequisites: Graduate standing and consent of instructor.

276. Seminar in European Social and Intellectual History. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Farmer.

V. AMERICAN HISTORY

101. (Formerly 116.) History of Colonial Society. I; 3 cr. European expansion and colonization in the New World; English colonization; political ideas and institutions; economic foundations; social evolution and conflict; intellectual currents; colonial expansion; international warfare. Prerequisite: Junior standing. Mr. Jensen.

102. (Formerly 115.) The Age of the American Revolution, 1763–1789. II; 3 cr. Structure of American society; British policy; growth of revolutionary movements; independence and political revolution; military and diplomatic phases; social consequences; Confederation period; Constitution of 1787. Prerequisite: Junior standing. Mr. Jensen.

103. Nationalism and Democracy in the United States, 1789–1815. I or II; 3 cr. Estab-

lishment of the national government; the rule of the Federalist Party; rise of Jeffersonian democracy; the philosophy and practice of Jeffersonians; the War of 1812. Prerequisite: Junior standing. Mr. Jensen.

104. THE RISE OF JACKSONIAN DEMOCRACY, 1815–1837. I or II; 3 cr. Expansion and economic change; economic sectionalism and national politics; rise of Jacksonian democracy; social and political reform; Jacksonians in power. Prerequisite: Junior standing. Mr. Jensen.

105. (Formerly 114.) SECTIONALISM AND THE CIVIL WAR. I; 3 or 4 cr. Conflict between rising industrialism and the Old South; the abolition crusade; secession; economic and social significance of the Civil War. Prerequisite: Junior standing. Offered 1952–53. Mr. Hesseltine.

106. (Formerly 118). SECTIONALISM AND THE CIVIL WAR. I; 3 or 4 cr. Conflict between Civil War; reconstruction; economic consequences of the war; the Grant era; the New South; the continuance and decline of sectionalism. Prerequisite: Junior standing. Offered 1952–53. Mr. Hesseltine.

107. AMERICA IN TRANSITION, 1877–1901. Sem; 3 cr. History of the rise of modern industrialism, the organization of labor and farmers, the disappearance of the frontier, the growth of American imperialism and resulting social, constitutional, and intellectual adjustments. Prerequisite: Junior standing. Mr. Beale.

108. (Formerly 124a.) RECENT AMERICAN HISTORY, 1901–1929. Sem; 3 cr. Economic, social, intellectual, constitutional, and political history of the age of big business and international bankers, progressive reform and conservative reaction, assumption of world leadership and retreat from it. Prerequisite: Junior standing. Mr. Beale.

109. (Formerly 124b.) RECENT AMERICAN HISTORY, 1929 TO THE PRESENT. Sem; 3 cr. Social, economic, and political history of the Great Depression, the New Deal, entry and participation in World War II, and problems of peace and war since 1945. Prerequisite: Junior standing. Mr. Lively.

111. HISTORY OF THE WEST, 1763–1893. (See VI, ECONOMIC AND SOCIAL HISTORY.)

112a. REPRESENTATIVE AMERICANS, 1623–1865. I; 3 cr. A biographical approach to American history. Evaluation of the contributions of leading Americans to the nation's development, the colonial era, the revolutionary and early national periods, the sectional controversy, and the Civil War. Offered concurrently with History 12a. Prerequisite: Junior standing or an introductory course in American history. Mr. Hesseltine.

112b. REPRESENTATIVE AMERICANS, 1865–1953. II; 3 cr. A biographical approach to American history. Evaluation of the contributions of leading Americans to the nation's development during the Age of Big Business, the Progressive Era, the New Deal, and two World Wars. Offered concurrently with History 12b. Prerequisite: Junior standing or an introductory course in American history. Mr. Hesseltine.

113a–b. HISTORY OF AMERICAN THOUGHT AND CULTURE. Yr; 3 cr. European and American influences on movement of thought, arts, and agencies of cultural life, seventeenth century to present, and impact of American ideas on the world. Prerequisite: Junior standing. Offered 1953–54 and in alternate years. Mr. Curti.

114. (Formerly 109.) HISTORY OF WISCONSIN. I; 3 cr. The history of Wisconsin from the beginning of the historical period to the present, with emphasis on the economic and social aspects of Wisconsin history since 1815. Prerequisite: History 4 or junior standing. Offered 1952–53. Mr. Carstensen.

117a. ORIGIN AND GROWTH OF THE CONSTITUTION (1700–1835). I; 3 cr. Colonial background of American governments; Philadelphia Convention; rival theories of constitutional interpretations; Supreme Court and the Constitution to the death of Marshall. Prerequisite: Junior standing. Offered 1953–54. Mr. Hesseltine.

117b. THE CONSTITUTION IN AMERICAN DEVELOPMENT (1835–1954). II; 3 cr. Constitutional aspects of the sectional controversy and Civil War; new economic forces and a changing

constitution; trust regulation; progressive movement; social legislation; recent constitutional controversies. Prerequisite: Junior standing. Offered 1953–54. Mr. Hesseltine.

120a–b. AMERICAN FOREIGN RELATIONS, 1775 TO THE PRESENT. Yr; 3 cr. The United States in its relations with the outside world, emphasizing public opinion and the economic, social and political forces that have determined American foreign policy. Prerequisite: Junior standing. Mr. Harrington.

121a–b. SOCIAL DEVELOPMENT OF THE AMERICAN PEOPLE. (See VI, ECONOMIC AND SOCIAL HISTORY.)

122a. AMERICAN ECONOMIC LIFE: THE HISTORY OF AMERICAN AGRICULTURE. (See VI, ECONOMIC AND SOCIAL HISTORY.)

122b. AMERICAN ECONOMIC LIFE: THE GROWTH OF INDUSTRIAL AND FINANCE CAPITALISM. (See VI, ECONOMIC AND SOCIAL HISTORY.)

129a. LATIN-AMERICAN HISTORY TO 1825. I; 3 cr. Conquests by Spain and Portugal; and the socio-economic, cultural, and governmental institutions in colonial life. Background of revolution, and wars for independence. Prerequisite: Junior standing. Mr. Kroeber.

129b. LATIN-AMERICAN HISTORY SINCE 1825. II; 3 cr. The modern struggle for stability, progress, and cultural advancement; relations with the United States; part played in world affairs; life and problems of today. Prerequisite: Junior standing. Mr. Kroeber.

155. HISTORY OF CANADA. I; 3 cr. Origins of the Canadian Nation. Economic, political, and social progress. Establishment of independent status. Foreign relations. Emphasis on period since federation, 1867. Prerequisite: History 5 or junior standing. Mr. Knaplund.

201. STUDIES IN EIGHTEENTH-CENTURY AMERICAN HISTORY. Sem; 3 cr. Prerequisites: Master's degree and consent of instructor. Mr. Jensen.

202. STUDIES IN AMERICAN INTELLECTUAL HISTORY: THE AMERICAN MIND. Sem; 3 cr. Prerequisites: Master's degree and consent of instructor. Mr. Curti.

203. STUDIES IN AMERICAN SECTIONALISM. Sem; 3 cr. Prerequisites: Master's degree and consent of instructor. Mr. Hesseltine.

204. STUDIES IN AMERICAN EXPANSION OVERSEAS. Sem; 3 cr. Prerequisites: Master's degree and consent of instructor. Mr. Harrington.

205. STUDIES IN RECENT AMERICAN HISTORY, 1880–1919. Sem; 3 cr. Topics like the Populist protest, Progressive movement, farm discontent, labor's struggle for recognition, minority groups, rise of industrialism, of imperialism, social reformers, critics of America, entry into international affairs and World War I, recent historians. Prerequisites: Master's degree and consent of instructor. Mr. Beale.

206. STUDIES IN LATIN-AMERICAN HISTORY. Yr; 2 cr. A course designed to acquaint graduate students with the historical literature of Latin America for the colonial and republican eras. Prerequisites: Graduate standing and consent of instructor. Mr. Kroeber.

208. STUDIES IN THE HISTORY OF THE WEST. I; 3 cr. Emphasis on social and economic phases of history of the westward-moving American frontier. Prerequisites: Master's degree and consent of instructor. Mr. Carstensen.

209. STUDIES IN AMERICAN ECONOMIC HISTORY. (See VI, ECONOMIC AND SOCIAL HISTORY.)

261. SEMINAR IN AMERICAN HISTORY. Yr; 2 cr. Social and economic problems of the Civil War and Reconstruction periods or in constitutional history. Prerequisite: Graduate standing. Mr. Hesseltine.

262. SEMINAR IN AMERICAN HISTORY. Yr; 2 cr. Social and intellectual history of the United States since 1890. Prerequisites: Graduate standing and consent of instructor. Mr. Curti.

263. SEMINAR IN AMERICAN HISTORY. Yr; 2 cr. Studies in eighteenth-century America. Prerequisite: Graduate standing. Mr. Jensen.

269. Seminar in American History. Yr; 2 cr. Studies in American foreign relations. Prerequisite: Graduate standing. Mr. Harrington.

270. Seminar in American History. Yr; 2 cr. Studies in recent history of the United States. Prerequisite: Graduate standing. Mr. Beale.

271. Seminar in American History. I; 2 cr. Problems in the history of the West. Prerequisite: Graduate standing. Mr. Carstensen.

290. Interdepartmental Seminar on Latin America. II; 2 cr. An interdisciplinary inquiry into the factors influencing the use of resources in various regions in Latin America. Prerequisites: Graduate standing, two semesters of courses on Latin America (or equivalent experience), and consent of instructor. Mr. Kroeber and members of other co-operating departments.

VI. ECONOMIC AND SOCIAL HISTORY

111. History of the West, 1763–1893. I; 3 cr. Advance of settlement from the Appalachians to the Pacific, and its effect upon economic and social conditions in the country as a whole. Prerequisite: Junior standing. Offered 1953–54. Mr. Carstensen.

121a–b. Social Development of the American People. Yr; 3 cr. Development of social institutions and ideas, seventeenth century to present; impact of immigration, frontier and industrialism on life of the people. Prerequisite: Junior standing. Offered 1952–53 and in alternate years. Mr. Curti.

122a. American Economic Life: The History of American Agriculture. I; 3 cr. Colonial agriculture and land tenure; western migrations and the disposition of the public domain; transportation and markets; application of technology and science; regional specialization; agrarian political and other movements. Prerequisite: Junior standing. Mr. Carstensen.

122b. American Economic Life: The Growth of Industrial and Finance Capitalism. II; 3 cr. Trade, industry, and finance before 1860; politics of early American capitalism; early urban development; the Civil War and the transformation of American society; growth of industrial combinations; the rise of finance capitalism; the politics of capitalism; regulation of business by government; World War I and American economy; "Normalcy" in the 1920's; the New Deal; World War II. Prerequisite: Junior standing. Mr. Jensen.

123. Economic History of the Ancient World. I; 3 cr. The economic development of the ancient Mediterranean world from the prehistoric period to the dissolution of the Roman Empire, with emphasis on the Graeco-Roman period. Prerequisite: History 2, 3, 5, or 10, or junior standing. Not offered 1952–53. Mr. Edson.

133. Economic Life in Europe. II; 3 cr. Agriculture, industry, and commerce in the Middle Ages and early Modern period. Prerequisite: Junior standing or consent of instructor. Offered 1952–53. Mr. Reynolds.

140a–b. European Economic History Since 1700. Yr; 3 cr. New technologies in industry and transport; the factory system and working class; Victorian and modern liberalism; central banking; cartels; railroads and regulations; the new power economy. Prerequisite: Six credits in history in a year course, History 2, 3, or 5. Mr. Cameron.

165. History of Commerce. I or II; 3 cr. Survey of the History of Commerce in the Western World from ancient times to the age of steam. Prerequisite: Freshman course in European or English history or junior standing. Not offered 1952–53. Mr. Reynolds.

209. Studies in American Economic History. Sem; 3 cr. Prerequisites: Master's degree and consent of instructor. Offered 1950–51. Mr. Kirkland.

240. Seminar in Modern European Economic History. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Cameron.

VII. HISTORY OF SCIENCE

The Department of History will accept for credit toward an undergraduate major in History as many as 6 credits in the History of Science, in courses to be selected by the student from among the following: History of Science 120 (Ancient and medieval science) yr., 6 credits; 150 (Early modern science) sem., 3 credits; or 170 (Modern science) sem., 3 credits; and the Department of History recommends as electives the other courses here listed and not taken for credit toward the major in History.

HISTORY OF SCIENCE

ASSOCIATE PROFESSOR CLAGETT, *chairman;* ASSISTANT PROFESSOR R. STAUFFER.

The courses in the history of science are designed to give a general knowledge of the development of science, its fundamental ideas, its men and its methods. An elementary knowledge of at least one science is required, and a previous course in history is desirable. No course in this department is open to freshmen.

For a major in History of Science 32 credits of historical work are required and one year of advanced work in a department within the Divisions of Biological Sciences or Physical Sciences.

For the historical work at least 18 credits must be offered from the history of science courses listed under Group A below and at least 6 credits from the history courses listed under Group B below. The remaining credits may be selected from any of the courses listed under Groups A, B, or C or similar courses which may be added in the future.

Any student wishing to major in the History of Science must have his program in fulfillment of these requirements approved by the department. If he is considering advanced work in the field, it is strongly advised that he make early plans to acquire the foreign languages he will need as tools for research.

GROUP A

HISTORY OF SCIENCE

1a–b. INTRODUCTION TO THE HISTORY OF SCIENCE. Yr; 3 cr. The first semester covers the development of science in the period from Antiquity through the Age of Newton; the second, from the latter eighteenth, nineteenth, to the early twentieth centuries. Prerequisites: One year of laboratory science; sophomore standing. Mr. Clagett, Mr. Stauffer.

*105. PROSEMINAR. I, II; 2 cr. (Ancient, Medieval or Early Modern Science.) Primarily for graduates. Prerequisite: Consent of instructor. Mr. Clagett.

*110. PROSEMINAR. I, II; 2 cr. (Early Modern or Modern Science.) Primarily for graduates. Prerequisite: Consent of instructor. Mr. Stauffer.

120a–b. ANCIENT AND MEDIEVAL SCIENCE. Yr; 3 cr. The first semester traces the development of science in Antiquity from its Egyptian and Babylonian origins through the rise and decline of Greek Science; the second traces the transmission of science through Islam to the West and its development there through the sixteenth century. Prerequisite: History of Science 1 or consent of instructor. Mr. Clagett.

150. EARLY MODERN SCIENCE. Sem; 3 cr. Scientific discovery, methods, and organization from the Age of Galileo to the Enlightenment. Prerequisite: History of Science 1 or consent of instructor. Mr. Stauffer.

170. MODERN SCIENCE. Sem; 3 cr. The expansion of science from the chemical revolution of Lavoisier to the twentieth century. Prerequisite: History of Science 1 or consent of instructor. Mr. Stauffer.

180. SPECIAL WORK. *cr. Upper-group students may, by consent of the professor, arrange for special out-of-class work, for which credit may be allowed on the basis of 1 credit for the equivalent of each full week's work devoted to the project.

GROUP B

HISTORY

113. Social and Intellectual History of the United States. Yr; 6 cr.

131. Medieval Civilization. Sem; 3 cr.

134. The Renaissance. Sem; 3 cr.

140. European Economic History Since 1700. Yr; 3 cr.

144. Sixteenth-Century Civilization. Sem; 3 cr.

145. European Intellectual and Social History, 1600–1789. Yr; 6 cr.

151. European Intellectual and Social History, Since 1789. Yr; 6 cr.

GROUP C

Philosophy 31. History of Ancient Philosophy. Sem; 3 cr.

Philosophy 120. Philosophy of Science. Sem; 3 cr.

Philosophy 131. History of Medieval Philosophy. Sem; 3 cr.

Philosophy 132. History of Modern Philosophy. Sem; 3 cr.

Agricultural Bacteriology 131. History of Bacteriology. Sem; 1 cr.

Chemistry 107. History of Chemistry. Sem; 2 cr.

Geology 135. History of Geology. Sem; 1 cr.

Mathematics 173. History of Mathematics. Sem; 3 cr.

History of Medicine 121. History of Medicine. Sem; 2 cr.

History of Medicine 122. History and Geography of Disease. Sem; 1 cr.

Pharmacy 158. History of Pharmacy. Sem; 3, cr.

Psychology 160. History of Psychology. Sem; 3 cr.

INTEGRATED LIBERAL STUDIES

Professors Agard, Earley, Hartshorne, Howells, Huskins, MacKendrick, Noland, Pfankuchen, Pooley, *chairman*, Post, Reynolds; Associate Professors Ihde, Judson, Wiley; Assistant Professors Howe, Rotwein; Instructors Milham, Sanders.

An alternate two-year program of studies comprising 46 credits of required courses designed to provide a broad general education through the integration of subject matter. Open to 300 entering freshmen in the first semester of each academic year. This program, with the election of a foreign language, qualifies a student to continue toward the B.A. degree. Candidates for the B.S. degree will select elective courses preparatory to later specialization or of personal interest. (See outline of courses, page 48.)

Courses in the Department of Integrated Liberal Studies are open only to students who enroll in the integrated program.

COURSES OF INSTRUCTION

I. HUMANITIES

11. Greek and Roman Culture. Sem; 4 cr. A comparison of Greek culture at its height with Roman culture at its height; readings in translation and some lectures in classical art. Mr. Agard, Mr. MacKendrick.

12. Medieval and Renaissance Culture. Sem; 3 cr. The transition from Graeco-Roman civilization to modern European civilization. Mr. Post.

* These proseminars will vary in subject matter, and they may be taken more than once for credit.

13. EUROPEAN CULTURE, 1750–1850. Sem; 4 cr. The literature of life and ideas in England and on the continent, with supplementary lectures on painting, music, and philosophy. Mr. Pooley.

14. AMERICAN CULTURE SINCE 1850. Sem; 3 cr. American literature from 1850 to the present, with supplementary lectures on American philosophy, art, and architecture. Mr. Wiley.

II. SOCIAL STUDIES

21. EARLY MAN AND HIS SOCIETY. Sem; 3 cr. How man appeared and how he developed culture, social groups, and religion to adjust himself better to his environment and to his fellow men. Mr. Howells.

22. TRANSITION TO INDUSTRIAL SOCIETY. Sem; 4 cr. European society, and the effect on it of new techniques leading toward industrialism. Mr. Reynolds.

23. MODERN INDUSTRIAL SOCIETY; U.S.A. Sem; 4 cr. Studies of its economy in relation to its political organization and social philosophies. Mr. Earley, Mr. Rotwein.

24. THE INTERNATIONAL SCENE. Sem; 3 cr. A comparative study of the types of government and economy of the present-day world, with attention to the causes of international co-operation and conflict. Mr. Hartshorne, Mr. Pfankuchen.

III. SCIENCES

31. THE PHYSICAL UNIVERSE. Sem; 4 cr. A study of the structure and composition of the universe, the nature of time, matter, energy, and light, with attention given to methods of scientific investigation. Mr. Ihde.

32. EARTH SCIENCE. Sem; 3 cr. The nature of the physical earth as the home of man; its materials, surface features and atmosphere. Illustrations of the methods by which knowledge of the earth has been obtained. Mr. Judson.

33. BIOLOGY. Sem; 3 cr. The adaptation of plant and animal life to environments and the development of functional variations. Mr. Noland, Mr. Huskins.

34. BIOLOGY. Sem; 4 cr. Continuation of Course 33 with the introduction of psychology and heredity. Mr. Noland, Mr. Huskins.

IV. COMPOSITION

41. THEORY AND PRACTICE OF WRITING. Sem; 2 cr. An introductory course in college composition, with writing subjects related to the courses of the program. Mr. Pooley and staff.

42. NATURE AND FUNCTION OF LANGUAGE. Sem; 2 cr. Continued practice in writing, with lectures and readings in the nature and function of language. Mr. Pooley and staff.

TABLE OF EQUIVALENTS OF I.L.S. COURSES WITH THOSE OF L. & S. FOR TRANSFER PURPOSES, AND COURSES WHICH I.L.S. TRANSFERS MAY NOT ELECT

I.L.S. COURSE	L. & S. EQUIVALENT	MAY NOT TAKE
11 Greek and Roman Culture 4 credits	Humanities elective 3 credits	Classics 41, 42
21 Early Man and His Society 3 credits	Anthropology 3 3 credits	Anthropology 3
31 Physical Universe 4 credits	Non-lab Science 4 credits	May take Chemistry 1 for 4 credits
41 Art of Writing 2 credits	English 1a 3 credits (1 credit from I.L.S. 11)	English 1a
12 Medieval and Renaissance Culture 3 credits	History 3a or 3b 3 credits	History 3a or 3b
22 Transition to Industrial Society 4 credits	History 3a or 3b 4 credits	History 3a or 3b
32 Earth Science 3 credits	Geography 2a or 17 3 credits (Lab. Science 3 credits)	Geography 2a, 2b, 5 or 17
42 Nature and Function of Language 2 credits	English 1b 2 credits	English 1b
13 European Culture 4 credits	Sophomore Literature 4 credits	English 30b
23 Modern Industrial Society 4 credits	Social Studies elective 4 credits (Economic majors receive 4 credits but must take Economics 1a)	
33 Biology 3 credits	Lab. Science 3 credits	Botany 1, Zoology 1
14 American Culture 3 credits	Sophomore Literature 3 credits	
24 International Scene 3 credits	Political Science or Geography 121 3 credits	Political Science 25 or 121 or Geography 121
34 Biology 4 credits	Lab. Science 4 credits	Botany 1 or Zoology 1

JOURNALISM

PROFESSORS NAFZIGER, *director*, HYDE, SMITH, THAYER; ASSOCIATE PROFESSORS CUTLIP, HAWKES, PATTERSON; ASSISTANT PROFESSORS DUNN, HIGBIE, HOVEY, TAYLOR, WESTLEY; INSTRUCTOR MACLEAN; LECTURER SCHOENFELD.

PURPOSE AND PLAN. While the emphasis in elementary courses is now, as always, on newspaper training, journalism today includes the whole broad field of communications. Adequate provision is therefore made for advanced students to study various phases of mass media. Courses in news writing, reporting, and editing are considered as basic. Thereafter, the student branches off into writing for magazines, advertising and management, radio, public relations, community press, communication media and public opinion, and the development of the press here and abroad—each student selecting the most advantageous arrangement, or "sequence" of courses. Classes and seminars are available throughout the year for students wishing to do advanced or graduate work. Many of the courses are open to students in the Colleges of Letters and Science, Agriculture, and Engineering, who desire journalistic training.

MAJOR. The undergraduate major in Journalism leads to the degrees of Bachelor of Arts (Journalism) and Bachelor of Science (Journalism). Thirty credits are required for the journalism major. By proper selection of courses students may undertake the equivalent of a major in a second field. Candidates for the Bachelor of Science degree will find this especially practicable. See outline under the heading SCHOOL OF JOURNALISM on page 83.

*1. FRESHMAN SURVEY OF JOURNALISM. I; 1 cr. Required of freshmen in the pre-journalism curriculum to acquaint them with what the school offers and to describe the opportunities in the various fields of mass communication. Mr. Hovey.

2a. NEWS WRITING. I, II; 3 cr. Practice in writing various types of news stories under close supervision of instructor. Required of Journalism School students. Staff.

2b. REPORTING. I, II; 3 cr. Emphasis on the gathering of news. Required of Journalism School students, except in the journalism-advertising sequence. Staff.

*3. NEWSPAPER EDITING. I, II; 4 cr. Training in editing and making up the newspaper. Prerequisites: 1.5 grade-point average in English 1 and Journalism 2. Required in School of Journalism. Mr. Cutlip, Mr. Westley and staff.

*4. NEWSPAPER TYPOGRAPHY. I, II; 2 cr. Training in the use of type and typographic make-up. Required in School of Journalism. Mr. Hawkes.

*5. ADVERTISING AND MAGAZINE TYPOGRAPHY. I, II; 2 cr. Laboratory work in the graphic arts. Required of students in the journalism-advertising sequence. Mr. Hawkes.

10. NEWS PHOTOGRAPHY. I, II; 3 cr. Special problems of photography for newspapers and magazines. Class limited to 25 juniors and seniors. Mr. Beeler and staff.

100. SENIOR THESIS. Yr; 4 cr. Staff.

104. INTERPRETATION OF CONTEMPORARY AFFAIRS. I; 3 cr. Training in editorial research and the preparation of background and editorial articles. Prerequisite: Consent of instructor. Mr. Hovey.

105a. WRITING OF FEATURE ARTICLES. I, II; 3 cr. Practice in preparing and selling special articles for newspapers and magazines. Miss Patterson, Mr. Schoenfeld.

105b. MAGAZINE ARTICLE WRITING. II; 2 cr. Practice in preparing periodical articles on technical, scientific, engineering, and economic subjects. Special sections emphasize women's fields in journalism and science writing. Miss Patterson, Mr. Schoenfeld.

106. CRITICAL WRITING. II; 2 cr. Practice in writing reviews of motion pictures, plays, concerts, and books, for newspapers. Miss Patterson.

107. THE COMMUNITY NEWSPAPER. Yr; 2 cr. Special problems of small daily and weekly newspapers. "Back shop" mechanical laboratory work in Campus Publishing Co. plant. Mr. Hawkes.

108. NEWSPAPER BUSINESS MANAGEMENT. II; 2 cr. Business problems of smaller newspapers. Mr. Thayer.

109. THE LAW OF THE PRESS. I, II; 2 cr. Libel, freedom of press, copyright, and other laws affecting publications. Required in the School of Journalism. Mr. Thayer.

110. HISTORY OF JOURNALISM. I, II; 3 cr. Evolution of the newspaper in England and the United States. Required in the School of Journalism except in the journalism-advertising sequence. Mr. Hyde, Mr. Smith.

110. RADIO SPEAKING. (See SPEECH 110.)

111. THE NEWSPAPER AND SOCIETY. I, II; 3 cr. Relation of the newspaper to public opinion, government and society, including ethics and psychology of journalism. Required in the School of Journalism. Mr. Higbie, Mr. Hyde, Mr. Smith.

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* Does not count towards the requirements for graduation from the College of Letters and Science except for students in the School of Journalism.

112. COVERING THE COURTS. I; 2 cr. Practice in reporting local, state, and federal courts; municipal, state, and federal administration. Prerequisites: Journalism 2 and 3. Mr. Thayer.

*112. MARKETING METHODS. (See COMMERCE 112.)

113. REPORTING OF PUBLIC AFFAIRS. II; 3 cr. Advanced training and practice in reporting city, county, state, and federal executive, administrative, and legislative agencies. Reporting of politics, business, and labor. Prerequisites: Journalism 2 and 3. Mr. Hovey.

114. COMMUNICATIONS AND PUBLIC OPINION. I; 3 cr. The role of the mass media of communications (newspapers, radio, magazines, and motion pictures) in the formation of public opinion. Publicity and propaganda techniques of government, political, economic, and social groups. Prerequisites: Journalism 2 and 3 or consent of instructor. Mr. Higbie.

115. PRINCIPLES OF ADVERTISING. I; 3 cr. Fundamentals of advertising theory and practice, including social and economic aspects, media, retail advertising, copy and layout, advertising research. Mr. Dunn.

*116. PROBLEMS IN NATIONAL ADVERTISING. (See COMMERCE 116.)

117. TRADE JOURNALS AND HOUSE ORGANS. I, II; 2 cr. Analysis of editorial and business management of trade journals, house organs, and business papers. Mr. Hawkes, Mr. Thayer.

118. RADIO AND TELEVISION ADVERTISING. II; 3 cr. Radio and television as advertising media. Responsibilities of advertisers, government regulation, audience measurement. Mr. Dunn.

120. INTERNATIONAL COMMUNICATIONS AND THE FOREIGN PRESS. II; 3 cr. A study of the news communications systems, including news-gathering agencies, the role of foreign correspondents, the foreign press, and the factors determining the flow of world news. Prerequisites: Journalism 2 and 3 or consent of instructor. Mr. Nafziger.

121. INTERPRETING HISPANIC AFFAIRS. Yr; 1 cr. I. Spain; II. Spanish America. Mr. Neale-Silva, Mr. Rosaldo.

122a. RADIO NEWS WRITING. I; 2 cr. Primary course in radio news techniques, covers radio news writing, editing, newscast preparation, operation of a small-station newsroom. Laboratory work at WHA, WIBA, WISC, WKOW. Prerequisite: Consent of instructor. Mr. Taylor.

122b. RADIO NEWS WRITING. II; 2 cr. Advanced course in radio news techniques, provides experience in writing and editing newscasts, study of newsroom problems. Laboratory work at a local radio station. Prerequisite: Journalism 122a. Mr. Taylor.

125. PUBLIC RELATIONS I; 3 cr. Study of publicity and its application to mass media, and proseminar on public relations in which each student works in the field of his interest—military, educational, social service, or commercial. Mr. Cutlip.

126. RETAIL ADVERTISING CAMPAIGNS. I; 3 cr. The planning and execution of retail advertising campaigns. Retail advertising objectives, media selection, preparation of copy and layout, institutional advertising. Mr. Dunn.

128. COMMUNICATION MEDIA ANALYSIS. I; 3 cr. Methods for investigating the control, content, audience, and effects of press, radio, and motion pictures. Prerequisite: Consent of instructor. Mr. Nafziger.

141. ADVERTISING COPY AND LAYOUT. II; 3 cr. Principles and practice of writing advertising copy for major media. Laboratory work and preparation of layouts. Mr. Dunn.

142. ADVERTISING MEDIA. I; 3 cr. The mass media industry. Mr. Dunn.

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* Does not count towards the requirements for graduation from the College of Letters and Science except for students in the School of Journalism.

180. Advanced Independent Reading. Yr; 1–4 cr. Staff.

191. Supervision of School Publications. I; 2 cr. Lectures and discussion on high-school and college publications; correlation with journalism classes and teaching methods. Miss Patterson.

192. Problems in Empirical Social Science Research. I, II; 2–3 cr. Supervised individual or joint work on problems in research. Mr. Fisher.

194. Introduction to Public Opinion Research. I; 3 cr. Theory and practice of survey techniques. Planning, design, sampling, questionnaire construction, interviewing, field operations, analysis of data. Mr. Fisher.

200. Graduate Thesis. 2–4 cr. Mr. Nafziger and staff.

201–280. Graduate Seminars. Yr; 2 cr. Several seminars are offered each semester. Some of the seminars offered recently are:

201. Seminar. 2 cr. Journalism history. Mr. Smith.

203. Seminar. 2 cr. Press and public opinion. Staff.

208. Seminar. 2 cr. Reader interest. Mr. Sumner.

211. Seminar. 2 cr. Media research methods. Mr. Nafziger.

221. Seminar. 2 cr. Problems of public relations. Mr. Cutlip.

222. Seminar. 2 cr. Newspaper management problems. Mr. Thayer.

280. Special Research Problems. Staff.

294. Seminar in the Design and Process of Survey Research. Mr. Fisher.

LIBRARY SCIENCE

Associate Professor Schenk; Assistant Professors Cavanagh, Winger; Instructor Gibson; Collaborators Appel, Boell, Glover, Jenkins, Lichter, Lord, Sivesind, Smith, Wilcox.

Courses 71, 72, 73 and 74* are required for admission to the graduate program. They may be taken as undergraduate electives, see Sections 17 and XXII.

71. Introduction to Bibliographic Method. II; 2 cr. Study of bibliographic methods and works, including the card catalog, with practice in forms of card entries, simple classification and subject cataloging.

72. Introduction to Reference. II; 2 cr. Nature and use of reference books and reference service. Study of core reference collections. Miss Cavanagh.

73. Introduction to Library Materials. I; 2 cr. Librarians' aids and sources of reliable information about books and other library materials. Methods of critical evaluation and selection in terms of users. Miss Cavanagh.

74. Introduction to Librarianship. I; 2 cr. Libraries and library work. Technical organization. Routines and procedures in acquisition, preparation, care, and loan of books and other library material.

†142. Reading Interests of Children. II; 3 cr. Survey of children's literature from chap books to present-day literature. Study of scientific investigation concerning children's interests, needs and abilities. Technique of reading guidance. Miss Cavanagh.

†144. Reading Interests of Adolescents. I; 3 cr. Criteria for the selection of books for adolescents. Techniques of reading guidance for young people in and out of school. Miss Cavanagh.

* Courses numbered 71–74 were formerly 171–174, and are being corrected in all new bulletins in which Library Science courses are listed.

† Courses numbered 142 and 144 were formerly numbered 242 and 244, and are being corrected in all future bulletins in which Library Science courses are listed.

165. METHODS IN VISUAL INSTRUCTION. I, II; 3 cr. The selection and use of audio-visual teaching materials. Consideration given sound 16 mm. film, slides, filmstrips, bulletin boards, graphics, maps, models, and recordings. Emphasis on effective utilization of audio-visual materials. Mr. Wittich.

191. THE SCHOOL LIBRARY. II; 3 cr. Library service in the school library; its function in the educational program and the organization and development of its resources and services. (May be taken as undergraduate course to complete minor in Library Science in School of Education.) Miss Cavanagh.

201. LIBRARY ADMINISTRATION. I; 2 cr. Principles of library administration; methods and procedures practiced in library administration and their application to various types of libraries. Miss Schenk.

202. PROBLEMS IN LIBRARY ADMINISTRATION AND SERVICE. II; 2–3 cr. Intensive study of contemporary problems in library administration and service. Mr. Winger.

211. CATALOGING. I; 2 cr. Study of the principles of cataloging books mainly through the use of unit cards and their arrangement into a dictionary catalog. Supervised laboratory practice.

212. CLASSIFICATION. II; 2 cr. Intensive study of the principles of classification. The organization of knowledge in libraries by classification schemes and the choice and use of subject headings in cataloging.

221. REFERENCE. I; 3 cr. Reference work in libraries. Critical evaluation of reference sources in subject fields. Building reference collections for different kinds of libraries. Miss Cavanagh.

231. THE READING INTERESTS OF ADULTS. II; 3 cr. Function and potential leadership of the library in adult education. Appraisal of reading interests, habits and needs of adults. Technique of reading guidance. Mr. Winger.

232. LIBRARY RESOURCES AND MATERIALS. I; 3 cr. Survey and evaluation of library resources in various subject fields with emphasis on the sciences, social sciences and humanities. Mr. Winger.

251. HISTORY OF BOOKS AND LIBRARIES. I; 2 cr. Development of writing, printing, books and libraries from the earliest times to the present day with special emphasis on their historical role in communications. Mr. Winger.

252. THE LIBRARY AS A SOCIAL, CULTURAL AND EDUCATIONAL INSTITUTION. II; 2 cr. Development of libraries in the United States. Contemporary trends and problems. Philosophy of librarianship and the role of the library of tomorrow. Miss Schenk.

280. INDEPENDENT READING AND RESEARCH. II; 2–4 cr. Concentrated study in a subject or problem in line with the student's needs or interests. Student must submit a typewritten report or paper covering the work accomplished. Staff.

The Library School, through the State Historical Society of Wisconsin, is offering four courses in the work of Historical Agencies:

161. HISTORICAL RECORDS. 3 cr. Collection, organization, and administration of the materials of state and local history, including printed records, personal and business manuscripts, state and local archives. Recommended prerequisite: 12 hours of American history. Consent of instructor required. Hours to be arranged. Mr. Wilcox, Miss Smith, Mr. Boell.

162. HISTORICAL MUSEUMS, SITES, AND RESTORATIONS. 3 cr. Physical remains, objects, and pictorial materials as historical evidence; history, theories, and practices of collecting, preserving, and interpreting these materials; history of the museum, the historic site, and the restoration. Recommended prerequisite: 12 hours of American history. Consent of instructor required. Mr. Jenkins, Mr. Lichter, Mr. Sivesind.

163. STATE AND LOCAL HISTORIOGRAPHY: ITS THEORY AND PRACTICE. 3 cr. Instruction and assistance in research, writing, editing, and publishing. Recommended prerequisite: 12

hours of American history. Consent of instructor required. Mr. Glover, Miss Smith, Miss Appel.

164. THE HISTORICAL AGENCY. 3 cr. History, administration, and contributions of historical agencies in the United States; special problems of federal, state, and local agencies; literature of the field. Recommended prerequisite: 12 hours of American history. Consent of instructor required. Mr. Lord, Mr. Glover.

MATHEMATICS

PROFESSORS BING, BRUCK, EVANS, INGRAHAM, KLEENE, LANGER, MACDUFFEE, *chairman*, MAYOR, SCHAEFFER, YOUNG; ASSOCIATE PROFESSOR BUCK; ASSISTANT PROFESSORS EBERLEIN, FULLERTON, KOREVAAR, OWENS, MRS. SOKOLNIKOFF; INSTRUCTORS CURTIS, IMMEL.

Only students who have had at least one unit of high-school algebra and one unit of geometry are eligible to enroll in courses in mathematics. Mathematics 1 is the most elementary course offered and is the only course open to students presenting the minimum high-school preparation of one unit of high-school algebra and one unit of geometry. Students presenting one and one-half or two units of high-school algebra should enroll in Mathematics 2 if they have not had a course in trigonometry, and in Mathematics 20 if they have had trigonometry. A placement examination is given to determine if they are qualified, or if they should transfer to a more elementary course. Mathematics 1 is not open, for credit, to students presenting two units of high-school algebra.

In general, students are required to present one full year of mathematics to satisfy the mathematics option for the B.A. or B.S. degree. However, students in Letters and Science who have passed either Mathematics 2 or Mathematics 20 will be regarded as having fulfilled this option. Mathematics 7, which is required of students in the School of Commerce, may not be counted towards fulfilling the requirement of the mathematics option for the B.A. or B.S. degree.

MAJOR IN MATHEMATICS. Students majoring in mathematics are required to take a year's course in the calculus, and, ordinarily, a year's course in physics, preferably Physics 31. The course in physics should be taken concurrently with or following the course in the calculus. In addition to these requirements the major comprises a minimum of 15 credits selected from the following courses: Mathematics 104, 106, 108, 111 or 112, 115, 116, 117, 118, 119, 120, 121, 122, 123, 133, 134, 137, 138. (Students who are enrolled in the School of Education may count 3 credits of Education 93 as part of the 15 credits requirement.)

Students entering the junior class with advanced standing who expect to complete a major in mathematics in four semesters, should previously have completed their year's work in the calculus.

Three sample sequences of courses are listed below for the student's guidance. Sequence A is recommended for students interested in mathematics or physics. Sequence B is recommended for students interested in mathematical statistics or actuarial work. Sequence C is recommended for prospective teachers of high-school mathematics. All three sequences include the basic courses required for the further study of either pure or applied mathematics.

YEAR	SEMESTER	SEQUENCES AND COURSES		
		A	B	C
Freshman	I	20	20	20
	II	21	21	21
Sophomore	I	22	22	22
	II	112, 106	106	106 or 134
Junior	I	115a, 120a	115a, 120a	115a, 120a
	II	115b, 120b	115b, 120b	115b or 120b
Senior	I	104a, 116a	118	108, 104a, or 118
	II	104b, 116b	137, 133	121 or 122 or 137

A minimum of 80 credits in subjects outside the major subject is required for graduation. Detailed programs covering the work of all four years have been prepared and are avail-

able at the departmental office. These programs meet the degree requirements and include courses offered by other departments which integrate significantly with one of the above sample sequences.

It is desirable for students who plan to take graduate work in mathematics to acquire a reading knowledge of French and German at the earliest possible time.

COURSE IN APPLIED MATHEMATICS AND MECHANICS. (See page 51.)

ELEMENTARY COURSES

1. INTRODUCTORY COLLEGE ALGEBRA. I, II; 4 cr. Development of the number system and the fundamental operations of algebra; linear and quadratic equations; exponents and logarithms; variations; progressions; the binomial theorem. Prerequisites: One unit of high-school algebra and one unit of geometry. Not open, for credit, to students who have had two units of high-school algebra.

2. INTRODUCTORY MATHEMATICAL ANALYSIS. I, II; 4 cr. Plane trignometry; mathematical induction; inequalities; functional variation and graphical analysis. Necessary review topics in algebra are included. Prerequisites: Mathematics 1; or at least one and one-half units of high-school algebra and one unit of geometry.

7. THEORY OF INVESTMENT. I, II; 4 cr. Simple and compound interest; annuity symbols and general annuities; special kinds of annuities; amortization and sinking funds; valuation of bonds; computation of depreciation. Prerequisite: Mathematics 1 or 2. Primarily for students in the pre-commerce sequence. May not be counted towards fulfilling the requirement of the mathematics option for the B.A. or B.S. degree.

20. CALCULUS AND ANALYTIC GEOMETRY. I, II; 4 cr. Analytic geometry of the straight line, circle, and conics; polynomials and their graphs; elements of the differential and integral calculus, with applications involving polynomials. Prerequisites: Mathematics 2; or at least one and one-half units of high-school algebra, one unit of geometry, and one-half unit of trigonometry.

21. CALCULUS AND ANALYTIC GEOMETRY. I, II; 4 cr. Continuation of Mathematics 20. Differential and integral calculus of algebraic and transcendental functions, with applications to the physical and social sciences; further topics in analytic geometry. Prerequisite: Mathematics 20.

22. CALCULUS AND ANALYTIC GEOMETRY. I, II; 4 cr. Continuation of Mathematics 21. Infinite series, including Taylor's series; ordinary differential equations; solid analytic geometry; partial derivatives; multiple integrals. Prerequisite: Mathematics 21.

24. THEORY OF LIFE INSURANCE. I, II; 3 cr. An introduction to the mathematics of life insurance. Mortality tables, net premiums, reserves, non-forfeiture benefits, gross premiums. Prerequisites: Two courses in mathematics.

50. SUB-FRESHMAN ALGEBRA. I; 0 cr. A non-credit review of high-school algebra for engineering students who fail the examination for admission to Mathematics 51.

51. ELEMENTARY MATHEMATICAL ANALYSIS. I, II; 5 cr. Elementary calculus, algebra, analytic geometry, and trigonometry. Required of freshmen in engineering (who are admitted to Mathematics 51 upon passing the entrance examination or successfully completing Mathematics 50).

52. ELEMENTARY MATHEMATICAL ANALYSIS. I, II; 5 cr. A continuation of Mathematics 51.

53. ELEMENTARY MATHEMATICAL ANALYSIS. I; 5 cr. A course designed to prepare for the calculus in one semester those engineering students whose high-school background is exceptionally strong. Admission to this course is by invitation.

INTERMEDIATE AND ADVANCED COURSES

Most of these courses are offered every year; the others when student needs warrant them.

102a. CALCULUS. I, II; 4 cr. Differentiation and integration of polynomials, and of

exponential, logarithmic, trigonometric, and inverse trigonometric functions; applications to mechanics and physics. Prerequisite: Mathematics 52 or 53.

102b. CALCULUS. I, II; 4 cr. Continuation of Mathematics 102a. Additional techniques of integration; multiple integration with applications to center of gravity and moments of inertia; infinite series. Prerequisite: Mathematics 102a.

104. THEORETICAL MECHANICS. Yr; 3 cr. Statics and dynamics of a particle and of a rigid body. Prerequisite: Mathematics 22 or a year of calculus.

106. ADVANCED ANALYTIC GEOMETRY. II; 3 cr. Advanced topics in plane analytic geometry and a treatment of solid analytic geometry. Prerequisite: A semester of calculus or concurrent registration in Mathematics 22.

108. COLLEGE GEOMETRY. I; 3 cr. Advanced topics in Euclidean geometry including constructions, properties of triangles, coaxal circles, inversion. Open to juniors and seniors. (Of interest to teachers in secondary schools.) Prerequisite: Consent of instructor.

110. HIGHER MATHEMATICS FOR ENGINEERS. I, II; 3 cr. Infinite series; partial differentiation; multiple, line, and surface integrals; vector analysis. Prerequisite: A year of calculus or Mathematics 22.

111. HIGHER MATHEMATICS FOR ENGINEERS. I, II; 3 cr. Ordinary and partial differential equations; Fourier series. Prerequisite: A year of calculus or Mathematics 22. (Mathematics 110 is not a prerequisite for Mathematics 111.)

112. DIFFERENTIAL EQUATIONS. II; 3 cr. A first course in differential equations. Methods of solution for equations of various types. Prerequisite: Mathematics 22 or a year of calculus.

115a. THEORY OF EQUATIONS. I; 3 cr. Solution of cubic and quartic equations by radicals, approximate methods, resultants, and discriminants, symmetric functions. Prerequisite: A year of calculus or concurrent registration in Mathematics 22.

115b. DETERMINANTS AND MATRICES. II; 3 cr. Matrices, determinants, systems of equations, quadratic forms. Prerequisite: Mathematics 115a or consent of instructor.

116a. HIGHER ANALYSIS. I; 3 cr. Elementary functions of a complex variable; conformal mapping; complex integrals; the calculus of residues. Prerequisite: Mathematics 110 or Mathematics 120a.

116b. HIGHER ANALYSIS. II; 3 cr. Partial differential equations of mathematical physics. Prerequisites: Mathematics 111 (or 112) and 110 (or 120a).

117. VECTOR AND TENSOR ANALYSIS. Sem; 3 cr. This course is devoted to the treatment of vectors and tensors of Euclidean and non-Euclidean manifolds. Applications are made to geometry and physics. Prerequisite: Mathematics 22 or a year of calculus.

118. INTRODUCTION TO THE THEORY OF PROBABILITY. I; 3 cr. Combinatorial methods; basic laws of probability; mathematical expectation; theorems of Tchebycheff, Bernoulli, Laplace, Bayes; probability in continuum; sampling. Applications to physics and statistics. Prerequisite: Mathematics 22 or a year of calculus.

119. DIFFERENTIAL GEOMETRY. II; 3 cr. The theory of curves and surfaces by differential methods. Prerequisite: Mathematics 22 or a year of calculus.

120a. ADVANCED CALCULUS. I; 3 cr. Review of elementary calculus, hyperbolic functions, Taylor's Theorem, infinite series, uniform convergence, improper integrals, Fourier series, functions of several variables. Prerequisite: Mathematics 22 or a year of calculus.

120b. ADVANCED CALCULUS. II; 3 cr. Continuation of Mathematics 120a. Geometric applications, implicit functions, transformation of multiple integrals, line and surface integrals, Beta and Gamma functions. Prerequisite: Mathematics 120a.

121. ELEMENTARY PLANE TOPOLOGY. Sem; 3 cr. A study of properties of plane sets and

applications of these properties to the calculus. Prerequisite: Mathematics 22 or a year of calculus.

122. PROJECTIVE GEOMETRY. II; 3 cr. The extension of elementary analytic methods as well as the synthetic method. Applications to rectilinear figures and conic sections. Prerequisite: Consent of instructor.

123. CONVEX FIGURES AND INEQUALITIES. Sem; 3 cr. An introductory course dealing with the simplest geometrical properties of convex figures and with their applications to the fundamental inequalities in use in everyday mathematical analysis. Prerequisite: Consent of instructor.

131. THEORY AND OPERATION OF COMPUTING MACHINES. Sem; 3 cr. Theory and operation of modern computing machines of intermediate complexity, particularly punched card machines. Programming of typical problems from statistics and the natural sciences. Prerequisites: Mathematics 22 or a year of calculus, and consent of instructor.

133. FINITE DIFFERENCES AND INTERPOLATION. II; 3 cr. Construction and use of mathematical tables, numerical solution of algebraic and transcendental equations and systems of equations, numerical evaluation of integrals. Prerequisite: Mathematics 22 or a year of calculus.

134. INTRODUCTION TO STATISTICS. Sem; 3 cr. Collection and presentation of data; frequency distributions; sampling; confidence intervals, tests of hypotheses; contingency tables; correlation and regression. Prerequisite: Mathematics 22 or a year of calculus, or concurrent registration.

137. INTRODUCTION TO MATHEMATICAL STATISTICS. II; 3 cr. Derived distributions: chi-square, t, and F; estimation, confidence intervals; statistical tests; operating characteristics; regression; analysis of variance. Prerequisites: Mathematics 118 and, usually, a course in statistics.

138. ACTUARIAL MATHEMATICS. Sem; 3 cr. Problems in finite differences, probability and statistics with particular emphasis on applications to life insurance. Prerequisite: At least a year of calculus or Mathematics 22.

GRADUATE COURSES

The graduate courses in mathematics are varied from year to year according to the needs of the students, other subjects being occasionally introduced in addition to those here listed. Standard courses will be given quite regularly and others when student needs warrant. Any course having the word "topics" in its title may have different content in successive semesters, and in such a case may be taken more than once. Enrollment in any graduate course requires the consent of the instructor.

200. READING AND RESEARCH.

201. TOPICS IN APPLIED MATHEMATICS. Sem; 3 cr.

202. ENTIRE FUNCTIONS. Sem; 3 cr. Chiefly the theory of functions of exponential type, with applications to the study of general interpolation series, the completeness of sets of functions, and Bernstein's theorems and their generalizations. Prerequisite: One semester of complex function theory.

215. TOPOLOGICAL ALGEBRA. Sem; 3 cr. Topological algebras and their applications to modern analysis. Prerequisite: Functions of a real variable and modern algebra, or consent of instructor.

216. TOPOLOGICAL GROUPS. Sem; 3 cr. Introduction to topological groups: groups, topoolgical spaces, topological groups, compact groups, representations.

217. TENSOR ANALYSIS. Sem; 3 cr. The algebra and calculus of tensors with particular emphasis on their applications to the theory of relativity.

218. Introductory Topology. Yr; 3 cr. Axiomatic treatment of topological spaces. Transformations. Convergence. Metric spaces, continuous curves, and Euclidean spaces.

219. Differential Geometry. Sem; 3 cr. Curves and surfaces in three dimensions by classical methods. An introduction to corresponding problems in n-dimensions involving tensor methods.

220. Theory of Analytic Functions. Yr; 3 cr. This course is fundamental for analysis. Functions of the complex variable.

221. Theory of Functions of a Real Variable. Yr; 3 cr. Fundamental concepts of analysis, including the real number system, point sets, series, functions, derivatives, Riemann and Lebesgue integrals.

223. Algebraic Topology. Sem; 3 cr. An investigation of the topological properties of certain types of spaces arising from their homology and homotopy groups and other algebraic systems associated with them.

224. Topics in Topology. Sem; 3 cr.

225. Divergent Series. Sem; 3 cr. A course dealing with the classical methods of summation, their generalizations, and their many applications.

230. Topics in the Foundations of Mathematics. Sem; 3 cr. A critical analysis of the foundations of mathematics, particularly of recursive number theory, with emphasis on the structure of mathematical reasoning.

231. Theory of Probability. Sem; 3 cr. Measure-theoretic foundations and modern analytical methods of the theory of probability.

232. Topics in Probability. Sem; 3 cr. Random variables, probability distributions, and limit theorems. Related topics in analysis, and applications.

237. Mathematical Statistics. Sem; 3 cr. Multivariate analysis, sequential analysis, non-parametric inference. Prerequisite: Mathematics 137.

238. Topics in Mathematical Statistics. Sem; 3 cr. Topics in mathematical statistics to suit the requirements of the students enrolling. Prerequisites: Mathematics 137 and consent of instructor.

239. Theory of Games. Sem; 3 cr. An introduction to von Neumann's Theory of Games, with emphasis on the zero-sum two-person game. Application will be made to problems of strategy, and to the theory of decision functions.

243. Modern Theory of Differential Equations. Sem; 3 cr. Ordinary differential equations in real variables. Existence, oscillation, and comparison theorems. Boundary conditions, the Green's function, and series developments. Prerequisite: An introductory course in differential equations.

244. Topics in Ordinary Differential Equations. Sem; 3 cr. Prerequisite: Some familiarity with the theory of functions of a complex variable.

246. Theory of Groups. Sem; 3 cr. Abstract groups with examples showing the most important modes of representation and with applications to fundamental problems in other branches of mathematics.

249. Theoretical Hydrodynamics. Sem; 3 cr. Kinematics and dynamics of fluid flow; airfoil theory; viscous fluids. Prerequisite: Normally Mathematics 116a.

251. Potential Theory. Sem; 3 cr. Harmonic functions, characteristic value problems, Newtonian potentials.

261. Abstract Algebra. Yr; 3 cr. Theory of numbers, abstract groups, algebraic and Galois fields, and matrices, with an introduction to modern abstract algebra.

263. Higher Algebra. Sem; 3 cr. Matrices, linear dependence and independence, quadratic and Hermitian forms, elementary divisors, and an introduction to matric equations.

264. Rings and Fields. Sem; 3 cr. An abstract treatment of rings, fields, and their ideals. Prerequisite: Normally Mathematics 261.

265. Fourier Analysis. Sem; 3 cr. Boundary value problems in partial differential equations of ordinary occurrence in mathematical physics. Fourier's series, series of Bessel's function, Hermite polynomials, and spherical harmonics. Prerequisite: Advanced calculus.

266. Topics in the Theory of Numbers. Sem; 3 cr. A selection of topics from the modern theory of numbers, presented from both the algebraic and the analytic point of view.

267. Calculus of Variations. Sem; 3 cr. An introductory course devoted to the classical theory and problems. Prerequisite. Advanced calculus.

268. Partial Differential Equations. Sem; 3 cr. The theory of partial differential equations of the first order and of linear partial differential equations of the second order.

269. Theory of Integral Equations. Sem; 3 cr. An introductory course. The classical approach to the equations of Volterra and Fredholm types.

270. Linear Transformations in Hilbert Space. Sem; 3 cr. Hilbert space as an infinite dimensional generalization of geometric spaces; linear closed subsets and orthogonality. Linear transformations, projections, spectral theory.

271. Linear Algebras. Sem; 3 cr. A course in the theory of linear associative algebras of finite order and their associated number theories. Prerequisite: Normally Mathematics 261.

272. Seminar in Algebra. Yr; 1 or 2 cr.

273. Theory of Integration. Sem; 3 cr.

275. Banach Spaces. Sem; 3 cr. Abstract normed linear spaces and linear operators together with applications to analysis in spaces of functions and sequences.

279. Advanced Topics in Algebra. Sem; 3 cr. Topics selected from the area of nonassociative systems, with attention to the connections with other fields of mathematics and to unsolved problems. Prerequisite: Normally Mathematics 261.

283. Laplace Transforms. Sem; 3 cr. Solution of simple ordinary and partial linear differential equations, systems of simultaneous ordinary differential equations, difference equations. Applications to mechanical vibrations, electric waves and circuit theory, heat conduction, and hydrodynamics.

284. Seminar in the Foundations of Mathematics. Sem; 3 cr.

285. Advanced Topics in Complex Variable Theory. Sem; 3 cr. Topics selected from entire functions, conformal mapping, Riemann surfaces, extremal methods, special functions, or related subjects.

286. Advanced Topics in Real Variable Theory. Sem; 3 cr. Topics selected from modern real variable methods and their applications.

287. Introduction to Laurent Schwartz's Theory of Currents and Distributions. Sem; 3 cr. The course is intended for graduate students in mathematics and physics. It contains a new treatment of certain operators and divergent series. The terms "current" and "distributions" have no relation to their everyday uses in physics and statistics.

Courses in Diophantine Equations, Advanced Algebraic Theory of Equations, Quality Control, Theory of Elasticity, Advanced Analytic Theory of Equations, Algebraic Geometry, Projective Differential Geometry, Non-Euclidean Geometry, Riemannian Geometry, and Infinite Series of Functions are given when demand warrants.

MEDICAL SCIENCE

A major in Medical Science is authorized for students in the General Course who satisfy the requirements as detailed on page 82.

MEDICAL TECHNOLOGY

COURSES IN SENIOR YEAR

PROFESSORS JAESCHKE, KOZELKA, STOVALL; ASSOCIATE PROFESSOR WORLEY; ASSISTANT PROFESSOR THORNGATE; INSTRUCTOR RUPP.

The courses in this department are open only to students enrolled in the Course in Medical Technology.

101. URINE ANALYSIS. I; 5 cr. Chemical and microscopic examination of urine. 240 hours. 8–12 MTWTFS for 10 weeks. Dr. Jaeschke.

102. NORMAL HEMATOLOGY. I; 4 cr. Hemoglobin determinations, cell counts; color, and volume index determination; platelet count; bleeding and coagulation time; erythrocyte fragility; sedimentation rate; blood grouping and cross matching. 201 hours. 8–12 MTWTFS for 4 weeks; 1:30–5 MTWTF for 6 weeks. Miss Thorngate.

103. SPECIAL HEMATOLOGY. I; 3 cr. Determinations outlined under "Normal Hematology" performed on abnormal blood. 177 hours. 8–12 MTWTFS for 3 weeks; 1:30–5 MTWTF for 6 weeks. Dr. Stovall.

104. APPLIED BACTERIOLOGY. I; 4 cr. Examination of smears, fluids, excreta, and pus for pathological organisms. 212 hours. 8–12 MTWTFS for 3 weeks; 1:30–5 MTWTF for 8 weeks. Miss Thorngate.

111. APPLIED SEROLOGY. II; 4 cr. Identification of organisms by serological methods. Wassermann and Kahn tests. Tests for allergic conditions. 212 hours. 8–12 MTWTFS for 3 weeks; 1:30–5 MTWTF for 4 weeks. Miss Thorngate.

112. APPLIED PARASITOLOGY. II; 3 cr. 60 hours. 8–12 MTWTFS for 2½ weeks. Dr. Jaeschke.

113. CLINICAL CHEMISTRY. II; 5 cr. Blood chemistry; chemistry of gastric and spinal fluids; basal metabolism. 318 hours. 7:30–11:30 MTWTFS for 3 weeks; 1:30–5 MTWTF for 13 weeks. Miss Thorngate.

114. MICROTECHNIQUE. II; 3 cr. 144 hours. 8–12 MTWTFS for 6 weeks. Dr. Stovall.

METEOROLOGY

ASSOCIATE PROFESSORS BRYSON, SUOMI; ASSISTANT PROFESSOR EKERN.

MAJOR. For a major 18 credits in meteorology are required, including 101 and 102. Since meteorology is primarily the application of the techniques and principles of physical science to the study of the atmosphere, certain background courses are also required. These are one course in advanced physics, and one course beyond calculus, both to be approved by the Department of Meteorology.

This department emphasizes those phases of meteorology which are closely related to agricultural, engineering and earth sciences.

17. SURVEY OF METEOROLOGY. I; 4 cr. A brief introduction to the field of meteorology, its development and physical basis; the circulation of the atmosphere, weather patterns, storms and fronts; some effects on the activities of man. Mr. Bryson.

101. THE GENERAL CIRCULATION. I; 4 cr. An intensive study of the general or primary circulation of the atmosphere over the earth to serve as foundation and background material for advanced consideration of synoptic processes. Mr. Bryson.

102. THE SECONDARY CIRCULATION. II; 4 cr. A detailed study of the patterns superimposed on the primary atmospheric circulation; moving cyclones and anti-cyclones, the polar front and its morphology, patterns characteristic of the tropics, and the theoretical basis of weather forecasting. Prerequisite: Meteorology 101. Mr. Bryson.

103. MICRO-CLIMATOLOGY. I; 4 cr. The roles of radiation, convection, and evaporation in the physics of layer of air near the ground; effects of soil and plants; weather variations due to local conditions; thunderstorms and other tertiary circulations. Prerequisite: Meteorology 17 or 101. Mr. Suomi.

110. BASIC THEORETICAL METEOROLOGY. Yr; 4 cr. The course consists primarily of the mathematical theories of the other meteorology courses given by the department. Prerequisites: Calculus and Physics 1. Mr. Suomi.

120. METEOROLOGICAL MEASUREMENTS. II; 4 cr. The theory and practice of meteorological observations. Elementary statistics and communication theories applied to meteorology, elements of measuring systems, radar storm detection and techniques of probing the upper atmosphere. Prerequisite: Calculus. Mr. Suomi.

130, 131, 132. SYNOPTIC LABORATORY. Yr; 3 cr. Intensive practice in routine analysis using upper-air charts, cross sections, surface charts and special tools, forecasting techniques, air-mass analysis and the use of soundings. Prerequisite: Meteorology 17 or 102. Mr. Bryson.

141. CLIMATES OF THE CONTINENTS. II; 3 cr. (See GEOGRAPHY 141.)

144. INTRODUCTORY OCEANOGRAPHY. II; 3 cr. A brief survey of the geography and geology of the oceans, with consideration of physical processes, the biological environment, and relation of ocean and atmosphere. Prerequisite: Consent of instructor. Mr. Bryson.

145. AGRICULTURAL CLIMATOLOGY. II; 3 cr. A one-semester survey of weather science as related to the field of agriculture, the physical basis of weather and its interrelations with crops and the soil, primarily for students in agriculture. Mr. Ekern.

175. ELECTRONIC AIDS TO MEASUREMENT. (Also PHYSICS 175 and E.E. 175.) 4 cr; 3 hrs. lect.; 3 hrs. lab. Fundamentals of electronics, electronic elements, basic electronic circuits; combinations of above into measuring instruments. Prerequisites: Graduate standing, elementary physics, intermediate electricity, and calculus or consent of instructor. Mr. Rideout.

180. ADVANCED INDEPENDENT READING. Prerequisite: Consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Staff.

251. SEMINAR: METEOROLOGY.

252. SEMINAR: APPLIED CLIMATOLOGY.

253. SEMINAR: OCEANOGRAPHY.

258. SEMINAR: PALEOCLIMATOLOGY.

292. SEMINAR.

MUSIC

PROFESSORS BURLEIGH, BURNS, *chairman*, CARPENTER, COON, DVORAK, ILTIS, JOHANSEN; ASSOCIATE PROFESSORS CHURCH, JONES, LUCKHARDT, SARIG, STEFFENS, SWINNEY; ASSISTANT PROFESSORS BLOTZ, EASTMAN, GUNLAUGSON, MONSCHEIN, PETZOLD, VOEGELI; INSTRUCTORS CRANE, KIMBALL, MARCOUILLER, REYNOLDS; RESIDENT LECTURER HEERMAN; VISITING LECTURER PAXTON; ARTISTS-IN-RESIDENCE FRIEDLANDER, KOLISCH, MILOFSKY, RAHIER OF THE PRO ARTE QUARTET.

See School of Music, page 99, for (a) outline of four-year curriculum in music, (b) outline of a major in music under the B.A. General Course, and (c) a teaching minor in Music.

For regulations covering the election of music courses by non-School of Music students, see page 93.

Courses numbered from 1 through 100 are open for credit to undergraduates only; from 101 to 199 to both undergraduates and graduates; 200 and over to graduates only.

1. ELEMENTS OF MUSICAL STRUCTURE. Yr; 2 cr. An introductory course in traditional

harmony; its acoustical basis; developing structural relationships between the arts of tone and movement; transition from diatonic to twelve-tone writing. For dance majors only. Mrs. Genther.

9a. The Quartets of Haydn and Mozart. I; 1 cr. Descriptive lectures on string quartets of Haydn and Mozart with performances by the Pro Arte Quartet. Open to all students. Prerequisite: Sophomore standing except for music majors. The Pro Arte Quartet and Mr. Johansen.

9b. The Quartets of Mozart and Beethoven. II; 1 cr. Descriptive lectures on the string quartets of Mozart and Beethoven with performances by the Pro Arte Quartet. Open to all students. Prerequisite: Sophomore standing except for music majors. The Pro Arte Quartet and Mr. Johansen.

11. First-Year Theory. Yr; 4 cr. Basic notation; intervals; scales and modes; rhythm; contrapuntal harmony, written and keyboard; sight singing and ear training; selected music for harmonic and form analysis. Open only to candidates for the B.M. degree. Mr. Crane, Mr. Monschein.

12. First-Year Harmony. Yr; 2 cr. Written and keyboard harmony, ear training, scales, intervals, triads, including dominant sevenths. Miss Eastman.

15. Music in Community Recreation. II; 2 cr. The meaning and significance of recreational music in the life of the individual; the theory and practice of organizing and carrying on music activities in a recreation program. Prerequisite: Open to music and recreation majors, others upon consent of instructor. Mr. Petzold.

20. Appreciation and History of Music. Yr; 2 cr. A survey of the development of music, stressing the elements of musical understanding and the study of representative compositions. Open to all students. Prerequisite: Sophomore standing, except for music majors. Mr. Coon.

21. Second-Year Theory. Yr; 4 cr. Aural and written harmony. Keyboard harmony and figured bass. Harmonic counterpoint. Sight singing and sight playing. Ear training, analysis. Prerequisites: Music 11b; 20b or concurrent registration. Mr. Luckhardt.

22. Second-Year Harmony. Yr; 2 cr. Written and keyboard harmony including ninth chords, secondary sevenths, modulation and analysis of Bach Chorales. Prerequisite: Music 12b. Miss Eastman.

23. Opera. I; 2 cr. Standard operas from Gluck to Strauss; opera as a social and cultural phenomenon and an expression of national styles. Prerequisites: Sophomore standing and Music 20a and 20b. Not open for credit to music majors. Not offered 1952–53. Mr. Crane.

24. The Symphony. II; 2 cr. Symphonic works from Haydn to the present; relation to other arts. Prerequisites: Sophomore standing and Music 20a and 20b. Not open for credit to music majors. Mr. Heermann.

25. Elementary Counterpoint. Yr; 2 cr. The analysis and writing of counterpoint in two, three and four parts; study of polyphonic music of the 16th through the 19th centuries. Prerequisite: Music 11b or 12b. Mr. Luckhardt.

30a. Music in the Baroque Era. I; 2 cr. The study of musical idioms, styles, and forms with emphasis on the development of opera, oratorio, cantata, and the rise of instrumental music; the place of music in the general culture of the period. Prerequisites: Music 11b, 20a, 20b. Mrs. Blotz, Mr. Crane.

30b. Music in the Classic Era. II; 2 cr. Survey of the development of the classic era based on the study of masterworks of the period. Prerequisites: Music 21a, 30a. Mrs. Blotz, Mr. Crane.

31. Third-Year Theory. Yr; 3 cr. Late 19th- and 20th-century technics of composition. Analysis of representative compositions and employment of observed technics. Prerequisites: Music 21b, 30b. Mr. Burleigh.

34. Arranging. Yr; 2 cr. Practical course in arranging for the usual high-school chorus, orchestra and band. Prerequisite: Music 21b. Mr. Burleigh.

38. Vocal Technic and Song Literature. I; 2 cr. Voice classification; tone production; classification of material; interpretation; psychological aspects of singing. Prerequisite: Consent of instructor. Miss Gunlaugson.

40a. Music in the Romantic Era. I; 2 cr. Survey of the developments of the Romantic era based on the study of masterworks of the period. Prerequisites: Music 21b, 30b. Mr. Crane.

40b. Music in the Post-Romantic Era. II; 2 cr. A study of the major musical developments of the late 19th century and their influence on contemporary music. Prerequisites: Music 21b, 40a. Mr. Crane.

51. Fundamentals of Pianoforte. Yr; 2 cr. All elementary piano students and those whom the instructors designate are taught in class groups. Open only to candidates for the B.M. degree, but may be taken by Recreation or Occupational Therapy majors. Staff.

53. Fundamentals of Stringed and Other Orchestral Instruments. Yr; 2 cr. Basic experience in the fundamentals of playing string, woodwind or brass instruments. Open only to candidates for the B.M. degree, but may be taken by Recreation or Occupational Therapy majors. Staff.

55. Elementary Pianoforte. Yr; 2 cr. Continued training in performance and the elements of piano technique. Prerequisite: Music 51b. Staff.

61. First-Year Pianoforte. Yr; 2–3 cr. Scales and arpeggios; Bach Two-Part Inventions; Haydn and Mozart Sonatas; romantic and modern compositions. Prerequisite: Approval of Applied Music Assignment Committee. Staff.

62. First-Year Voice. Yr; 2–3 cr. Fundamentals of tone production; principles of correct breathing; resonance; range, extension; diction, interpretation of easy songs in English. Prerequisite: Approval of Applied Music Assignment Committee. Miss Gunlaugson, Mr. Swinney.

63. First-Year Stringed and Other Orchestral Instruments. Yr; 2–3 cr. Correct tone production; simple repertoire; technical studies; reading; major and harmonic minor scales and arpeggios. Prerequisite: Approval of Applied Music Assignment Committee. Staff.

64. First-Year Organ. Yr; 1–3 cr. Manual and pedal technic; Bach simple chorale preludes (Orgelbüchlein); Bach short preludes and fugues; hymn playing. Prerequisite: A satisfactory polyphonic piano technic. Approval of Applied Music Assignment Committee. Miss Eastman, Mr. Jones.

65. Instrumental Technics. Yr; 2 cr. String technics; theory and practice of playing the violin, viola, violoncello, contrabass. Prerequisite: Music 11b or equivalent. Mr. Church.

71. Second-Year Pianoforte. Yr; 2–3 cr. Technic; Bach Three-Part Inventions; Beethoven Sonatas; romantic and modern compositions. Prerequisite: Music 61b or equivalent. Staff.

72. Second-Year Voice. Yr; 2–3 cr. Art songs in English and Italian; easy oratorio and operatic arias; ensemble. Prerequisite: Music 62b or equivalent. Miss Gunlaugson, Mr. Swinney.

73. Second-Year Stringed and Other Orchestral Instruments. Yr; 2–3 cr. Moderately difficult solos and technical studies; sight reading; melodic minor scales and arpeggios; major scales in thirds. Prerequisite: Music 63b. Staff.

74. Second-Year Organ. Yr; 1–3 cr. Continuation of technical studies; Buck Studies in Pedal Phrasing; Bach Chorale Preludes, and Preludes and Fugues. Shorter works for service playing. Prerequisite: Music 64b. Miss Eastman, Mr. Jones.

75a. Instrumental Technics. Sem; 2 cr. Woodwind technics; theory and practice of playing the flute, oboe, clarinet, saxophone, bassoon. Prerequisite: Music 11b or equivalent. Mr. Dvorak.

75b. Instrumental Technics. Sem; 2 cr. Brass and percussion technics; theory and practice of playing the French horn, cornet and trumpet, trombone, baritone, tuba and percussion instruments. Prerequisite: Music 11b or equivalent. Mr. Marcouiller.

76. Conducting. Yr; 2 cr. Study of rehearsal and baton technics in vocal and instrumental fields. Mr. Burns, Mr. Dvorak.

81. Third-Year Pianoforte. Yr; 2–3 cr. Technic; Bach's Well Tempered Clavier; Beethoven's Sonatas; more advanced compositions from romantic and modern schools. Prerequisite: Music 71b. Staff.

82. Third-Year Voice. Yr; 2–3 cr. Study of embellishments; arias and art songs in English, Italian, German or French. Solo appearance. Prerequisite: Music 72b. Miss Gunlaugson, Mr. Swinney.

83. Third-Year Stringed and Other Orchestral Instruments. Yr; 2–3 cr. Advanced solos and technical studies; all scales in thirds; advanced sight reading; study of orchestral literature for the instrument; transposition. Prerequisite: Music 73b. Staff.

84. Third-Year Organ. Yr; 1–3 cr. Selected works of Bach, Franck, Mendelssohn, Widor, Rheinberger, Karg-Elert and others for service and concert playing. Prerequisite: Music 74b. Miss Eastman, Mr. Jones.

85. Orchestra. Yr; 0–1 cr. University Symphony and Second Orchestra. Prerequisite: Ability to play an orchestral instrument. Membership by try-out is open to all students. Mr. Church.

86. Chorus. Yr; 0–1 cr. The University Chorus, the A Cappella Choir, the Men's Chorus and the Women's Chorus devote themselves to the study of the masterpieces of choral literature in their respective fields. Membership by try-out is open to all students. Mrs. Blotz, Mr. Jones.

87. Bands. Yr; 0–1 cr. Concert Band, Regimental (Badger) Band, Regimental (Cardinal) Band. Prerequisites: Ability to play a band instrument. Membership by try-out is open to all students. Mr. Dvorak.

91. Advanced Pianoforte. Yr; 2–3 cr. Advanced technic; Bach Suites and Toccatas; sonatas; advanced compositions from romantic and modern schools; preparation for recital. Prerequisite: Music 81b. Staff.

92. Advanced Voice. Yr; 2–3 cr. Continued study of repertoire covering all types of vocal literature; stage deportment; preparation for recital and concert appearance. Prerequisite: Music 82b. Miss Gunlaugson, Mr. Swinney.

93. Advanced Stringed and Other Orchestral Instruments. Yr; 2–3 cr. Continuation of study of solo literature and repertoire; preparation for recital and concert appearance. Prerequisite: Music 83b. Staff.

94. Advanced Organ. Yr; 1–3 cr. Larger works of German, French, English and American composers; preparation for recital and public performance. Prerequisite: Music 84b. Miss Eastman, Mr. Jones.

95. Ensemble. Yr; 2 cr. Performance of ensemble literature. Prerequisites: Junior standing in music; 80 level in applied music; consent of instructor. Not accepted as Applied Music credit. Mr. Iltis.

96. Applied Technics. I; 2 cr. A study of the principles of applied music, both class and individual; materials for both types. Prerequisite: Consent of instructor. Mr. Steffens.

97. Applied Repertoire. II; 2 cr. An analysis of applied music literature, including representative works from all periods. Prerequisite: Consent of instructor. Mr. Steffens.

115. Music in Society. II; 3 cr. Civic music, music in recreation, music in industry, music in therapy; individual research and reports required. Prerequisite: Consent of instructor. Mr. Burns.

125. Music in Radio. I; 2 cr. At Station WHA under staff supervision. Radio music programming, performance; laboratory training in studio technics. Prerequisite: Junior standing in music or consent of the dean. Mr. Voegeli.

131. Music of the Clavecin Period. I; 3 cr. A critical analysis of music by Purcell, Couperin, Scarlatti, and Rameau; music theory and ornamentation. Prerequisite: Music 40b, or consent of instructor. Mr. Coon.

132. Modern French Music. II; 3 cr. A style and content analysis of music from Franck to the present day. Prerequisite: Music 40b, or consent of instructor. Mr. Coon.

135. The Wind Band; Its Instrumentation and Literature. I, II; 2 cr. The examination of the origins and historical significance of the wind band, including a survey of its instrumentation and literature. Prerequisite: Consent of instructor. Mr. Dvorak.

138. Choral Technic and Literature. II; 2 cr. Organizational plans, rehearsal procedure and training technics for all types of choirs. Analysis of choral literature; program planning. Prerequisites: Music 38, 76b or consent of instructor. Mr. Jones.

141. Modern Contrapuntal Technics. Yr; 3 cr. The writing of contrapuntal compositions in free style; the analysis of contemporary works in these forms. Prerequisites: Music 31b, 40b. Mr. Luckhardt.

150. Proseminar. I, II; 2 cr. Practice in the technics of music research. Each semester will be devoted to the study of one composer or form, e.g., Bach, Mozart, English madrigals, Brahms. Prerequisite: Music 40b or senior standing. Mr. Crane.

152. Orchestration. Yr; 3 cr. History of orchestration. Representative orchestral works are studied by means of scores and phonograph records. Attendance at rehearsals of the University Orchestra and Band. Scoring for orchestra and band. Prerequisites: Music 21b, 34b. Mr. Luckhardt.

162. Composition. Yr; 3 cr. Original composition and analysis based upon the diatonic system of harmony. Songs, quartets, piano pieces, etc. Prerequisite: Music 31b. Mr. Burleigh.

165. Advanced Music Literature. Yr; 3 cr. A further study of music literature; thorough and critical analysis of symphonic and chamber music. Prerequisite: Music 40b. Mr. Crane.

175a. Advanced Instrumental Technics. I; 2 cr. Advanced string technics; an advanced course in the theory and practice of playing the violin, viola, violoncello and contrabass. Emphasis on preparation for class instruction. Prerequisite: Music 65b. Mr. Church.

175b. Advanced Instrumental Technics. II; 2 cr. Advanced wind and percussion technics. An advanced course in the theory and practice of playing the woodwind, brass and percussion instruments; emphasis on preparation for class instruction. Prerequisite: Music 75a, 75b. Mr. Church.

176. Advanced Conducting. Yr; 2 cr. Score reading and interpretation of standard musical compositions; opportunity to conduct choral and instrumental groups. Prerequisite: Music 76b or conducting experience. Mr. Heermann.

180. Advanced Independent Work. *cr. Staff.

191, 192, 193, 194. Artist Course in Applied Music. Yr; 2–3 cr. Prerequisite: Graduate standing in Applied Music. Extensive repertoire in music literature, and public appearance. Staff.

195. Advanced Ensemble. Yr; 2 cr. Graduate course in advanced string quartet, woodwind and other ensembles. Prerequisites: Music 95 and consent of instructor. Mr. Kolisch.

200. Master's Thesis. Yr; 2 cr. Subjects appropriate for graduate theses are chosen after consultation with the Graduate Committee. Staff.

201. Research. *cr. Individual projects to be approved by the Graduate Committee. Staff.

211. Modern Orchestration. Yr; 2 cr. A further study of modern methods in scoring; original composition for orchestra or band will be required. Prerequisites: Graduate standing and Music 152. Mr. Luckhardt.

222. Fugue. Yr; 2 cr. Fugal analysis; the writing of three- and four-part fugues, employing technics of the Baroque era to the present time. Prerequisites: Music 141b and graduate standing. Mr. Luckhardt.

231. Seminar. Yr; 2 cr. Essentially a course in musicology. The Wagnerian Ring, Early Orchestral Music, Musical Forces up to the 17th Century, Aesthetic Phases of Musical Form, Contemporary American Music, The String Quartet, or Early Music Theorists. Mr. Coon.

262. Modern Harmony and Advanced Composition. Yr; 3 cr. Advanced composition employing modern technics in structure, harmony and counterpoint. Prerequisites: Music 141b and 162b. Mr. Burleigh.

EDUCATION COURSES IN MUSIC

Education 1. Integrated Arts. Yr; 2 cr. A course planned to develop an understanding of the place of arts in contemporary life with emphasis upon direct experience in the fields of art, dance, drama and music. Prerequisite: Freshman standing in Elementary Education Curriculum. Staff.

Education 4. Music Education for Elementary Schools. I; 4 cr. Materials and procedures for developing integrated musical experiences through singing, playing and creating; problems of organization and administration. Lectures, observations and laboratory practice. Prerequisite: Education 75. Mr. Burns, Mr. Petzold.

Education 5. Music Education for Secondary Schools. II; 4 cr. The development of music curricula for the junior and senior high school; problems in teaching and administering vocal and instrumental organizations. Lectures, observations, and laboratory practice. Prerequisite: Education 75. Mr. Burns, Mr. Petzold.

Education 102. Studies in Curriculum and Instruction in School Music. I, II; 3 cr. Methods and materials to meet the challenge of changing conditions; problems of evaluation. Prerequisite: Teaching experience or consent of instructor. Mr. Burns.

Education 202. Seminar in Music Education. 2 cr. For advanced students interested in working on special problems in music education. Study of research methods, selection of research problems, planning and writing of research studies. Prerequisite: Consent of instructor. Mr. Petzold.

NAVAL SCIENCE

Professor Ellis, *commanding officer;* Associate Professor Pickall; Assistant Professors Bloom, Lyford, McCabe, Rabe, Thomas.

11. Naval History and Orientation. Sem; 3 cr. Naval history; influence of sea power on global warfare.

12. Naval History and Orientation. Sem; 3 cr. Naval customs, regulations, and organization, elementary seamanship and ship handling, elementary naval strategy and tactics.

21. Naval Weapons. Sem; 3 cr. Ammunition components; gun assemblies; automatic guns, torpedoes, mines, and rockets; surface fire control; nuclear explosives.

22. Naval Weapons. Sem; 3 cr. Anti-aircraft fire control and director systems; aircraft gunnery and bombing; fundamentals of radar and sonar equipment; shore bombardment; guided missiles.

31. Navigation. Sem; 3 cr. Definitions, instruments, and equipment; the sailings, dead reckoning, and piloting; radar and loran navigation; maneuvering board problems; rules of the road at sea; meteorology.

*31M. History of the Art of War. Sem; 3 cr. Evolution of warfare; decisive battles of history; modern combat principles; total war; lessons of World War II.

32. Navigation. Sem; 3 cr. Nautical astronomy; lines of position; the astronomical triangle; azimuths, meridian altitudes, star identification; advanced celestial navigation problems and the practice of navigation at sea.

*32M. United States Military History and Policy. Sem; 3 cr. Development of U. S. military policy; tactics of U. S. Forces in selected battles; summation of U. S. foreign and military policies.

41. Naval Machinery. Sem; 3 cr. Marine engineering power plants, boiler, feed-water, and fuel-oil systems; turbine propulsion systems; auxiliary systems, distillers, refrigeration systems; electrical plants; internal combustion engines, systems and controls; aircraft engines.

*41M. Amphibious Warfare. Sem; 3 cr. Evolution of landing operations; amphibious organization and intelligence; naval gunfire, air and artillery support; logistics, selected amphibious operations.

42. Ship Stability, Naval Justice, and Leadership. Sem; 3 cr. Fundamentals of ship stability; impaired stability and control of damage; uniform code of military justice and courts martial; naval leadership; naval administration.

*42M. Amphibious Warfare, Part II, Leadership, and the Uniform Code of Military Justice. Sem; 3 cr. Selected amphibious operations; basic psychology of leadership situations to develop knowledge of leadership techniques; responsibility and administration of the Uniform Code of Military Justice.

PHILOSOPHY

Professors Garnett, *chairman*, Bögholt, Ramsperger; Associate Professors Hay, Weinberg; Assistant Professors Golightly, Goodwin, McGary; Instructor Singer.

The student may begin his work in philosophy with any of the courses numbered under 100, but beginners who desire to take three hours of work throughout the year in the department, whether they wish to continue with the subject or not, will ordinarily find it most profitable to select course 1a, 11, 31, or 41 in the first semester and either 1b, 11, 41, or 132 in the second semester. None of the courses except 1a in this department is open to freshmen without special permission.

Major. The minimum requirement is 24 credits including courses 31 and 132. Of these at least 15 credits must be taken from the 100-group. A thesis may be included in these 24 credits at the option of the department.

1a. Introduction to Philosophy. I, II; 3 cr. Introduction to philosophic thinking through examination of the problems of freedom, knowledge, and the problem of estimating what is worth while. Prerequisite: Open to freshmen and to sophomores and juniors who have had no previous philosophy course other than Philosophy 11. Not open to seniors. Staff.

1b. Introduction to Social Philosophy. II; 3 cr. Studies of opposing philosophical views about man and his political and social life. Prerequisite: Sophomore standing. Mr. Bögholt.

11. Elementary Logic. I, II; 3 cr. Problems and methods of better thinking. Development of skill in detecting the more obvious logical errors. The positive aim is improvement in the student's thinking. Prerequisite: Sophomore standing. Staff.

31. History of Ancient Philosophy. I; 3 cr. From the pre-Socratics to Augustine.

* Substituted for equivalent Navy Course by Marine Corps candidates. Up to 16⅔ per cent of each class may elect the Marine Corps. Midshipmen are not assigned to Marine Corps courses to fill this quota unless they volunteer.

Particular emphasis on Plato and Aristotle. Prerequisite: Sophomore standing. Mr. Weinberg.

41. Introductory Ethics. I, II; 3 cr. Development of moral ideas. Criticism of ethical theories and of social institutions such as state, property, family. Prerequisite: Sophomore standing. Mr. Garnett, Mr. Goodwin.

53. Philosophy of the Arts. I; 3 cr. Making, appreciation, and criticism of works of art. Sources and use of standards. Prerequisite: Sophomore standing. Mr. Hay, Mr. Goodwin.

54. Social Problems of Contemporary Art. II; 3 cr. A critical consideration of problems raised by the activities and productions of contemporary artists, such as freedom, censorship, uses of art, function of artists in society, social benefits of art. Prerequisite: Sophomore standing. Mr. McGary.

100. Senior Thesis. Yr; 2 cr. Staff.

101. Introduction to Philosophy for Upperclassmen. 3 cr. A first philosophy course for juniors and seniors. Emphasis upon philosophical problems connected with the methods and assumptions of science, and with the relation of scientific knowledge to moral choice, freedom of inquiry, and social action. Prerequisite: Open only to juniors and seniors with no previous philosophy. Staff.

102. Aristotle and His Influence. II; 3 cr. Study of his logical, metaphysical, and psychological writings together with a history of their influences on subsequent authors. Prerequisite: Philosophy 31 or consent of instructor. Mr. Hay.

111. Theory of Valuation. II; 3 cr. A study of theories of the value judgment in morals; its character, function, and verification. Prerequisite: Philosophy 1a or 11. Mr. Bögholt.

113. Symbolic Logic. II; 3 cr. Its fundamental methods studied and applied to such philosophical problems as nature of mathematics, logical truth, and analysis of meanings. Prerequisite: Philosophy 11 or consent of instructor. Mr. Hay.

116. Language and Meaning. I; 3 cr. Introduction to semantics; types of sign-action; expressive, evocative, and referential meaning; verifiability and truth; uses for linguistic analysis in philosophy. Prerequisite: Junior standing or consent of instructor. Mr. Hay.

120. Philosophy of Science. I, II; 3 cr. Theories of reality, of knowledge and of value involved in various philosophical interpretations of science. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. Ramsperger.

123. Philosophy and the Human Enterprise. I; 3 cr. An attempt to begin with the everyday philosophies that universally grow out of day-to-day living, and to clarify, broaden, and deepen them through the study of scientific and humanistic achievements. Prerequisite: Junior standing. Offered 1951–52. Mr. Otto.

125. Reality and Analysis. II; 3 cr. An attempt to apply logical analysis to some questions of metaphysics; the nature of existence, qualities and relations, process and substance. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. Weinberg.

126. Philosophical Ideas in Modern Literature. I; 3 cr. A study of the philosophical content, religious and scientific background and intellectual influence of some writings of such men as Erasmus, Voltaire, Goethe, and Flaubert. Prerequisite: 3 credits in philosophy. Mr. Weinberg.

131. Medieval Philosophy. II; 3 cr. A critical and historical examination of writings of Erigena, Anselm, Abelard, Grosseteste, Bacon, Aquinas, Scotus, Ockham. Prerequisite: Philosophy 31, or 102, or consent of instructor. Mr. Weinberg.

132. History of Modern Philosophy. II; 3 cr. From Locke through Kant. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. Weinberg.

133. Philosophical Conflicts of the Nineteenth Century. I; 3 cr. A study of the

conflict of idealistic, materialistic and irrationalist philosophies of the nineteenth century and their influence on its social, literary and religious movements. Prerequisites: 3 credits in philosophy and consent of instructor. Mr. Garnett.

134. Contemporary Philosophy. I, II; 3 cr. One or more present-day philosophers or philosophical movements are selected for study each semester. Prerequisite: 3 credits in philosophy or consent of instructor. Staff.

135. Descartes, Spinoza, and Leibniz. II; 3 cr. The outstanding seventeenth-century rationalists. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. Ramsperger.

136. British Philosophers. I; 3 cr. The English tradition in philosophy with emphasis on Locke, Berkeley, and Hume. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. Goodwin.

137. The Philosophy of Kant. II; 3 cr. Prerequisite: Philosophy 132 or consent of instructor. Mr. Ramsperger.

139. American Philosophers. I; 3 cr. Philosophies of Edwards, Jefferson, Emerson, Royce, James, Dewey, and Otto with particular reference to their views on freedom, God, the individual, nature, and society. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. McGary.

141. Modern Ethical Theories. II; 3 cr. Ethical theories and problems as discussed in the late nineteenth and twentieth centuries. Prerequisites: Junior standing and 3 credits in philosophy or consent of instructor. Offered in 1952–53 and in alternate years. Mr. Garnett.

143. Introduction to Indian Philosophy. I; 3 cr. A survey of philosophical ideas in India from the early religious philosophies to the present day. Prerequisite: 3 credits in philosophy or consent of instructor. Offered 1951–52. Mr. Datta.

145. Plato and Platonism. II; 3 cr. Representative Platonic dialogues will be studied, together with the historical background of Plato's philosophy, and the subsequent influence of his ideas. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. Hay.

147. Philosophy of Religion. I, II; 3 cr. Analysis of religious experience and activity and examination of principal religious ideas in light of modern psychology, philosophy and anthropology. Prerequisite: Junior standing or consent of instructor. Mr. Garnett.

149. Great Moral Philosophers. II; 3 cr. Ethical problems as viewed by outstanding moral philosophers from Aristotle to Mill. Prerequisites: Junior standing and 3 credits in philosophy or consent of instructor. Offered in 1951–52 and in alternate years. Mr. Garnett.

150. A Philosophy of Democracy. I; 3 cr. The social philosophy of John Dewey. Prerequisites: Junior standing and Philosophy 1a, 31, or 41. Mr. Bögholt.

151. Theories of Mind and Self. II; 3 cr. The contributions of philosophy and science to the understanding of mind and self. Prerequisites: Junior standing and 3 credits in philosophy or consent of instructor. Mr. Golightly.

153. Aesthetics. II; 3 cr. Analysis of current philosophies of art and of criticism. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. Hay, Mr. Goodwin.

157. Critique of Dialectical Materialism. II; 3 cr. Critique of writings of Marx, Engels, and others on Marxian theory of the universe and knowledge, the nature of the state and society, historical determinism, the class struggle, and the class determination of ethical and esthetic values. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. McGary.

158. Types of Humanism. II; 3 cr. The philosophy of humanism; with special reference to the classical, neo-Thomian, and the naturalistic types. Prerequisite: 3 credits in philosophy or consent of instructor.

160. Logical Empiricism. 3 cr. An investigation of recent contributions by Logical Empiricists to problems of linguistic analysis, meaning, truth, foundations of logic and mathe-

matics, probability, ethics, and philosophy of science. Prerequisite: 3 credits in philosophy or consent of instructor.

161. Ethics and Social Science. I; 3 cr. A critical survey of social science literature which deals with the applicability of scientific method to the problems of ethics. Prerequisites: Junior standing and 3 credits in philosophy or consent of instructor. Mr. Golightly.

162. Idealism and Pragmatism. II; 3 cr. Clarification of basic issues by means of a study of one or more of the major representatives of each view. Prerequisite: 3 credits in philosophy.

180. Advanced Independent Reading. Consult chairman of department.

200. Thesis. Yr; 2 cr. Staff.

213. Logical Seminar. I or II; 2 cr. Prerequisite: Graduate standing. Staff.

231. Advanced History of Philosophy: Ancient. I or II; 3 cr. Prerequisites: Graduate standing and consent of instructor. Staff.

232. Advanced History of Philosophy: Rationalism. I or II; 3 cr. Prerequisites: Graduate standing and consent of instructor. Staff.

233. Advanced History of Philosophy: Empiricism. I or II; 3 cr. Prerequisites: Graduate standing and consent of instructor. Staff.

234. Advanced History of Philosophy: Critical Philosophies (Kant and Hegel). I or II; 3 cr. Prerequisites: Graduate standing and consent of instructor. Staff.

240. Metaphysical Seminar. I or II; 2 cr. Prerequisites: Graduate standing and consent of instructor. Staff.

247. Ethical Seminar. I or II; 2 cr. Prerequisites: Graduate standing and consent of instructor. Staff.

253. Aesthetics Seminar. I or II; 2 cr. Prerequisites: Graduate standing and consent of instructor. Staff.

280. Graduate Independent Reading. Prerequisites: Philosophy major and consent of instructor. Consult chairman of department.

PHYSICAL MEDICINE

Professor Bouman; Associate Professor Kohli; Instructors Briggs, Bryce, Shaffer.

Courses in Physical Medicine are open only to students enrolled in the Course in Physical Medicine, described on page 59.

1. Orientation Course. II; 1 cr. Designed to acquaint the student with the field of physical medicine in its various phases and its occupational opportunities. The student's aptitude for this type of work is also evaluated.

2. Preclinical Subjects. I; 1 cr. This course includes observations of treatments in the clinic, observation of surgery, training in the techniques of asepsis and bandaging.

3. Medical Sciences. I, 3 cr.; II, 1 cr. Instruction in the principles of surgery, orthopedics, medicine, neurology, psychiatry, X-ray, and dermatology. Prerequisites: Anatomy and physiology.

4. Massage. I; 2 cr. Instruction in and practice of massage techniques. Prerequisite: Anatomy.

5. Therapeutic Exercise. II; 4 cr. A study of the principles of movement of the body, disability evaluation, and the adaptation and use of movement for the treatment of the disabled. Prerequisites: Anatomy and kinesiology.

6. Electrotherapy. II; 4 cr. A review of electrophysics and instruction in the principles and technique of the therapeutic use of electricity. Prerequisite: Physics.

7. HYDROTHERAPY. II; 1 cr. This course consists of the physiology of, and the techniques for, the use of water in treating disease.

8. CLINICAL PRACTICE. II; 5 cr. This course consists of the practice of all of the techniques used in physical therapy in the treatment of patients.

100. APPLIED ANATOMY. I; 3 cr. An advanced anatomy course emphasizing body mechanics and muscle function in various diseases. Prerequisites: Anatomy 37 or the equivalent, and kinesiology.

101. PATHOLOGY. I; 2 cr. Lectures on and study of gross specimens of various diseased tissues of the human body. Prerequisites: Anatomy and physiology or consent of instructor.

102. ETHICS AND AMINISTRATION. II; 1 cr. Instruction in professional ethics, organization and administration of physical therapy departments in various types of institutions and the organization and administration of training.

103. JOURNAL CLUB. I, II; 1 cr.

200. RESEARCH. I, II; 4 cr.

201. TEACHING METHODS IN PHYSICAL THERAPY. II; 2 cr.

300. ADVANCED PHYSICAL THERAPY. I, II; 6 cr. Advanced clinical procedures will be discussed and students will give reports on special cases.

316. PHYSICAL MEDICINE FOR MEDICAL STUDENTS. II; 1 cr. Lectures on the medical aspects of physical medicine.

PHYSICS

PROFESSORS BARSCHALL, BEEMAN, HERB, MACK, RICHARDS, ROLLEFSON, *chairman*, SACHS, WAHLIN; ASSOCIATE PROFESSORS LUTTINGER, MILLER, WINANS; ASSISTANT PROFESSORS CURTIS (also Chemistry), DILLINGER, LIND, MCLANE, POWELL, RODGERS; INSTRUCTOR ADAIR.

In order to adapt the instruction in physics to students of different aims and degrees of preparation, the following introductory courses in general physics are offered: 1, 17, 31, 51–52, 53–54, 61, and 65. Any one of these courses may be taken as an elective, but 61 is not given Letters and Science credit. The science requirements for the B.A. degree are satisfied by 1, 31, or 51–52, and in part by 17. Courses 1 and 31 are both year courses in general physics for Letters and Science students. Course 31 is intended for those expecting to major in the physical sciences or mathematics. Course 1 is intended for all others; fundamentals are treated with a minimum of mathematics. Courses 51–52, 53–54 are intended for engineering students. It is assumed that students taking any of the courses have had the minimum mathematical preparation for admission to the University, i.e., 1 unit each of high-school algebra and plane geometry. See ADMISSION REQUIREMENTS.

After completion of one of the introductory courses, 1a and 1b, or 31, or 51–52, or 53–54, the student who is interested in further study in this subject will normally take next one of the intermediate courses 102, 103, 104 or 106. Completion of one of the introductory courses is a prerequisite for all courses numbered above 100; calculus is prerequisite for all courses numbered above 100, with the exception of 110 and 119.

MAJOR IN PHYSICS. Students planning to major in physics are advised to take a year of chemistry in the freshman year, and calculus not later than their sophomore year. The only introductory course that essays to lay the physics foundation for a career in natural science is Physics 31, and it is important that a beginning student elect Physics 31 as his first physics course if he is considering a major in physics; for those students who have not made their choice of career early enough, another introductory course will be accepted as a substitute. To be accepted as a major in physics, a student must have a grade-point average of 1.5 or better in the university mathematics and physics courses taken in his first two years, and must present to his adviser a permit signed by the chairman of the department. A minimum of 32 credits is required, which shall include the following courses: One of the

one-year elementary courses (31 is recommended), 102, 103, 104a, 106a and 106b. The remaining credits will be selected from physics courses numbered 100 and above, but not including Physics 119. Astronomy 102 (Astrophysics) may also be used for credit towards the physics major. A major in physics may include a thesis, which is usually an account of a piece of experimental work done largely on the student's own initiative.

Students choosing physics as a major or minor are advised to obtain the department's recommendations on sequence of courses from the physics office. For education majors and minors see School of Education. For courses recommended in the physics option in engineering see College of Engineering.

1a. General Physics. I, II; 5 cr. Mechanics, heat, and sound. Prerequisite: Sophomore standing is advisable. (See also Physics 31.) 2 lect.; 4 hrs. lab.; 2 quiz. (Repeated second semester.) Staff.

1b. General Physics. II, I; 5 cr. Electricity, light, and modern physics. Prerequisite: Physics 1a. Sophomore standing is advisable. 2 lect.; 4 hrs. lab.; 2 quiz. (Repeated first semester.) Staff.

Note: For second courses see 102, 103, 104a, 106a and 106b.

10. Laboratory Arts. I, II; 1 cr. Shop work and glass blowing. Prerequisites: Senior standing and consent of instructor.

17. Survey of Physics: Nature of the Physical World. II; 4 cr. A brief course showing the fundamental principles of physics and their application, designed to fulfill in part the nonprofessional science option. Open to all students excepting those who have had a more extended introductory course in physics. 2 lect.; 2 hrs. lab.; 2 quiz. Mr. Miller.

31. General Physics. Yr; 5 cr. Prerequisite: Calculus or concurrent registration. Recommended for students who expect to major in physics, chemistry or mathematics. 2 lect.; 4 hrs. lab.; 2 quiz. Mr. Rollefson.

51. General Physics. I; 5 cr. Mechanics, wave motion, sound, and heat. Required of sophomores in civil, chemical, mechanical, and mining engineering. 2 lect.; 4 hrs. lab.; 2 quiz. Prerequisite: Calculus or concurrent registration. Staff.

52. General Physics. II; 5 cr. Magnetism, electricity, light, and atomic structure. 2 lect.; 4 hrs. lab.; 2 quiz. Prerequisite: Physics 51. Staff.

53. Mechanics and Heat. I; 5 cr. Required of sophomores in electrical engineering. Prerequisite: Calculus or concurrent registration. 2 lect.; 4 hrs. lab.; 2 quiz. Mr. Wahlin.

54. Wave Motion, Sound, Light, and Modern Physics. II; 5 cr. Continuation of Physics 53. 2 lect.; 4 hrs. lab.; 2 quiz. Mr. Wahlin.

61. General Physics. II; 5 cr. For agricultural, home economics, and physical education students. Letters and Science students may take this course for 4 credits only as Physics 17. 2 lect.; 4 hrs. lab.; 2 quiz. Mr. Miller.

65. General Physics. Yr; 3 cr. Primarily for students in physical education, pharmacy, medical technology and home economics. 2 lect.; 2 hrs. lab.; 1 quiz. Mr. Winans.

75. General Physics for Students in the Biological Sciences. I; 5 cr. (Given when demand warrants.) This course is intended for graduate students in the Division of Biological Sciences who enter with deficiencies in Physics. Prerequisite: Graduate standing or consent of instructor. 3 lect.; 3 hrs. lab.; 1 quiz. Mr. Beeman.

100. Senior Thesis. Yr; 2 cr. Staff.

102. Heat and Thermodynamics. II; 4 cr. Properties of real and ideal gases, thermal properties of solids and liquids. Elementary kinetic theory and thermodynamics. Laboratory practice in modern methods of temperature measurement, calorimetry and the thermal properties of matter. 3 lect.; 3 hrs. lab. Mr. Dillinger.

103. Optics. I; 4 cr. Elements of geometric optics, Huyghens' principle, image forma-

tion, interference, diffraction, polarization, optical instruments, resolving power. Corresponding laboratory work. 2 lect.; 3 hrs. lab.; 1 quiz. Mr. Rodgers.

104a. ELECTRICITY AND MAGNETISM. I; 3 cr. Electro- and magneto-statics, electromagnetism, accurate electrical measurements, instruments and related theory. Direct current circuits, qualitative discussion of dielectrics, semiconductors, and magnetic properties of solid bodies. 2 lect.-conf.; 3 hrs. lab. Mr. Lind.

104b. ELECTRICITY AND MAGNETISM. II; 3 cr. Alternating currents, low and high frequency. Electromagnetic machinery, thermionic emission, elementary electronics. Certain phases of modern experimental physics are discussed and dealt with in the laboratory. 2 lect.-conf.; 3 hrs. lab. Prerequisite: Physics 104a. Mr. Lind.

105. MECHANICS. II; 3 cr. Vector algebra. Statics, kinematics, conservative forces, planetary motion, pendulum, angular momentum, elementary treatment of rigid bodies, impulsive forces. Prerequisite: Differential equations or advanced calculus. Mr. Powell.

106a. ATOMIC PHYSICS I. I; 3 cr. Atomistic structure of matter; experimental evidence. Critical potentials, quantum hypothesis, nuclear atom, correspondence principle, Bohr model, hydrogen atom. Mr. Herb.

106b. ATOMIC PHYSICS II. II; 3 cr. Matter waves, uncertainty principle, atomic structure, spin, vector model, periodic table, valency, x-rays, molecular spectra, solids, radioactivity, nuclear forces, radiations, transformations, detectors and accelerators. Prerequisite: Physics 106a. Mr. Herb.

110. ADVANCED LABORATORY PHYSICS. I; 2 cr. Laboratory experience with the more important research techniques and apparatus. High vacuum, evaporation of thin films, Geiger counters, ionization chambers, photoelectricity. 4 hrs. lab. Prerequisite: Senior standing or consent of instructor. Mr. Miller.

113. ATOMIC AND MOLECULAR STRUCTURE. I; 3 cr. Bohr-Sommerfeld theory, vector model, wave model, periodic table, complex spectra, hyperfine structure; diatomic molecules, infrared and Raman spectra, electronic transitions, continuous spectra, dissociation, molecular constants, nuclear spin. Applications. Prerequisite: Physics 106b. Mr. Mack, Mr. Winans.

115. THERMODYNAMICS. I; 2 cr. First and second laws, thermodynamic temperature scale, Joule-Kelvin effect, thermodynamic potentials, thermodynamic equilibrium, dilute solutions, phase rule, Nernst's heat theorem, radiation. Applications. Prerequisite: Differential equations or advanced calculus or concurrent registration. Staff.

116. ADVANCED CIRCUIT ANALYSIS. II; 3 cr. Theory of electric circuits, alternating currents, networks, transmission lines, guided systems, analysis of vacuum tube circuits, gas tubes, instrumentation. Prerequisites: Physics 104a or equivalent and differential equations. Mr. Wahlin.

118. KINETIC THEORY. I; 2 cr. Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac distributions and elementary applications. Brownian motion, diffusion, heat conduction, viscosity, practical applications in physics, physical chemistry and engineering. Prerequisite: Physics 106b or equivalent. Mr. Dillinger, Mr. Winans.

119. RADIATION, ULTRAVIOLET TO INFRARED. II; 1 cr. Primarily for premedical students. Non-mathematical lectures on radiation, including radium (gamma) rays, x-rays, ultraviolet, visible, and infrared and longer waves, their properties, physiological effects (Vitamin D) and biological applications. Prerequisite: Physics 1b or equivalent or concurrent registration. Staff.

120. COLLOQUIUM. Yr; 0 cr. Discussion of current research with main emphasis on experimental physics. Staff.

126. SPECIAL TOPICS IN EXPERIMENTAL PHYSICS. I; 3 cr. Critical analysis, mainly by students, of experiments of fundamental importance in physics, e.g., the determination of fundamental constants. Mr. Wahlin.

137. Introduction to Quantum Mechanics. I; 3 cr. Schroedinger equation, interpretation and methods of solution; hydrogen atom; spin functions; Pauli principle; perturbation theory; Zeeman effect, scattering theory. Prerequisites: Physics 106b and differential equations or consent of instructor. Staff.

175. Electronic Aids to Measurement. II; 4 cr. (Condensed treatment for advanced students in a variety of fields.) Fundamentals; elements (tubes, transistors); basic circuits (power supplies, amplifiers, oscillators, filters, pulse networks, discriminators); sensors; servos; analog computers; data recording; combination into measuring instruments. 3 lect.; 3 hrs. lab. (Same course listed as Electrical Engineering 175, Meteorology 175.) Prerequisite: Consent of instructor. Calculus, intermediate electricity advisable. Staff.

180. Advanced Independent Reading. I, II; *cr. Staff.

190. Junior Seminar. II; 2 cr. Reports by students on papers or subjects of current or historical importance. Designed to give graduate students practice in the proper presentation of scientific papers. Prerequisite: Graduate standing or consent of instructor. Staff.

200. Graduate Research. Yr; *cr. Staff.

210a. Theoretical Physics I: Dynamics. I; 3 cr. Lagrange equations, principle of least action, simple treatment of normal co-ordinates, rigid bodies, mathematical methods of physics, vector analysis, potential theory, waves. Prerequisites: Consent of instructor or Physics 105 or equivalent, and differential equations. Mr. Luttinger, Mr. Powell.

210b. Theoretical Physics II: Electrodynamics. Fundamental experiments and simple treatment of Maxwell's equations. Plane electromagnetic waves, radiation, Lorentz's theory of electrons, dispersion, group and phase velocity. Average fields in matter. Prerequisites: Consent of instructor or Physics 210a and 104a or equivalent. Mr. Luttinger, Mr. Powell.

211. Advanced Dynamics. II; 3 cr. Variational principles, contact transformations, Hamilton-Jacobi equation, action variables, perturbation theory, rigid bodies, normal co-ordinates, special relativity, basic principles of mechanics of continua. Prerequisite: Physics 210a. Mr. Luttinger.

212. Quantum Mechanics. Yr; 3 cr. Correspondence and uncertainty principles, Schroedinger equation and applications, spectroscopic results, perturbation theory, mathematical and general foundations. Pauli principle. Applications to radiation theory and selection rules. Approximation methods and applications. Prerequisites: Physics 106b and 210b or equivalent or consent of instructor. Mr. Sachs, Mr. Powell.

213. Advanced Atomic and Molecular Structure. II; 3 cr. Advanced topics in atomic and molecular spectra. Complex spectra, hyperfine structure, applications to nuclear physics. Diatomic and polyatomic molecules. Raman effect, fluorescence, solid bodies. Prerequisites: Physics 106b and consent of instructor. Physics 113 and first semester of Physics 212 recommended. Mr. Mack, Mr. Winans.

215. Advanced Electrodynamics. I; 3 cr. Advanced mathematical treatment of electrodynamics. Maxwell's equations, special boundary value problems, multipole expansions, retarded potentials, Hertz vectors, Lorentz electron theory, diffraction, electromagnetic mass problem, relativistic electrodynamics, canonical formulation of electrodynamics, theory of waves guides and antennas. Prerequisite: Physics 210b. Mr. Powell.

220. Recent Papers Seminar. Yr; 0 cr. Reports on current literature by students and staff. To be attended by advanced research students only. Prerequisite: Consent of instructor. Staff.

221. Seminar in Theoretical Physics. Yr; 0–1 cr. Discussion of current literature in theoretical physics. Mr. Sachs, Mr. Luttinger.

225. X-rays and Solid State. II; 3 cr. Production, absorption, scattering of x-rays, crystal structure, theory of metals, surface properties, elements of band theory. Prerequisite: Physics 106b. Concurrent registration in Physics 212a is recommended. Mr. Beeman.

229a. Experimental Nuclear Physics. I; 3 cr. Basic properties of nuclei, nuclear forces, binding energy, radioactivity, nuclear reactions, basic principles of detectors, interaction of alpha, beta, and gamma rays with matter. Cosmic rays. Prerequisite: Physics 106b. Mr. Barschall, Mr. Richards.

229b. Theoretical Nuclear Physics. II; 3 cr. Theory of the deuteron and other light nuclei; nuclear forces, scattering resonances, magnetic moments, nuclear reactions, isomerism, beta-decay, neutron diffusion, meson theories. Prerequisites: Consent of instructor or Physics 229a and first semester of Physics 212. Mr. Sachs.

232. Special Topics in Theoretical Physics. I, II; 2–3 cr. Discussion of recent work in theoretical physics or of advanced specialized topics. To be given when demand warrants.

241. Statistical Mechanics. I; 3 cr. Boltzmann statistics, H theorem and entropy, principle of detailed balance, Gibbs statistics, quantum statistics. Application to specific heats, perfect and imperfect gases, very low temperature and transport phenomena. Prerequisites: Consent of instructor or Physics 210a and 118 or equivalent. Mr. Sachs, Mr. Curtiss, Mr. Luttinger.

270. Relativity, Special and General. I; 2–3 cr. Experimental basis, tensors, dynamical laws, stress energy tensor, electromagnetic mass. Einstein's theory of general relativity and its main cosmological consequences. Mr. Sachs.

273. Low-Temperature Physics. II; 3 cr. Methods and techniques. Properties of matter at low temperatures including paramagnetic phenomena, liquid helium, superconductivity. Virial equation of state, Fermi-Dirac and Bose-Einstein gases. Prerequisites: Physics 212a and 241 or consent of instructor. Staff.

PHYSIOLOGY

Professors Youmans, *chairman*, Herrin; Associate Professors Barnard, Morrison, Murphy, Stone; Instructor Larsen.

Physiology is also a department of the Medical School, the announcement of which should be consulted for other courses.

1. Elements of Human Physiology. I; 4 cr. Lectures and laboratory work directed toward understanding of the functions of the human body. Prerequisites: Sophomore standing and a course in elementary science. May be counted toward the science requirement of the B.A. or the B.S. degree. Dr. Youmans.

3. Animal Physiology. II; 4 cr. Especially designed for students in pharmacy and agriculture but open to others. Lectures and laboratory work directed toward an understanding of animal physiology. Prerequisites: Sophomore standing and general chemistry. Dr. Herrin.

127. Comparative Physiology. II; 3 cr. This is a joint course with the Department of Zoology. Prerequisites: 10 cr. in zoology and 10 cr. in chemistry. Dr. Morrison.

POLITICAL SCIENCE

Professors Clarenbach, Fellman, McCamy, Pfankuchen, Stokes, Young, *chairman*; Associate Professors Epstein, Salter; Assistant Professors Hart, Huitt, Mayda; Instructor Thomson.

The courses offered by the Department of Political Science are designed to afford a well-rounded view of the nature, functions, and activities of government and to give substantial acquaintance with public affairs, state and local, national, and international. Some of them are intended primarily to furnish information requisite for intelligent citizenship, along with the training which forms a part of any liberal education. Others involve more specialized study, with a view to comprehensive knowledge of legislation, administration, inter-

national relations, and public law. Many contribute to training for public service. Except as qualified by the prerequisites indicated below, courses are open to students who have completed their freshman year, and all are elective. Course 7 is given every semester and, being designed for freshmen and sophomores, serves as a gateway to the more advanced and specialized courses.

MAJORS IN SOCIAL SCIENCE WITH POLITICAL SCIENCE AS A FIELD OF CONCENTRATION. The requirements in political science when offered as a field of concentration are: (1) 30 credits, for students beginning majors in and after September 1948, including thesis if one is written; (2) course 7; (3) other courses so selected that the total political science offering will include at least one course in each of the first four groups enumerated below, and in the case of Group II, one course in addition to Course 7. Students offering this field may be required to take courses outside of the department which are related to their political science programs.

THESIS. Students who, by their attainments in political science, and by personal characteristics, aptitudes, and interests, have shown that they can probably gain more from a thesis than from work for equivalent credits in courses, may be required by their adviser to write a thesis (4–6 credits).

AMERICAN INSTITUTIONS AND INTERNATIONAL RELATIONS as major fields. Students interested in these major fields are referred to pages 61 and 69.

PREPARATION FOR POSITIONS IN THE CIVIL SERVICE. There are courses offered in the department that are prerequisites for a few positions such as that of Junior Administrative Analyst, or the Junior grade in the Foreign Service or the home service of the State Department, and in general the ground is laid for interne, apprentice or fellowship training posts in all levels of government. However, the chief recruitment for the civil service is on the basis of training in specific subject-matter fields such as is offered in other colleges and departments. The Department of Political Science is glad to supply students with information concerning entrance qualifications and other aspects of the civil service and aims in its courses to supplement the subject-matter courses in other departments with an introduction to the institutional setting of government services.

I. POLITICAL THEORY

101. INTRODUCTION TO POLITICAL THEORY. I, II; 3 cr. The study of fundamental political ideas in the light of the modern state and contemporary issues. Prerequisite: Junior standing or consent of instructor. Staff.

110. GOVERNMENT AND THE PROBLEMS OF DEMOCRACY. Sem; 3 cr. Development of American theories of democracy, with an examination of the role of government in society. Prerequisite: Sophomore standing. Staff.

165. HISTORY OF AMERICAN POLITICAL THOUGHT. Sem; 3 cr. Prerequisite: Junior standing. Staff.

166. CONTEMPORARY AMERICAN POLITICAL THOUGHT. Sem; 3 cr. Prerequisite: Political Science 101 or 165, or work in American history or literature. Staff.

245a–b. HISTORY OF POLITICAL THOUGHT. Yr; 3 cr. A study of the political thought developed out of the Greek city state, the Roman Empire, the medieval state, and the modern state. Prerequisite: Graduate standing or consent of instructor. Staff.

II. AMERICAN GOVERNMENT AND PUBLIC LAW

7. AMERICAN GOVERNMENT AND POLITICS. I, II; 3 cr. An analysis of the chief problems of American government. Prerequisite: Freshman standing. Staff.

13. MUNICIPAL GOVERNMENT. Sem; 3 cr. The organization and politics of city government. Prerequisites: Political Science 7 and sophomore standing. Mr. Young, Mr. Hart.

112a–b. CONSTITUTIONAL LAW. Yr; 3 cr. The American Constitution in practice as seen in the jurisprudence of the Supreme Court. Prerequisite: Junior standing. Mr. Fellman.

115. LAW IN SOCIETY. I; 3 cr. The nature, sources, and development of law; the structure and functions of courts and other agencies; the interests served by law and the conflicts which mark the growth and administration of law; and the relation of law to other social sciences and other agencies of social control. Prerequisite: Junior standing. Mr. Auerbach.

120. ADMINISTRATIVE LAW. Sem; 3 cr. The delegation of powers; elements of fair administrative procedure; judicial control over administrative determinations. Prerequisite: Junior standing or consent of instructor. Mr. Fellman.

122. POLITICAL PARTIES AND CITIZENSHIP. I, II; 3 cr. A description and critical examination of the party process in the United States. Prerequisites: Political Science 7 and sophomore standing. Mr. Salter.

123. ADMINISTRATION OF UNITED STATES FOREIGN AFFAIRS. I, II; 3 cr. Descriptive analysis of the way in which American foreign policy is formulated and carried out by Federal agencies. Prerequisite: Junior standing or consent of instructor. Mr. McCamy.

124. PUBLIC FINANCE. (See ECONOMICS 124.)

126. LEGISLATION. Sem; 3 cr. Principles, procedures, and problems of the legislative process. Prerequisites: Sophomore standing and one course in political science. Mr. Huitt.

134. RURAL LOCAL GOVERNMENT. I; 3 cr. The structure and functions of rural local government in the United States. Prerequisite: Junior standing or consent of instructor. Mr. Clarenbach.

139. STATE GOVERNMENT. Sem; 3 cr. Organization and functioning of the state governments with emphasis on Wisconsin. Prerequisites: Political Science 7 and sophomore standing. Mr. Young.

142. PUBLIC UTILITIES. (See ECONOMICS 142.)

146. GOVERNMENT AND BUSINESS. (See ECONOMICS 146.)

148. PROSEMINAR: POLITICAL PARTIES AND PUBLIC OPINION. I, II; 3 cr. Traits and techniques of representative party leaders; their relation to public opinion and the voter. Prerequisite: Senior standing or consent of instructor. Mr. Salter.

152. GOVERNMENT AND NATURAL RESOURCES. Sem; 3 cr. A consideration of problems in public policy and administration with respect to the utilization and wastage of natural resources. Prerequisite: Junior standing or consent of instructor. Mr. Clarenbach.

163. LOCAL PLANNING ADMINISTRATION. II; 3 cr. Principles and procedure in the administration of local planning for the development and use of land and other basic resources and for the provision of public services closely related to land development and use. Prerequisite: Junior standing. Mr. Clarenbach.

171. CIVIL LIBERTIES IN THE UNITED STATES. Sem; 3 cr. The philosophy of civil liberties; the American constitutional context; rights of conscience and expression; rights of defendants accused of crime; equal protection of the laws; political rights; vindication of rights; proposals for reform. Prerequisite: Junior standing or consent of instructor. Mr. Fellman.

172. POLITICS OF PRESSURE GROUPS. Sem; 3 cr. Analysis of the internal politics of labor unions, business and professional associations, and farm groups; and of the techniques employed in advancing their policies in government. Prerequisite: Junior standing. Mr. Huitt.

173. PUBLIC OPINION. Sem; 3 cr. An analysis of the formation of opinions within and among the political publics, and of their role in the development and practice of governmental policy. Prerequisite: Junior standing. Mr. Huitt.

174. ADVANCED AMERICAN GOVERNMENT. Sem; 3 cr. An analysis at an advanced level of the structure and operation of the Federal Government of the United States. Prerequisites: Junior standing and Political Science 7. Mr. Huitt.

175. PROSEMINAR: POLITICS OF PRESSURE GROUPS. Sem; 3 cr. Case studies in interest

groups; internal politics, public policy programs, and relations with the organized state. Prerequisite: Political Science 172 or graduate standing. Mr. Huitt.

192. Problems in Empirical Social Behavior Research. I, II; 2–3 cr. Supervised individual or joint work on problems in research, including carrying out of projects and/or independent reading on methodology. Prerequisite: Consent of instructor. Mr. Fisher.

194. Introduction to Public Opinion Research. I; 3 cr. Theory and practice of *survey* techniques. Planning, design, sampling, types of data, questionnaire construction, interviewing, field operations, content analysis and coding, machine tabulation, analysis of data, utilization of findings. Examples in a variety of fields. Two hours lecture; two hours laboratory or field work. Prerequisite: Junior standing. Mr. Fisher.

213. Seminar in Local Government. Sem; 3 cr. Prerequisite: Graduate standing. Mr. Clarenbach.

226. Seminar in the Legislative Process. Sem; 3 cr. Prerequisite: Graduate standing or consent of instructor. Mr. Young.

261. Seminar in Public Law. Sem; 3 cr. Prerequisite: Graduate standing or consent of instructor. Mr. Fellman.

270a–b. Seminar in Public Planning. Yr; 2–3 cr. Processes in decision-making with respect to physical design and administration in regional, state, and local planning. Participation by members of the interdepartmental Committee on the Regional Planning Course. Prerequisites: Graduate standing and consent of seminar leader. Mr. Clarenbach, Mr. Ratcliff.

274. Seminar in Politics and Public Policy. Sem; 3 cr. Research in the formulation and execution of public policy in a democratic society. Prerequisite: Graduate standing. Mr. Huitt.

285. Seminar in River-Basin Planning. II; 2–3 cr. The natural potentialities of river basins, control methods available with modern engineering, private and public means of developing these potentialities. Studies will be made of the political, administrative, and engineering experience from such river basins as the Tennessee, Columbia, St. Lawrence, and Wisconsin. Prerequisite: Graduate standing or consent of instructor. Mr. Glaeser, Economics; Mr. Hart, Political Science; Mr. Lenz, Civil Engineering.

294. Seminar in the Design and Process of Survey Research. II; 3 cr. Presentation of initial study designs or of research in progress by members of the seminar, for critiques leading both to further development of the project itself and to illustration of research problems in the social sciences. Prerequisite: Consent of instructor. Mr. Fisher.

III. COMPARATIVE GOVERNMENT AND PUBLIC ADMINISTRATION

127. Government of Great Britain. I; 3 cr. An analytical study of the political institutions of the British Commonwealth, with special reference to Great Britain. Prerequisite: Junior standing or consent of instructor. Mr. Epstein.

128. Governments of Continental Europe. II; 3 cr. An analytical study of the backgrounds, techniques, and political institutions of selected Continental states. Prerequisite: Junior standing or consent of instructor. Mr. Epstein.

130. Governments of Latin America. Sem; 3 cr. Analysis of contemporary governments in Latin America, with particular emphasis on the social way of life, the politics of economic organization, and government in action. Prerequisites: Sophomore standing and Political Science 7 or consent of instructor. Mr. Stokes.

132. Governments of Central-Eastern Europe. Sem; 3 cr. The fundamentals, changing pattern, and practice of the various communist governments in that area. Prerequisite: Junior standing or consent of instructor. Mr. Mayda.

133. The Soviet State and Government. Sem; 3 cr. Theory and practice of the Soviet

State. Emphasis on the politico-economic and institutional developments since 1936. Prerequisite: Junior standing or consent of instructor. Mr. Mayda.

135. Municipal Administration. Sem; 3 cr. The functions and structure of municipal administration. Prerequisites: Sophomore standing and Political Science 7 or 13 or 143 or consent of instructor. Mr. Hart, Mr. Young.

140. Far Eastern Politics. (See Group IV.)

143. Introduction to Public Administration. I, II; 3 cr. The role of administration in modern government; problems of organization, control, personnel, and finance. Prerequisites: Sophomore standing and Political Science 7 or consent of instructor. Mr. Hart, Mr. McCamy, Mr. Young.

163. Local Planning Administration. (See Group II.)

170. The Civil Service. Sem; 3 cr. Analysis of problems of public personnel. Prerequisites: Political Science 7 and junior standing. Political Science 143 is recommended. Mr. Hart.

187a. Governments of Scandinavia. I; 3 cr. An analysis of constitutional organization, political parties, administrative procedures, and issues of public policy. Prerequisites: Junior standing and Political Science 7 or consent of instructor. Staff.

250. Seminar in European Government. Sem; 3 cr. Problems of government and politics in Western Europe, with particular references to Great Britain. Prerequisite: Graduate standing. Mr. Epstein.

258. Seminar in Public Administration. Sem; 3 cr. Prerequisite: Graduate standing or consent of instructor. Mr. McCamy, Mr. Young.

262. Seminar in Latin-American Government, Politics, and International Relations. Sem; 3 cr. Prerequisite: Graduate standing. Mr. Stokes.

290. Interdepartmental Seminar in Latin-American Problems. Sem; 3 cr. Prerequisites: Graduate standing and 5 credits in courses in the Latin-American field in the co-operating departments or consent of the committee in charge. Mr. Stokes and members of other co-operating departments.

IV. INTERNATIONAL LAW, ORGANIZATION, AND RELATIONS

21–121. Foundations and Problems of International Relations. (Identical with Geography 21–121.) I, II; 3 cr. The geographic, economic, and political foundations of national power in the more important states and problem areas; efforts to deal with problems of conflicting national policies through international economic and political institutions. Prerequisite for 21: Sophomore standing or a previous course in political science or cultural geography; for 121: Junior standing. (May not be taken for credit by students who have had I.L.S. 24 or Political Science 25.) Mr. Hartshorne, Mr. Pfankuchen.

118. Principles of International Law: Survey. Sem; 5 cr. The rules governing international relations, as illustrated in texts and cases. Prerequisites: One course in political science or one in modern history; sophomore standing. (This course will not be offered concurrently with Political Science 118a or 118b.) Mr. Pfankuchen.

118a. Principles of International Law: Law of Peace. Sem; 3 cr. Content and prerequisites same as Political Science 118 above, except that law of peace only is considered. Credit will not be given for both Political Science 118 and 118a, nor will 118a be offered concurrently with 118. Mr. Pfankuchen.

118b. Principles of International Law: Law of War and Neutrality. Sem; 3 cr. Content and prerequisites same as Political Science 118 above, except that law of war and neutrality only is considered. Credit will not be given for both Political Science 118 and 118b, nor will 118b be offered concurrently with 118. Mr. Pfankuchen.

119. Principles of International Law: Problems. Sem; 3 cr. Research on hypothetical cases or significant current problems. Prerequisite: Political Science 118 or consent of instructor. Mr. Pfankuchen.

123. Administration of United States Foreign Affairs. (See Group II.)

131. International Relations of Latin America. Sem; 3 cr. United States-Latin-American relations with particular reference to social, economic, and political problems in the western hemisphere, the Organization of American States, and the United Nations. Prerequisite: Sophomore standing. Mr. Stokes.

136. Soviet Foreign Policy. Sem; 3 cr. Principles, formulation, and administration; case studies of policies; emphasis on recent developments. Prerequisite: Junior standing or consent of instructor. Mr. Mayda.

137. International Organization and Diplomacy. I, II; 3 cr. Evaluation of agencies and procedures of international co-operation, with special attention to the League of Nations and the United Nations. Prerequisites: Sophomore standing and one course in political science or modern history. Mr. Thomson.

138. Proseminar: Contemporary Problems in International Relations. Sem; 3 cr. A proseminar in selected aspects of international institutions and politics. Prerequisites: Senior standing and consent of instructor. Mr. Pfankuchen.

140. Far Eastern Politics. I, II; 3 cr. Interests and policies of the United States are given special emphasis. Prerequisite: Junior standing or consent of instructor. Mr. Thomson.

155. Proseminar: The United States and the Far East. Sem; 3 cr. Prerequisites: Junior standing and either a course in Far Eastern history or Political Science 140 or consent of instructor. Mr. Thomson.

156. Proseminar: Prospects and Problems of World Government. Sem; 3 cr. Comparative analysis of the more important plans for World Government, including the constitutional organization and the difficulties of establishing World Government. Prerequisite: Political Science 21–121 or consent of instructor. Mr. Thomson.

159. Current Problems of American Foreign Policy. (Identical with Social Studies 159.) II; 3 cr. Analysis of the factors and alternative solutions of selected problems in contemporary American foreign policy approached from the disciplines of economics, geography, and political science. Prerequisite: Senior or graduate standing. Mr. Ellsworth, Economics; Mr. Hartshorne, Geography; Mr. McCamy, Political Science.

187b. International Relations of Scandinavia. II; 3 cr. General survey of international relations and participation in international organizations, with attention to the problem of federalism, and particular emphasis on the relations of Scandinavia to other European countries and to Russia. Prerequisites: Junior standing and Political Science 7 or consent of instructor. Staff.

251. Seminar in American Foreign Policy. Sem; 3 cr. Prerequisite: Graduate standing. Staff.

255. Seminar in the Politics of the Pacific. Sem; 3 cr. Prerequisite: Graduate standing. Mr. Thomson.

259. Seminar in International Law and Organization. Sem; 3 cr. Prerequisite: Graduate standing. Mr. Pfankuchen.

260a–b. Seminar in International Relations. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Pfankuchen.

V. MISCELLANEOUS

100. Senior Thesis. Yr; 2 cr. Staff.

180. Special Work. I, II; 2 or 3 cr. This course is intended primarily for upper-group undergraduates, but may be taken by graduates. The work is carried on individually, under the direction of a member of the staff. Open only to upper-group majors in the department by consent of instructor. See Section 18, page 43.

200. Thesis. *cr. Staff.

275. Scope and Methods of Political Science. Sem; 3 cr. Prerequisite: Graduate standing. Staff.

280. Special Work. I, II; 2 or 3 cr. Open to graduate students only. Staff.

PSYCHOLOGY

Professors Brogden, Cameron, Grant, *chairman*, Harlow, Magaret, Mote, Smith; Associate Professor Bridgman; Assistant Professors Baughman, Gilchrist, Page, Thurlow; Instructors Archer, Butler, Leibowitz, Odoi, Wyckoff; Lecturers Calden, Friedman, Ruedisili, Sanders.

Major. There are two requirements that must be met by the student who wishes to be accepted as a major in the Department of Psychology: (1) completion of Psychology 1, a laboratory course in zoology or physics, and a course in college mathematics, with a grade-point average in these courses of 1.5 or better; (2) attainment of junior standing.

A total of 26 credits in psychology must be earned to satisfy the minimum requirement of the major. This total shall include: Psychology 1, 25, 105, 130, either 160 or 161, and any two of the following: Psychology 100, 116, 117, 129, 141, 152, 154, 170, 171, 172, 173, 179, 185, 187, 188, 189, 190.

For majors in the department, Psychology 25 and 130 are prerequisites to Psychology 100, 116, 117, 129, 141, 152, 154, 166, 170, 171, 172, 173, 174, 179, 185, 187, 188, 189, and 190.

1. Introduction to Psychology. I, II; 4 cr. Development of human behavior; motivation, frustration, emotion, and biological functions; intelligent behavior; learning, retention and forgetting; social behavior, language and thinking; personality; efficiency. Prerequisite: Sophomore standing. Dr. Cameron, Mr. Harlow, Mr. Leibowitz, Mr. Mote, Mr. Smith.

3. Psychology for Engineers. I, II; 3 cr. Psychological facts and methods in engineering work; response mechanisms in the human individual; motor co-ordination; emotional adjustment, learning and training, human capacities and traits; attitudes; psychological principles in equipment design. Mr. Smith.

25. Experimental Psychology. I, II; 4 cr. Lectures, demonstrations and experiments. Motor, sensory and nervous-system functions; reflex action and equilibrium; emotion; learning; speech functions. Emphasis is on research techniques and methodology. Prerequisites: Psychology 1 and sophomore standing. Mr. Archer, Mr. Brogden, Mr. Leibowitz, Mr. Thurlow, Mr. Wyckoff.

39. General Elementary Social Psychology. II; 3 cr. Introduction to the study of personality development and collective behavior in contemporary social life. A more general and elementary course than Sociology (or Psychology) 139a or 139b. Prerequisite: Sociology 1 or Sociology 2 or Anthropology 3 or Psychology 1. May not be counted toward major in Sociology (or Psychology). Mr. Barnett, Mr. Gilchrist.

50. Applied Psychology. II; 3 cr. Vocational guidance and choice; selection of workers; business psychology; personnel; advertising; applications of psychology to professions and national agencies. Prerequisite: Psychology 1. Mr. Smith.

100. Senior Thesis. Yr; 2 or 3 cr. Prerequisite: Consent of instructor. Staff.

105. Psychology of Human Adjustment. I, II; 3 cr. Personality adjustment and maladjustment in normal persons, need, frustration and conflict; adjustive techniques; analysis and rehabilitation. Prerequisite: Psychology 1. Mr. Baughman, Miss Magaret, Mr. Page.

107. Psychology of Perception. I; 3 cr. Lectures and demonstrations. Theories of

perceptual organization in the various sense modalities; perception of form, space and movement; the influence of social factors upon perception. Prerequisite: Psychology 1. Mr. Gilchrist, Mr. Odoi.

108. Psychology of Human Emotions. I; 3 cr. Influence of emotions on goals, customs, interests, learning, reasoning, and behavior problems in children and adults. Prerequisite: Psychology 1. Mr. Harlow, Mr. Odoi.

109. Psychology of Motivation. II; 3 cr. The origin, differentiation, and transformation of motives, and their influence upon initiation, direction and maintenance of the behavior of organisms. Prerequisites: Psychology 1 and junior standing. Mr. Gilchrist, Mr. Odoi.

115. Industrial Psychology. I; 3 cr. Applications of psychological techniques to industry with particular emphasis upon employee testing, sensory and perceptual problems, employee training, work, fatigue, efficiency, merit rating, safety, and morale. Prerequisite: Psychology 1. Mr. Smith.

116. Experimental Industrial Psychology. II; 3 cr. Experiments and demonstrations of psychological techniques in industry. Sensory measurements in employee selection, maintenance of efficiency, and quality control. Measuring fatigue, efficiency, accident proneness, employee attitudes, and morale. Prerequisite: Prior credit or current registration in Psychology 115. Mr. Smith.

117. Psychology of Individual Assessment. I; 3 cr. Introduction to the field; diagnostic procedures used by the clinical psychologist; interviewing methods, psychometric and projective techniques; analysis and writing of case materials. Prerequisites: Psychology 105, 141. Mr. Baughman, Miss Magaret, Mr. Page.

125. Experimental Psychology for Graduate Students. I, II; 3 cr. May be elected by graduate students in place of Psychology 25. Prerequisites: Psychology 1 and graduate standing. Mr. Brogden, Mr. Leibowitz, Mr. Thurlow, Mr. Wyckoff, Mr. Archer.

128. Maturity and Senescence. I; 3 cr. A study of the psychological characteristics of the mature and senile person with emphasis on the changes and problems that accompany aging. Prerequisite: Psychology 1.

129. Personnel Psychology. II; 3 cr. Selection, classification and placement procedures; techniques of employment interviewing, rating methods, industrial tests (mental ability, mechanical, clerical, trade, etc.), job analysis and occupational descriptions. Lectures and laboratory. Prerequisites: Psychology 1 and senior standing. Mr. Ruedisili.

130. Psychometric Methods. I, II; 3 cr. Calculation and interpretation of measures of central tendency, variability, and relationship in psychological research; graphic representation; reliability of statistics from large and small samples. Prerequisite: Psychology 1. Mr. Grant, Mr. Thurlow, Mr. Wyckoff, Mr. Archer.

131. Advanced Psychometric Methods. II; 3 cr. General principles of psychological measurement; psychophysical methods, scaling and correlation techniques in psychological measurement; partial, multiple correlation, factor analysis. Prerequisites: Psychology 25 and 130 or an equivalent elementary course in statistics. Mr. Grant.

132. Quantitative Methods in Psychology. II; 3 cr. Curve fitting and the rational formulation of psychological theory in terms of quantitative functions. Prerequisite: Consent of instructor. Mr. Leibowitz, Mr. Wyckoff.

135. Psychology of Public Opinion. II; 3 cr. Techniques in the measurement of public opinion, attitudes, and morale; intensity scaling; factors determining opinions and attitudes; field exercises in polling. Prerequisites: Psychology 1 or Sociology 1 or 2, and either Psychology 130 or Sociology 132, or consent of instructor.

139a. Introductory Social Psychology: Personality. I, II; 3 cr. Modern personality theory and its application to personality development in various social settings. Emphasis

will be placed upon contemporary American personality patterns. Prerequisites: Psychology 1 and Sociology 1 or Psychology 1 and Anthropology 3. May not be taken for credit if student has received credit for Psychology 127 or Sociology 139. Mr. Barnett, Mr. Gilchrist, Mr. McCormick.

139b. Introductory Social Psychology: The Individual in the Group. I, II; 3 cr. Group formation, group processes, institutions, attitudes and public opinion as they affect and are affected by the individual. Emphasis on attitudes, public opinion, morale, leadership, social movements. Prerequisites: Psychology 139a or Sociology 139a or Psychology 127. Mr. Barnett, Mr. Gilchrist, Mr. McCormick.

141. Psychological Testing. I; 3 cr. Theory and methods of measuring human behavior; survey of representative tests of intelligence, performance, achievement, interests, attitudes, personality, and special aptitudes. Lectures and laboratory. Prerequisite: Psychology 130 or an equivalent course in statistics. Mr. Ruedisili.

143. The Psychology of Individual Differences and the Measurement of Intelligence. I; 3 cr. Individual differences in quantitative aspects of human behavior, heredity and environmental factors, correlation of abilities, with special emphasis on intelligence. Prerequisite: Psychology 130. Miss Magaret, Mr. Page.

144. The Psychology of Learning. I; 3 cr. Basic principles of conditioning and learning; functional relationships between salient variables related to rate of acquisition and degree of retention; transfer effects and related phenomena. Prerequisite: Psychology 1. Mr. Grant, Mr. Wyckoff, Mr. Archer.

147. Child Psychology. II; 3 cr. Learning principles, motor, language, emotional and social development of the child with emphasis on experimentation and systematic investigation. Prerequisite: Psychology 1. Mr. Wyckoff.

148. Psychology of Adolescence. II; 3 cr. Physical development, intellectual, emotional, and social behavior, and the problems of adjustment which accompany and follow the physiological changes of pubescence. Prerequisite: Psychology 1. Mr. Archer.

149. Animal Behavior. I; 2 or 3 cr. Maturation, motivation, and learning in animals, particularly mammals. Prerequisite: 10 credits of biology may be substituted for Psychology 1 as a prerequisite for this course. Mr. Butler, Mr. Harlow.

150. Animal Behavior: The Primates. II; 2 or 3 cr. Evolution from monkey to man of intelligence, social behavior, emotion, growth and bodily structure. Prerequisite: Psychology 1 or 10 credits of biology. Mr. Butler, Mr. Harlow.

152. Animal Behavior Problems. I, II; 2 or 3 cr. Individual experimental studies in animal behavior. Prerequisites: Psychology 149 or 150, or concurrent registration, and consent of instructor. Mr. Harlow, Mr. Odoi.

154. Physiological Psychology. I; 4 cr. The physiological mechanisms determining reflex action, emotions, locomotion, motor skills, thinking and language. Effect of drugs, internal secretions, and cortical lesions on behavior. Prerequisite: Psychology 1. Mr. Butler, Mr. Harlow.

156. Aptitude Testing. II; 3 cr. Principles of construction, technique and results of measurement of sensory, motor and other aptitudes. Prerequisites: Psychology 130, 141.

160. History of Psychology. II; 3 cr. Changes in subject matter and experimental methods of psychology from the ancient period to 1940, with emphasis upon the historical roots of modern fields of psychology. Prerequisite: 9 credits in psychology. Mr. Leibowitz.

161. Modern Viewpoints in Psychology. I; 3 cr. Theoretical and systematic psychology as represented by British empiricism, William James, structuralism, functionalism, dynamic psychology, behaviorism, gestalt, and psychoanalysis; current trends in theory and systems. Prerequisite: 9 credits in psychology. Mr. Brogden.

165. Behavior Pathology. I; 3 cr. Psychology of abnormal behavior; biological and

social factors in the genesis of behavior disorders; emotional disturbances; distortions of language and thinking; common neuroses and psychoses. Prerequisites: Grade of *B* in Psychology 105 and senior standing. Dr. Cameron.

166. FUNDAMENTALS OF PSYCHODYNAMICS. II; 3 cr. Psychopathology of everyday life; unconscious motivation; psychoanalytic theories of drives; conflict, resistance, repression and transference; fantasy and dream in problem solving. Prerequisites: Psychology 105 and 165, or Neuropsychiatry 107 and 112. Dr. Cameron.

167. THINKING AND IMAGINATION. II; 3 cr. Prerequisites: Psychology 165 and senior standing. Dr. Cameron.

170. EXPERIMENTAL PSYCHOLOGY OF VISION. I; 3 cr. Lecture and laboratory exercises on topics in the field of vision. Mr. Mote.

171. EXPERIMENTAL PSYCHOLOGY OF CONDITIONING, LEARNING, AND MEMORY. II; 3 cr. Lecture and laboratory exercises on topics in the field of conditioning and learning. Mr. Grant.

172. EXPERIMENTAL PSYCHOLOGY OF HEARING AND COMMUNICATION. II; 3 cr. The psychophysics of audition; experiments in audition; articulation testing; characteristics of speech and hearing as they relate to communication engineering; theory of transfer of information. Prerequisites: Psychology 25 and 130 or consent of instructor. Mr. Thurlow.

173. EXPERIMENTAL PSYCHOLOGY OF PERSONALITY. II; 3 cr. Lectures and laboratory exercises on topics in the field of personality; frames of reference, level of aspiration, ego and self, conflict and frustration. Prerequisites: Psychology 25 and 130. Mr. Gilchrist.

174. INSTRUMENTATION OF PSYCHOLOGICAL RESEARCH. I; 3 cr. Design, construction, and calibration of apparatus for presentation of stimuli and recording of responses in psychological experiments. Lecture and laboratory. Prerequisites: Psychology 1, 25. Mr. Wyckoff.

175. CLINICAL PROJECTIVE TECHNIQUES. II; 3 cr. Rorschach; thematic apperception test; perceptual and association tests; expressive techniques; play techniques. Prerequisites: Psychology 117 and consent of instructor. Mr. Baughman.

178. VISUAL SPACE PERCEPTION. II; 3 cr. Lectures, discussion and laboratory on selected topics in visual space perception; cues for the perception of distance; horopter and alley problems; stereoscopic and movement effects, and related phenomena. Prerequisite: Psychology 107 or consent of instructor.

179. FIELD WORK IN CHILD DEVELOPMENT. I, II; 3 cr. Individual investigation in the psychology of child development. Two semesters of this course satisfy the areal specialization requirement for those concentrating in psychology. Prerequisite: Consent of instructor.

180. INDEPENDENT READING. Yr; 1–3 cr. Prerequisites: Graduate major in Psychology and consent of instructor. See Section 18, page 43. Staff.

185. PROBLEMS IN CHILD AND ADOLESCENT PSYCHOLOGY. I, II; 3 cr. Independent problems in child and adolescent psychology under supervision. Prerequisites: Psychology 147 or 148 and consent of instructor.

187. PROBLEMS IN CLINICAL PSYCHOLOGY. I, II; 3 cr. Individual experimental studies in clinical psychology. Prerequisites: Psychology 117 and consent of instructor. Mr. Baughman, Mr. Calden, Mr. Friedman, Miss Magaret, Mr. Page, Mr. Sanders.

188. PROBLEMS IN BEHAVIOR PATHOLOGY. I, II; 3 cr. Prerequisite: Consent of instructor. Dr. Cameron.

189. PROBLEMS IN INDUSTRIAL PSYCHOLOGY. I, II; 3 cr. Independent work in problems in industrial and applied psychology under supervision. Prerequisite: Consent of instructor. Mr. Bridgman, Mr. Smith.

190. PROBLEMS IN HUMAN BEHAVIOR. I, II; 3 cr. Individual experimental investigation. Prerequisite: Consent of instructor. Mr. Archer, Mr. Bridgman, Mr. Brogden, Mr. Gilchrist, Mr. Grant, Mr. Leibowitz, Mr. Mote, Mr. Thurlow, Mr. Wyckoff.

194. Introduction to Public Opinion Research. I; 3 cr. Theory and practice of survey techniques. Planning, design, sampling, types of data, questionnaire construction, interviewing, field operations, content analysis and coding, machine tabulation, analysis of data, utilization of findings. Examples in a variety of fields. Two hours lecture; two hours laboratory or field work. Prerequisite: Junior standing. Mr. Fisher.

200. Research. Yr; *cr. Independent experimental, observational or statistical investigation under the supervision of a staff member. Prerequisite: Graduate standing. Staff.

201–202. Departmental Proseminar. Yr; 6 cr. Required of all graduate majors and minors in Psychology. Staff.

203–204. Colloquium. Yr; 0 cr. Required of all graduate majors. Staff.

205. Central Nervous System and Behavior. I; 3 cr. Lectures on the role of the central nervous system in relation to sensory processes, learning, thinking, language and emotions. Prerequisite: Psychology 154. Mr. Harlow.

207. Clinical Techniques. I; 3 cr. Application of special interviewing and consulting methods to the single case. Prerequisite: Consent of instructor. Mr. Baughman, Mr. Page.

208. Advanced Clinical Techniques. II; 3 cr. The use of special clinical methods of assaying intelligence, deterioration, and personality in cases of behavior pathology. Prerequisites: Psychology 165, 207 and consent of instructor. Mr. Baughman, Miss Magaret, Mr. Page.

209. Principles of Psychotherapy. II; 3 cr. Lectures and discussion on the theories, concepts, and assumptions underlying modern psychotherapeutic techniques; evaluation of the effectiveness of psychotherapy. Prerequisites: Psychology 175, 208 and consent of instructor. Mr. Baughman.

210. Seminar in Aptitude Testing. I; 2 cr. Prerequisite: Consent of instructor. Mr. Bridgman.

211. Personality Measurement-Theory and Analysis of Projective Test Results. I; 2 cr. Application of test results to the single case, with emphasis on problems of reliability and validation; survey of literature. Prerequisites: Psychology 175 and consent of instructor. Mr. Baughman.

212. Personality Measurement-Theory and Analysis of General Personality Test Results. II; 2 cr. Application of response-restricted test results to the single case, with emphasis on problems of reliability and validation. Prerequisites: Psychology 141 and consent of instructor. Mr. Friedman.

215. Seminar in Industrial Psychology. I, II; 2 cr. Prerequisites: Psychology 115 and consent of instructor. Mr. Bridgman, Mr. Smith.

218. Seminar in General Psychology. I, II; 2 cr. Prerequisite: Consent of instructor. Mr. Brogden.

225. Advanced Experimental Psychology. II; 3 cr. Lectures, discussions and individual work on selected problems. Prerequisites: Psychology 25 or 125, 130 and consent of instructor. Mr. Brogden.

227. Seminar in Clinical Psychology. I, II; 2 cr. Prerequisite: Consent of instructor. Mr. Baughman, Miss Magaret.

228. Field Work in Clinical Psychology. I, II; 3 cr. Supervised field work in practical clinical situations. Prerequisites: Psychology 207 and consent of instructor. Mr. Baughman, Mr. Calden, Mr. Friedman, Miss Magaret, Mr. Page, Mr. Sanders.

230. Seminar in Psychometric Methods. I, II; 3 cr. Prerequisites: Psychology 130 and consent of instructor. Mr. Grant.

231. Design of Psychological Experiments. I; 3 cr. Structure of psychological experiments. Measurement and control of variables in psychology. Sample and randomization;

simple, block, and factorial designs. Analysis of variance and covariance. Prerequisites: Psychology 25 and 130. Mr. Grant.

244. SEMINAR IN LEARNING. I, II; 2 cr. Prerequisite: Consent of instructor. Mr. Grant.

247. SEMINAR IN CHILD PSYCHOLOGY. I; 2 cr. Prerequisites: Psychology 147 and consent of instructor.

248. SEMINAR IN PSYCHOLOGY OF ADOLESCENCE. II; 2 cr. Prerequisites: Psychology 148 and consent of instructor.

249. SEMINAR IN ANIMAL BEHAVIOR. I; 2 cr. Seminar on problems of comparative psychology. Prerequisites: Psychology 149 or 150 and consent of instructor. Mr. Harlow.

254. SEMINAR IN PHYSIOLOGICAL PROBLEMS AND BEHAVIOR. II; 2 cr. Prerequisites: Psychology 154 and consent of instructor. Mr. Harlow.

261. SEMINAR IN SYSTEMATIC PSYCHOLOGY. I; 2 cr. Prerequisite: Psychology 161. Mr. Brogden.

265. SEMINAR IN BEHAVIOR PATHOLOGY. II; 3 cr. Prerequisites: Psychology 165 and consent of instructor. Dr. Cameron.

267. SEMINAR IN THINKING AND IMAGINATION. I; 3 cr. Prerequisites: Psychology 167 and consent of instructor. Dr. Cameron.

270. SEMINARY IN SENSORY FUNCTIONS. I, II; 2 cr. Prerequisite: Consent of instructor. Mr. Mote, Mr. Thurlow.

273. SEMINAR IN PERSONALITY. I, II; 2 cr. Prerequisite: Consent of instructor. Mr. Gilchrist.

SCANDINAVIAN AREA STUDIES

COMMITTEES-IN-CHARGE

EXECUTIVE: DEANS HERRIOTT, INGRAHAM; PROFESSORS GROVES, HAUGEN, *chairman*, KNAPLUND; ASSOCIATE PROFESSOR BAKKEN. ADVISORY: ASSOCIATE PROFESSOR BARTON.

In the fall of 1949 a program of Scandinavian Area Studies was established at the University, with the partial support of the Carnegie Corporation of New York and in co-operation with a similar program at the University of Minnesota. The purpose was to provide a broad offering of courses from the various humanistic and social science departments bearing on the life and civilization of Scandinavia.

Students may take one or more courses as a part of their general cultural program or as part of their field of concentration. Special minors in Scandinavian Area Studies can be taken in each of the associated departments which have courses in this field. At present these include economics, history, political science, Scandinavian, sociology, rural sociology, and agricultural economics. A minor in Scandinavian Area Studies will involve about 20 credits; of these 12 should be non-linguistic and 6 linguistic in a second- or third-year language course. A teaching minor in Scandinavian Area Studies may be offered for the Teachers' Certificate. In special cases students enrolled in a Scandinavian Area Studies minor may be permitted to take two of their last four semesters at the University of Minnesota, and offer a minimum of 12 credits and 12 grade-points in advanced courses at the University of Wisconsin.

Two undergraduate scholarships of $500 each are offered to qualified students who wish to pursue undergraduate courses in Scandinavian Area Studies.

Any special problems should be discussed with the chairman of the committee on Scandinavian Area Studies.

SCANDINAVIAN 75. SCANDINAVIAN LIFE AND CIVILIZATION. Yr; 2 cr. An introductory survey of Scandinavian culture in its widest aspects, including present-day trends and problems, given co-operatively by members of the staff. First semester gives social science credit. Mr. Hovde and staff.

COMPARATIVE LITERATURE 70–135. SCANDINAVIAN CLASSICS. Yr; 2–3 cr. The first semester includes the literature from the Vikings to Ibsen, ca. 800 to 1870. The second semester, entitled From Ibsen to the Present, includes readings and lectures in realistic writers of the 19th century, and the novel and drama of the 20th. Prerequisite: Sophomore standing. Mr. Haugen.

COMPARATIVE LITERATURE 131. IBSEN AND STRINDBERG. I; 2–3 cr. The realistic and expressionistic drama with special attention to the social and intellectual currents in the second half of the 19th century. Prerequisite: Two semesters in literature courses. Offered 1953–54 and alternate years. Mr. Haugen.

ART HISTORY 187a. EARLY SCANDINAVIAN ART. I; 3 cr. Scandinavian art from Stone Age to 1700 A.D.: prehistoric rock-carvings to Viking runic-stones, ships, and metalwork; Romanesque, Gothic, Renaissance, and Baroque architecture, painting, and sculpture. Not offered 1952–53.

ART HISTORY 187b. MODERN SCANDINAVIAN ART. I; 3 cr. Painting, sculpture, architecture since 1700; folk, industrial, and handcraft products: furniture, textiles, wall-hangings, silver, glass, and pottery; emphasis on Sweden. Not offered 1952–53.

ECONOMICS 187. RECENT ECONOMIC DEVELOPMENTS IN SCANDINAVIA. Yr; 3 cr. The characteristic features of Scandinavian economy; standard of living; economic policy in the Thirties and during the War. Postwar developments; the reconstruction program and the Marshall Aid. Monetary policy; taxation; labor market and industrial relations. Co-operatives in farming and housing; the town-planning act. Prerequisites: Economics 1 or consent of instructor; junior standing. Not offered 1952–53.

HISTORY 187. HISTORY OF THE SCANDINAVIAN COUNTRIES. Yr; 3 cr. The political, economic, and social history of the Scandinavian countries from the earliest times to the present. Prerequisites: History 3 or History 2; junior standing. Mr. Hovde.

POLITICAL SCIENCE 187a. GOVERNMENTS OF SCANDINAVIA. I; 3 cr. An analysis of constitutional organization, political parties, administrative procedures, and issues of public policy. Prerequisites: Political Science 7 or consent of instructor; junior standing. Mr. Hovde.

POLITICAL SCIENCE 187b. INTERNATIONAL RELATIONS OF SCANDINAVIA. II; 3 cr. General survey of international relations and participation in international organizations, with attention to the problem of federalism, and particular emphasis on the relations of Scandinavia to other European countries and to Russia. Prerequisites: Political Science 7 or consent of instructor; junior standing. Mr. Hovde.

SOCIOLOGY 187. SOCIAL TRENDS IN SCANDINAVIA. Yr; 3 cr. Conditions for the social development of the 20th century. Public support to private initiative. Family policies: assistance to mother and child; vocational guidance and industrial training; sick-clubs and medical services. Unemployment benefits; pension schemes; housing policy. Prerequisites: Sociology 1 or consent of instructor; junior standing. Not offered 1952–53.

SCANDINAVIAN LANGUAGES

PROFESSOR HAUGEN, *chairman*.

The Department of Scandinavian Languages (established in 1875) provides the opportunity for (1) the acquisition of a Scandinavian language as a tool for further reading in the field; (2) systematic study of the literatures of Scandinavia, both in the original languages and in English; (3) stimulating contact with various aspects of modern and ancient Scandinavian culture through the work of the student Scandinavian Club and the collections of the department; (4) graduate study and research, particularly in the fields of linguistics and dialectology.

Students in other fields who believe that familiarity with Scandinavian may be helpful are encouraged to consult with the chairman concerning their problems.

Scandinavian is accepted for foreign-language credit in most undergraduate courses and

may be substituted for either French or German by doctoral candidates with the consent of their major professors and by students in the School of Music with faculty consent. Students who wish may take intermediate or proficiency tests to satisfy language requirements. The department offers an undergraduate major and a graduate minor.

MAJOR. For a major in Scandinavian the student must earn 18 credits beyond second-year Norwegian (or an intermediate reading test), including 4 credits of course 80 and a year of Old Norse. A reading knowledge of German is required.

1. BEGINNING NORWEGIAN. Yr; 4 cr. An introduction to the language for students without previous knowledge; open to freshmen. Oral approach emphasized. Mr. Haugen.

2. BEGINNING SWEDISH. Yr; 4 cr. Staff.

10. SECOND-YEAR NORWEGIAN. Yr; 3–4 cr. Rapid reading of suitable texts by modern writers; open to students who can speak the language or have taken Beginning Norwegian; concentrates on reading knowledge. Mr. Haugen.

80. SUPERVISED INDIVIDUAL READING. 2 cr. For upper-group students with a good reading knowledge of a Scandinavian language who wish to pursue reading along some special topic. Maximum credit: 6. Mr. Haugen.

121. SURVEY OF NORWEGIAN LITERATURE. Yr; 3 cr. From the eighteenth century to about 1914; major writers from Holberg to Undset. Offered 1952–53. Mr. Haugen.

127. TWENTIETH-CENTURY WRITERS. Yr; 3 cr. Dramatic and narrative masterpieces since about 1905. Offered 1953–54. Mr. Haugen.

163. OLD NORSE. Yr; 3 cr. Reading of texts from the Sagas and Eddas with comparative study of the linguistic structure and literary style. Offered 1952–53 and in alternate years. Mr. Haugen.

185. SCANDINAVIAN PHONETICS. 1 cr. Offered in collaboration with English or German 185. Mr. Haugen.

200. ADVANCED INDEPENDENT WORK. 2 cr. May be elected by graduate students wishing to do research in the fields of Scandinavian language or literature. Mr. Haugen.

264. HISTORY AND STRUCTURE OF THE SCANDINAVIAN LANGUAGES. Sem; 3 cr. Introduction to Scandinavian linguistics, with selective readings. Open to graduate students with a reading knowledge of at least one Germanic language besides English. Offered 1953–54 and in alternate years. Mr. Haugen.

SCANDINAVIAN CLASSICS IN ENGLISH

These courses do not give language credit. They are offered for the benefit of students who wish to acquaint themselves with the literatures of Scandinavia, but who are unable to read the original languages.

70a. SCANDINAVIAN CLASSICS. I: From the Vikings to Ibsen. Sem; 2–3 cr. Readings and lectures in the literature of medieval and modern Scandinavia from 800 A.D. to 1870. Given annually. Mr. Haugen.

70b. SCANDINAVIAN CLASSICS. II: From Ibsen to the Present. Sem; 2–3 cr. Readings and lectures in the literature of modern Scandinavia since 1870. Given annually. Mr. Haugen.

71. LIFE AND LITERATURE OF THE VIKING AGE. Sem; 2 cr. Mr. Haugen.

72. SCANDINAVIAN FOLKLORE AND BALLADRY. II; 2 cr. per sem. Popular beliefs in Scandinavia; primitive religion; magic and witchcraft; Christian influences; legends, fairy tales, and ballads; folklore themes in literature. Offered 1952–53 and in alternate years. Mr. Haugen.

77. NORWEGIAN LITERATURE FROM RENAISSANCE TO REALISM. Sem; 2–3 cr. Mr. Haugen.

78. HENRIK IBSEN: SOCIAL AND PSYCHOLOGICAL DRAMAS. I; 2–3 cr. per sem. Dramatic

work from *Peer Gynt* to *When We Dead Awaken.* Discussion of themes, technique, significance. Offered 1952–53 and in alternate years. Mr. Haugen.

131. IBSEN AND STRINDBERG. Sem; 2 cr. The realistic and expressionistic drama with special attention to the social and intellectual currents in the second half of the nineteenth century. Offered 1953–54 and in alternate years. Prerequisite: Two semesters in literature courses. Mr. Haugen.

135. SCANDINAVIAN CLASSICS. Yr; 2–3 cr. Same as Course 70, with special discussion section and term papers for graduate students. Mr. Haugen.

SLAVIC LANGUAGES

ASSOCIATE PROFESSOR ZAWACKI, *chairman;* ASSISTANT PROFESSORS GASIOROWSKI, FOLEJEWSKI; INSTRUCTOR WILDE.

The elementary courses in Russian and Polish are planned to meet the needs of those who have begun the language in high school, as well as of those who take it up for the first time in college. One unit (year) of high-school work is assumed to be equivalent to 4 credits of college work, but all entering students continuing Russian or Polish are assigned to courses on the basis of placement tests. (See page 40.) These tests may admit a student to a more advanced course, but give no extra credit toward graduation.

See page 40 for foreign language attainment examinations.

MAJOR. 24 credits in advance of 1b, 15 of which must be in approved courses. By faculty requirement, students choosing a foreign language major must present at least 8 credits in a second foreign language.

TEACHING MAJOR AND MINOR. See SCHOOL OF EDUCATION.

POLISH CLUB, RUSSIAN CLUB. This activity offers students opportunities to hear talks about the country whose language they are studying, to participate in programs and to converse in Polish or in Russian.

POLISH

1a. FIRST-SEMESTER POLISH. I; 4 cr. For students who have not studied Polish. Elements of phonetics and morphology. Mr. Folejewski.

1b. SECOND-SEMESTER POLISH. II; 4 cr. Morphology of Polish continued. Simple texts. Prerequisite: Polish 1a or consent of instructor. Mr. Folejewski.

10a. THIRD-SEMESTER POLISH. I; 3 cr. Reading, conversation exercises and grammar review. Prerequisite: Polish 1b or consent of instructor. Mr. Folejewski.

10b. FOURTH-SEMESTER POLISH. II; 3 cr. Reading, conversation exercises and grammar review. Prerequisite: Polish 10a or consent of instructor. Mr. Folejewski.

31. SELECTED MASTERPIECES. Yr; 3 cr. per sem. Prerequisites: Polish 10b or knowledge of Polish and consent of instructor. Mr. Folejewski.

80. SUPERVISED INDIVIDUAL READING. Yr; 2–3 cr. per sem. For upper-group students with grade *A* in Polish 10b or equivalent, or who have passed intermediate test in Polish, and desire Polish reading in their major field of study. Approval of the dean and instructor required.

100. SENIOR THESIS. Yr; 2–3 cr. per sem. Well-qualified seniors majoring in Polish may apply to the chairman of the department for permission to write a thesis.

132. MASTERPIECES OF POLISH LITERATURE. Sem; 2–3 cr. The principal works of Polish literature, their literary importance and social significance. The lectures are in English. Prerequisites: Polish 31 or graduate standing and consent of instructor. Mr. Zawacki.

150. History of the Polish Language. II; 2 cr. Primarily for majors in Polish. Prerequisite: Consent of instructor. Mr. Folejewski.

180. Supervised Individual Reading. Yr; 2–3 cr. Prerequisites: Polish 31 or 2 years of college Polish, and graduate standing. Staff.

200. Individual Research. Yr; credit and conference hours to be arranged. For graduates only. Mr. Zawacki.

220. Seminar in Polish. Yr; 2 cr. per sem. For graduates only. Work chosen according to needs of students. Hours to be arranged. Mr. Zawacki.

RUSSIAN

1a. First-Semester Russian. I; 4 cr. Conducted with drill sessions. Mr. Zawacki.

1b. Second-Semester Russian. II; 4 cr. Conducted with drill sessions. Prerequisite: Russian 1a or consent of instructor. Mr. Zawacki.

5. Beginning Composition and Conversation. II; 2 cr. Prerequisite: Concurrent registration in Russian 1b. Staff.

10a. Third-Semester Russian. I; 3 cr. Reading and conversational exercises with grammar review. Prerequisites: Russian 1b or equivalent and consent of instructor. Mrs. Wilde.

10b. Fourth-Semester Russian. II; 3 cr. Reading and conversational exercises with grammar review. Prerequisites: Russian 10a or equivalent and consent of instructor. Mrs. Wilde.

18a. Scientific Russian. I; 2 cr. Reading in scientific texts with grammatical review. Prerequisite: Russian 1a or consent of instructor. Mrs. Wilde.

18b. Scientific Russian. II; 2 cr. Reading in scientific texts with grammatical review. Prerequisite: Russian 18a or consent of instructor. Mrs. Wilde.

25a. Intermediate Composition and Conversation. I; 2 cr. Prerequisite: Russian 1b or special examination. Mrs. Wilde.

25b. Intermediate Composition and Conversation. II; 2 cr. Prerequisite: Russian 25a or special examination. Mrs. Wilde.

31a. Selected Russian Masterpieces. I; 3 cr. Readings in the poetry and prose of Pushkin, Gogol, Turgeniev, Chekhov. Prerequisite: Russian 10b. Mrs. Wilde.

31b. Selected Russian Masterpieces. II; 3 cr. Prerequisite: Russian 31a or special examination. Mrs. Wilde.

80. Supervised Individual Reading. Yr; 2–3 credits. For upper-group students who wish to read Russian materials in their major field. Prerequisite: Russian 10b. Approval of the dean is required. Staff.

124a. Advanced Composition and Conversation. I; 2 cr. Prerequisite: Russian 10b or special examination. Mrs. Wilde.

124b. Advanced Composition and Conversation. II; 2 cr. Prerequisite: Russian 124a or special examination. Mrs. Wilde.

127a. Advanced Composition and Conversation. I; 2 cr. Prerequisite: Russian 124b Mrs. Gasiorowski.

127b. Advanced Composition and Conversation. II; 2 cr. Prerequisite: Russian 127a Mrs. Gasiorowski.

131a. Survey of Nineteenth-Century Russian Literature. I; 2–3 cr. The background the development and the principal works of Russian literature, exclusive of the drama, from Pushkin to Tolstoy. The lectures are in English. Prerequisites: Russian 124b, or two years of college Russian and graduate standing. Mr. Zawacki.

131b. Survey of Nineteenth-Century Russian Literature. II; 2–3 cr. A continuation of Russian 131a, but may be taken as a separate course. The lectures are in English. Prerequisites: Russian 124b, or two years of college Russian and graduate standing. Mr. Zawacki.

140. Masterpieces of Russian Drama. Sem; 2–3 cr. The principal dramas in Russian literature, their social function and their literary significance. The lectures are in English. Prerequisites: Russian 124b, or graduate standing and consent of instructor. Mrs. Gasiorowski.

148a. Contemporary Russian Literature. I; 2–3 cr. The background and the representative works of Russian literature from 1880 to 1917. The lectures are in English. Prerequisites: Russian 124b, or two years of college Russian and graduate standing. Mrs. Gasiorowski.

148b. Contemporary Russian Literature. II; 2–3 cr. Russian literature from 1917 to the present; a continuation of Russian 148a, but may be taken as a separate course. The lectures are in English. Prerequisites: Russian 124b, or two years of college Russian and graduate standing. Mrs. Gasiorowski.

150. History of the Russian Language. Sem; 2 cr. Introduction to the historical development of the sounds and forms of modern Russian. Primarily for majors in Russian. Prerequisite: Grade of *B* in Russian 10b. Mr. Folejewski.

151. Proseminar in the History of the Russian Language. II; 2 cr. Primarily for majors in Russian. Prerequisite: Russian 150. Mr. Folejewski.

170. Old Church Slavonic. Sem; 2 cr. Mr. Folejewski.

191. Trends in Russian Culture and Literature. Sem; 2–3 cr. The development of Russian culture within the framework of Russian literature. The lectures are in English. Prerequisite: Russian 131 and/or 148. Mrs. Gasiorowski.

200. Individual Research. Yr; *cr. For graduates only. Staff.

220. Seminar in Russian Literature. Yr; 2 cr. per sem. For graduates only. Mr. Zawacki, Mrs. Gasiorowski.

Note: Courses 131a, 131b, 132 (Polish), 140, 148a, 148b, and 191 are organized in a way which makes them available as Comparative Literature 31a, 31b, 32, 40, 48a, 48b and 91 to students who do not read Russian or Polish (see page 113). The reading schedules, the examinations, and the discussion sections in English (Comparative Literature) and in Russian or Polish (Slavic Languages) are parallel. Students desiring credit toward the fulfillment of the language and course requirements for a major in Russian or for higher degrees in Russian or Polish must, of course, do the reading, take the examinations, and participate in the discussions in Russian or Polish as provided for in the organization of the given course.

SOCIAL STUDIES

120. Human Relations for Engineers. I, II; 3 cr. Analysis of human relations problems characteristic of the engineering profession. Policies and procedures. Prerequisites: Senior standing and registration in the College of Engineering. Mr. Lescohier.

159. Current Problems of American Foreign Policy. Sem; 3 cr. Study of outstanding current problems of policy in light of basic objectives. Student panels will discuss each problem and prepare joint reports. Prerequisite: Senior or graduate standing. Mr. Ellsworth, Mr. Hartshorne, Mr. McCamy.

192. Problems in Empirical Social Behavior Research. I, II; 2–3 cr. (This course is listed elsewhere as Journalism 192, Pol. Sci. 192, Social Work 192, and Sociology 192.) Supervised individual or joint work on problems in research, including carrying out of projects

and/or independent reading on methodology. Prerequisite: Consent of instructor. Mr. Fisher.

194. INTRODUCTION TO PUBLIC OPINION RESEARCH. I; 3 cr. (This course is listed elsewhere as Agr. Econ. 194, Agr. Journ. 194, Journalism 194, Pol. Sci. 194, Psychology 194, Rural Soc. 194, Social Work 194, and Sociology 194.) Theory and practice of *survey* techniques. Planning, design, sampling, types of data, questionnaire construction, interviewing, field operations, content analysis and coding, machine tabulation, analysis of data, utilization of findings. Examples in a variety of fields. Two hours lecture; two hours laboratory or field work. Prerequisite: Junior standing. Mr. Fisher.

270a–b. SEMINAR IN PUBLIC PLANNING. Yr; 2–3 cr. Processes in decision-making with respect to physical design and administration in regional, state, and local planning. Participation by members of the interdepartmental committee of the Regional Planning Course. Prerequisite: Graduate standing. Mr. Clarenbach, Mr. Ratcliff.

294. SEMINAR IN THE DESIGN AND PROCESS OF SURVEY RESEARCH. II; 3 cr. (This course is listed elsewhere as Journalism 294, Pol. Sci. 294, Social Work 294, and Sociology 294.) Presentation of initial study designs or of research in progress by members of the seminar, for critiques leading both to further development of the project itself and to illustration of research problems in the social sciences. Prerequisite: Consent of instructor. Mr. Fisher.

SOCIAL WORK

PROFESSORS CLARKE, MILES, *director;* ASSOCIATE PROFESSORS DOWNING, HOWERY, ORCHARD; ASSISTANT PROFESSORS GANE, KADUSHIN, TETER, WALTER, WRIGHT; SPECIALISTS (FIELD WORK SUPERVISORS) HAMMER, NAGEL, THUNEN.

The undergraduate major in Social Work is intended to give the student a basic liberal education with a well-rounded selection of courses from the social sciences and, in the junior and senior years, some pre-professional courses in social work.

MAJOR. For Social Work as a major, 15 credits are required in sociology and anthropology. The required courses are: Sociology 1, 32 or 132,* Rural Sociology 131, and Anthropology 3. In addition, 3 credits of electives in sociology are required. High-school mathematical preparation is required.

Twenty hours of related courses in the social sciences are also required as a part of the major. These courses are: Economics 1a and one advanced 3-credit course, preferably in labor; Political Science 7 and one 3-credit advanced course in government administration; Psychology 1 and one 3-credit advanced course.

Fifteen credits of social work courses are required. Social Work 145 is the only required course. The additional courses may be selected from those available to undergraduate students. Any student who majors in social work or sociology cannot count toward graduation more than 40 credits in both subjects combined.

I. PRE-PROFESSIONAL COURSES

100. SENIOR THESIS. Yr; 4 cr. Staff.

113. THEORY AND PRACTICE OF GROUP LEADERSHIP. Yr; 2–3 cr. Importance and meaning of group experience. Needs of group members. Qualities of leadership. Section a: 3 cr. Field work in selected recreational agencies. Section b: 2 cr. Class work only. Prerequisites: Senior standing, demonstrated leadership ability, and consent of instructor. Staff.

114. PROBLEMS IN RECREATION PLANNING. II; 3 cr.

120. SOCIAL SECURITY. II; 3 cr. (See ECONOMICS 120.)

145. INTRODUCTION TO THE FIELD OF SOCIAL WORK. I, II; 3 cr. Fields and methods of social work. For social work students and those preparing for allied professions as law, medicine, ministry, teaching. Prerequisite: Junior standing. Staff.

* Students who plan to do graduate work are urged to elect Sociology 132 rather than Sociology 32

162. CHILD WELFARE. I, II; 3 cr. Problems of dependent, neglected and delinquent children; methods of study and treatment utilized by federal, state and local governments and by private agencies. Prerequisites: Junior standing and consent of instructor. Miss Orchard.

177. SOCIAL LEGISLATION. I; 3 cr. Statutes and court decisions on marriage, divorce, adoption, illegitimacy, poverty, etc. The reciprocal effects of law and social work. Prerequisites: Junior standing and Social Work 145 or concurrent registration. Miss Clarke.

180. INDEPENDENT READING IN SOCIAL WORK. I, II; *cr. Reading may be in any field for which the student has an adequate background. Staff.

185. INTRODUCTION TO SOCIAL WELFARE ADMINISTRATION. II; 2–3 cr. Administrative process in public and voluntary social agencies. Analysis of federal, state, and local welfare structure. Comparison of administrative techniques in public and voluntary agencies. Prerequisites: Section I, graduate standing; Section II, junior standing and Social Work 145 or concurrent registration. Mr. Miles, Mr. Downing.

II. SOCIAL TREATMENT

168. (SOCIOLOGY) PROBATION AND PAROLE. I; 3 cr.

219. SOCIAL GROUP WORK. I, II; 2–4 cr. Analysis of social process in groups based on group records. Group work in relation to case work treatment. Prerequisite: Consent of instructor. Miss Clarke, Mr. Walter.

225. GROUP WORK PRACTICE. I, II; 2–4 cr. Twenty to forty hours per week of practice in Madison, Milwaukee or elsewhere in the state. Prerequisite: Consent of instructor. Miss Clarke, Mr. Walter.

226. ADVANCED GROUP WORK PRACTICE. I, II; 2–4 cr. Twenty to forty hours per week of advanced practice in group work agencies in Madison, Milwaukee or elsewhere in the state. Emphasis upon supervisory and administrative problems. Prerequisites: Social Work 225 and consent of instructor. Mr. Walter.

228. METHODS AND PROCESS IN GROUP WORK. II; 2 cr. An analysis of the aims, assumptions and philosophic basis of various techniques and their relationship to the administration and planning of group work programs. Prerequisite: Consent of instructor. Mr. Walter.

236. MEDICAL AND PUBLIC HEALTH PROBLEMS AND THEIR IMPLICATIONS FOR SOCIAL WORKERS. I; 2 cr. The more common diseases, as tuberculosis, cancer, venereal diseases, children's difficulties, etc., with emphasis upon community problems. Prerequisites: Graduate standing and consent of instructor. Miss Gane and staff.

245. PRINCIPLES OF SOCIAL WORK TREATMENT. I, II; 2–4 cr. General principles of human relationships in social work treatment, social foundations of human behavior; emphasis on understanding the individual with social problems. Prerequisite: Graduate standing. Staff.

247. CASE WORK PRACTIVE. I, II; 2–4 cr. Twenty to forty hours per week of practice in a case work agency in Madison, Milwaukee or elsewhere in the state. Prerequisite: Social Work 249 or concurrent registration. Miss Orchard and staff.

248. ADVANCED CASE WORK PRACTICE. I, II; 2–4 cr. Case work practice in a specialized field such as child welfare, medical case work, advanced family case work, etc. Prerequisites: Social Work 249 and consent of instructor. Miss Orchard and staff.

249. CASE WORK THEORY. I, II; 2–4 cr. A study of the generic principles of social case work and its objectives and methods. Prerequisite: Consent of instructor. Miss Orchard, Miss Hammer, Mr. Kadushin, Mr. Howery.

253a. PSYCHOPATHOLOGY FOR SOCIAL WORKERS. I; 2 cr. Study of the social implications of the more common neuroses, psychoses, mental deficiency, convulsion disorders and neurological disturbances. Prerequisite: Consent of instructor. Staff.

253b. PSYCHOPATHOLOGY FOR SOCIAL WORKERS. II; 2 cr. The social implications and treatment of behavior disorders of children and adults, including a survey of psychological tests and their significance for social diagnosis and treatment. Prerequisites: Social Work 253a and consent of instructor. Staff.

254. PSYCHIATRIC SOCIAL WORK THEORY. II; 2 cr. An examination of the processes of case work diagnosis and treatment based on discussion of cases from psychiatric settings. Prerequisites: Social Work 247a and b and consent of instructor. Mr. Kadushin.

258. (SOCIOLOGY) SEMINAR IN CORRECTIONAL ADMINISTRATION. I, II; 2 cr.

268. SOCIAL SERVICE IN THE SCHOOLS. II; 2 cr. Contribution of social services to the school. Function of the school social worker in relation to community welfare services, the classroom teacher, and the principal. Prerequisites: Social Work 247a and b or consent of instructor. Mr. Howery.

269. CHILD WELFARE CASE WORK. II; 2 cr. A study of case work principles, methods, and techniques used in dealing with children's problems. Prerequisite: Consent of instructor. Miss Orchard.

282. (SOCIOLOGY) SEMINAR IN CRIMINOLOGY. I; 2 cr.

285a. MEDICAL SOCIAL WORK THEORY. I; 2 cr. Social study and treatment of the individual patient in relation to problems of his illness. Case work in the medical setting with emphasis on the case work process carried on in collaboration with patient and physician. Co-operation with other community agencies for welfare of the patient. Prerequisites: Social Work 249a and b and consent of instructor. Staff.

285b. MEDICAL SOCIAL WORK THEORY. II; 2 cr. Principles of medical social case work. Development, organization and administration of medical social service functions within hospitals and clinics and in public medical care programs. Prerequisite: Social Work 285a. Staff.

286. SPECIALIZED MEDICAL PROBLEMS FOR SOCIAL WORKERS. II; 2 cr. Emphasis upon major disease groups with opportunity for clinical observation. Lectures and demonstrations by medical specialists. Discussion of emotional and social implications of each disease studied. Prerequisites: Social Work 236 and consent of instructor. Miss Gane.

III. SOCIAL WELFARE PLANNING

212. INTERNATIONAL ASPECTS OF SOCIAL WORK. II; 2 cr. Public and private international organizations with social work functions. Prerequisites: Consent of instructor. Staff.

229. COMMUNITY PLANNING FOR LEISURE-TIME AND VOLUNTARY EDUCATION SERVICES. II; 2 cr. A survey of leisure-time and voluntary education needs of the community, the methods of determining those needs, and the co-ordination of services by various agencies. Prerequisite: Consent of instructor. Staff.

278. SOCIAL WELFARE PLANNING. II; 2 cr. An analysis of the function of planning in social welfare. Special emphasis upon methods, organization and practice of social welfare planning. Prerequisite: Graduate standing. Mr. Downing.

279. SEMINAR IN SOCIAL WELFARE PLANNING. I; 2 cr. A detailed analysis of specific problems in social welfare planning; such as research, fund raising and public relations. Prerequisites: Graduate standing and consent of instructor. Mr. Downing.

281. PRACTICE IN SOCIAL WELFARE PLANNING. I, II; 2–4 cr. Supervised field work participation in a social welfare planning agency. Prerequisites: Social Work 279, or concurrent registration and consent of instructor. Mr. Downing.

IV. SOCIAL WELFARE ADMINISTRATION

220. SEMINAR IN SOCIAL SECURITY. Yr; 2–4 cr. The history, present status, current problems and proposed development of the major social security institutions of the United

States. Prerequisite: Graduate standing. Mr. Miles, Mr. Witte.

227. Supervision and Administration in Group Work. I; 2 cr. The relationship between theoretical supervision and administrative principles to current practices in group work agencies. Prerequisite: Consent of instructor. Mr. Walter.

235. Seminar in Administration of Social Case Work. II; 2 cr. Generic and differential factors in understanding and utilizing various administrative settings in social case work practice. Prerequisites: Graduate standing and consent of instructor. Miss Gane, Mr. Kadushin and staff.

259. Practice in Public Welfare Administration. I, II; 3–6 cr. Supervised agency participation in the administration of a public welfare program. Assignment as assistant to an administrative officer. Prerequisites: Graduate standing and consent of instructor. Mr. Miles.

265. Problems in Public Welfare Administration. II; 2 cr. Research projects undertaken by public welfare agencies. Prerequisite: Consent of instructor. Mr. Baldwin.

267. Public Assistance. I; 3 cr. Administrative procedures in the public assistance programs; relationships between public assistance and social insurance. Prerequisite: Consent of instructor. Mr. Miles, Mr. Downing.

V. RESEARCH AND STATISTICS

Sociology 132. Introductory Social Statistics. I; 3 cr.

Sociology 182. Intermediate Social Statistics: Correlation. I; 3 cr.

Sociology 183. Intermediate Social Statistics: Sampling. II; 3 cr.

192. Problems in Empirical Social Behavior Research. I, II; 2–3 cr. Supervised individual or joint work on problems in research, including carrying out of projects and/or independent reading on methodology. Prerequisite: Consent of instructor. Mr. Fisher.

194. Introduction to Public Opinion Research. I; 3 cr. Theory and practice of *survey* techniques. Planning, design, sampling, types of data, questionnaire construction, interviewing, field operations, content analysis and coding, machine tabulation, analysis of data, utilization of findings. Examples in a variety of fields. Two hours lecture; two hours laboratory or field work. Prerequisite: Junior standing.

200. Research and Thesis. Yr; 2 cr.

240. Methods of Social Study. II; 2 cr. An analysis of various research methods used in social investigation, such as case study, historical, and quantitative methods. Prerequisite: Consent of instructor. Mr. Teter.

277. Research in Social Legislation. II; 2 cr. Research study of problems in husband-wife, parent-child, and family-state relationships. Prerequisite: Social Work 177 or consent of instructor. Miss Clarke.

280. Reading and Research in Social Work. I, II; *cr. Work suited to individual graduate students may be arranged; this may be in conjunction with dissertation. Staff.

294. Seminar in the Design and Process of Survey Research. II; 3 cr. Presentation of initial study designs or of research in progress by members of the seminar, for critiques leading both to further development of the project itself and to illustration of research problems in the social sciences. Prerequisite: Consent of instructor. Mr. Fisher.

VI. HISTORY OF SOCIAL WELFARE

246. Philosophy of Social Work. II; 2 cr. An analysis of the concepts and values of social work practice. Designed to help the student recognize and develop his own social philosophy. Emphasis will be placed on trends in social thinking related to social work. Prerequisites: Social Work 247 and 249 or consent of instructor. Mr. Teter, Mr. Kadushin.

SOCIOLOGY AND ANTHROPOLOGY

PROFESSORS BECKER, *chairman*, CLINARD, HOWELLS, KOLB, MCCORMICK, SEWELL, WILEDEN; ASSOCIATE PROFESSORS BAERREIS, BARTON, GERTH, HART, MARSHALL; ASSISTANT PROFESSORS BARNETT, HAKEEM, WILKENING; INSTRUCTORS AMES, ANDERSON, BRIM, MORRIS, SHANNON.

Sociology and Anthropology deal with personality, society, and culture in their interrelationships. This necessarily involves description and analysis of the origins, structure, and working of manners and customs, social structures, social institutions, and the relation between these and personality. The chief but not exclusive anthropological emphasis is on the life of the less "civilized" peoples, although the "civilized" are also considered. Sociology also operates in similar fields, but the major although not exclusive stress is on the "civilized" peoples. Anthropology deals, in addition, with the antiquity and evolution of human races, societies, and cultures. Current social problems receive attention from both anthropology and sociology, and both are supplementary to the professional training in fields such as law, journalism, business, industrial relations, personnel, and social work. Specialization in one or both subjects may lead to graduate study in preparation for secondary and college teaching and public and private research positions.

MAJOR. For Sociology as a field of concentration 30 credits within the department are required, including courses 1, 2, 32 or 132, 139a, 151 and Anthropology 3. Sociology 1 and 2 and Anthropology 3 must be taken before the senior year. High-school mathematical preparation is required. Not less than 20 additional credits must be offered within the Division of the Social Sciences, 10 of which may be in this department.

For Sociology (Correctional Administration) as a field of concentration, 30 credits within the department are required, including Sociology 1 or Anthropology 3, Sociology 2, 32 or 132, 139a, 151 or Anthropology 40, and Sociology 156 and 161. Sociology 1 and 2, and Anthropology 3 must be taken before the senior year. Not less than 20 additional credits must be offered within the Division of the Social Sciences, 10 of which may be in this department.

Any student who majors in social work or sociology cannot count toward graduation more than 40 credits in both subjects combined.

For Anthropology as a field of concentration 30 credits within the department are required, including Anthropology 3, 40, 101, and a course in archaeology, a course in social statistics (32 or 132), and Sociology 151 or 172. Anthropology 3 must be taken before the senior year. High-school mathematical preparation is also required. Not less than 20 additional credits selected in conference with the adviser must be offered within the Division of the Social Sciences, or in geography, geology, and zoology, 10 of which may be in this department.

Certain upper-group students may substitute a thesis for 4 of the above required credits. This thesis may be written in any one of the fields designated in Groups I–VIII as described on subsequent pages.

I.L.S. 21. Wherever Anthropology 3 is listed as a requirement or as a prerequisite, I.L.S. 21 may be substituted.

TEACHING MAJOR AND MINOR. See SCHOOL OF EDUCATION.

SOCIAL WORK

The Department of Social Work, in co-operation with the Department of Sociology and Anthropology, administers an undergraduate major for prospective social workers. For details on this major, see page 210.

INDEPENDENT WORK

100. SENIOR THESIS. Yr; 2 cr. Staff.

180. INDEPENDENT WORK IN SOCIOLOGY. I, II, or Yr; *cr. See page 43 of this bulletin for requirements and procedures. Staff.

200. RESEARCH AND THESIS. Yr; *cr. Prerequisite: Advanced graduate standing. Staff.

280. READING AND RESEARCH IN SOCIOLOGY. I, II, or Yr; *cr. Prerequisites: Graduate standing and consent of major professor. Staff.

DEPARTMENTAL PROSEMINAR

220. PROSEMINAR IN SOCIOLOGY. I; 4 cr. Required of all master's degree and minor candidates. Advanced presentation of present concepts, materials, problems and research methods. Staff.

I. SOCIOLOGICAL THEORY

1. MAN IN SOCIETY: AN INTRODUCTION TO SOCIOLOGY. I, II; 3 cr. Interrelations of personality, society, and culture; social processes, structures, institutions, and functions as they affect the building up and tearing down of society. Open to freshmen. Mr. Becker and staff.

135. TRENDS IN THEORIES OF SOCIAL ACTION. II; 3 cr. Examination of the work of a selected group of contemporary sociologists with reference to the convergence of their contributions. Prerequisite: Sociology 151 or consent of instructor. Not offered 1952–53.

151. GENERAL ASPECTS OF SOCIAL RELATIONS. I; 3 cr. The social sciences and sociology; methodology; social actions, processes, and structures; applications of sociological analysis. Prerequisites: Sociology 1 or 2 or Anthropology 3 and junior standing. Mr. Becker.

152. CULTURES AND STYLES OF THOUGHT. II; 3 cr. Basic course in sociology of knowledge. Selected major cultures of ancient world, particularly Greece and Rome, analyzed with reference to interrelations of social structure and ideology. Prerequisites: For undergraduates, I.L.S., or a semester course in general classics, ancient history, or ancient philosophy, and junior standing; for graduates, consent of instructor. Mr. Becker.

157. METHODS OF SOCIOLOGICAL INQUIRY. II; 3 cr. Training in scientific habits of thought; development of a critical attitude toward sociological research; familiarization of the student with the use of documentary materials, case studies, interviews, etc. Prerequisites: Sociology 1 or 2 or Anthropology 3, and junior standing. Mr. Morris.

172. SOCIAL INTERACTION. II; 3 cr. Groups from pairs upward, with functions ranging from reproduction to war, surveyed in perspectives of process and structure. Emphasis on observation and systematic analysis. Prerequisites: Sociology 151, 157, or consent of instructor. Mr. Becker or Mr. Morris.

173. SOCIAL INSTITUTIONS. II; 3 cr. Customs, norms, and other aspects of society-perpetuating conduct. Matrimonial, religious, political, economic, educational, and like functions are distinguished and related to ideologies and social patterns. Prerequisites: Sociology 151, or Anthropology 140 or 145, and junior standing. Mr. Becker or Mr. Morris.

175. GROWTH OF SOCIAL THOUGHT. I; 3 cr. Survey of man's ideas about life with his fellows, centered on thinkers up to the 20th century. Prerequisites: Sociology 1 or 2 or Anthropology 3, and junior standing. Mr. Gerth.

176. CONTEMPORARY ANALYSES OF SOCIAL RELATIONS. II; 3 cr. Trends of specialized social sciences from late 19th century onward, with reference to the rise of sociology. Chief representatives and schools of sociology and closely related fields. Prerequisites: Sociology 1, 2, 175, or Anthropology 3 and junior standing. Mr. Gerth.

190. SMALL GROUP RESEARCH. I; 3 cr. Comparative analysis and critical evaluation of concepts, hypotheses, techniques, and results of research on small groups (including group dynamics, interaction analysis, sociometrics, sociodrama, etc.); training in applied experimental methods and the development of research instruments. Prerequisites: Sociology 139a or 139b and junior standing, or consent of instructor. Mr. Morris.

199. DEVELOPMENT OF AMERICAN SOCIOLOGY. II; 3 cr. Schools of thought in American sociology, traced through origins, conceptualizations, methodologies, and research. Prerequisite: Sociology 151 or consent of instructor. Mr. Becker or Mr. Morris.

257. SEMINAR: SOCIOLOGY OF KNOWLEDGE. I; 2 cr. Study of ideologies and other kinds of

social thought functionally interdependent with social processes and structures. Selected culture cases used as basis for type analysis. Prerequisites: Sociology 152 or 175 or Anthropology 140 or 145, or equivalent, and consent of instructor. Mr. Becker.

263. SEMINAR: SOCIAL CHANGE. I; 2 cr. Social dynamics as viewed by Comte, Spencer, Marx, Veblen, Pareto, Max Weber, Alfred Weber, Teggart, Toynbee, and others. Development of a substantive theory of social change. Prerequisite: Consent of instructor. Mr. Becker.

279. SEMINAR: SYSTEMATIC SOCIOLOGY. II; 2 cr. Co-ordination of current theories and methods of relevance for sociological research. Prerequisites: Sociology 172 or equivalent, and consent of instructor. Mr. Becker.

II. SOCIAL ORGANIZATION

60. MARRIAGE AND FAMILY. II; 3 cr. Nature of the family. Processes of courtship and marriage interaction. Correlation of physiological, psychological, economic, and sociological contributions to marriage and family life. Prerequisite: Junior standing or consent of instructor. No credit for students who have had Sociology 159.

133. SOCIAL STRATIFICATION. II; 3 cr. Occupation, class, status, as determinants of group interests, ideologies, and struggles. Selected international comparisons. Prerequisites: Sociology 1 and junior standing. Mr. Gerth.

134. DEMOCRATIC AND TOTALITARIAN SOCIETIES. II; 3 cr. A comparative analysis of democratic and totalitarian societies. Militarily disciplined societies like the Spartans, the Jesuit state of Paraguay, Absolutist Prussia, National Socialism and Russian Communism will be considered in the perspective of freedom and order. Prerequisites: Sociology 1 or 139a or b and junior standing, or consent of instructor. Mr. Gerth.

144. CAPITALISM AND SOCIALISM. II; 3 cr. Capitalism, unionism, socialism, fascism-nazism and individualistic and anti-capitalism, each viewed under the headings of conditions, theories, and movements. Prerequisites: Sociology 1 and 2 and junior standing. Mr. Gerth.

159. SOCIOLOGY OF THE FAMILY. I; 3 cr. The family as a social institution. Its place in different cultures and social strata. The impact of industrialization and urbanization upon family life. Family functions: procreation, education, production, and consumption. The family in transition. Prerequisites: Sociology 1 or 2 or Anthropology 3, and junior standing.

171. PLANNING AND SOCIAL ORGANIZATION. II; 3 cr. Discussion of "planning" as a principle of social organization, its relation to social change in various phases of the industrialization process, its influence upon contemporary social institutions, its effect upon the social cohesion of the family, the neighborhood and other territorial and associational groups. Sociological aspects of home, neighborhood and community planning. Prerequisites: Introductory course in a social science, junior standing, and consent of instructor.

174. SOCIAL CONTROL. II; 3 cr. A basic course in social organization. How different ways of life are controlled and directed by social forces. From folkways to mass-persuasion and public opinion. The family, educational institutions and legislation as means of control. Group pressures, ideologies and science as a social influence. Print, radio, movies and the integration of the social order. Prerequisites: Sociology 1 or 2 or Anthropology 3 and junior standing.

177. THE MODERN CITY. I; 3 cr. (Formerly SOCIOLOGY 71.) Urban institutional and personality patterns, folkways, and mores. Ecological process and structure. The city as center of dominance over a trade area and hinterland. Prerequisites: Sociology 1, 2, or 151, or an introductory course in either economics, political science, or geography, and sophomore standing.

178. CONTEMPORARY AMERICAN SOCIETY. II; 3 cr. (Formerly SOCIOLOGY 185.) The patterns of contemporary North American social life in the United States and Canada; cultural

orientations, social structures, and dynamics of social change. Prerequisite: Junior standing. Mr. Becker.

185. MODERN AMERICAN COMMUNITIES. II; 3 cr. Rural backgrounds of American culture. Development of American social institutions, social structure and values as seen in selected rural and urban communities. European images of America and evaluation of America's social strengths. Prerequisite: Major in American Institutions or junior standing. Mr. Barton. (For sociology majors may be counted toward 20 hours of related social science, but not toward the 30 credits in sociology.)

186. SOCIAL LIFE IN EUROPE: SOUTH AND WEST. I; 3 cr. A study of comparative social organization with special attention to the societies of Southern and Western Europe. Survey of the regional differences (i.e., Gascon, Sicilian, Macedonian, Basque, etc.) in social institutions, patterns of living, and contemporary social organization. Prerequisite: Junior standing. Mr. Becker.

187a–b. SOCIAL TRENDS IN SCANDINAVIA. Yr; 3 cr. A study of trends in social institutions and social organization of Scandinavia. Prerequisites: Sociology 1 and junior standing or consent of instructor.

188. SOCIAL LIFE IN EUROPE: NORTH AND EAST. II; 3 cr. A study of comparative social organization with special attention to the societies of Northern and Eastern Europe. Survey of the regional differences (i.e., Hebridean, Welsh, Upper Saxon, Tyrolean, etc.), patterns of living. Prerequisite: Junior standing. Mr. Becker.

193. INDUSTRIAL SOCIOLOGY. I; 3 cr. The factory as a social system; status systems in industry; lines of communication and authority; explanations of employee dissatisfaction in terms of group relations; and problems of minority groups in industry. Prerequisites: Sociology 1 or 2 and Economics 1a and junior standing, or consent of instructor. Mr. Hart.

198. INDUSTRY AND COMMUNITY. II; 3 cr. The factory system and technological factors in community life; the role of industrial workers, leaders and family in the community; the impact of community disorganization upon the industrial worker. Prerequisite: Sociology 193 or consent of instructor. Mr. Hart.

224. SEMINAR: URBAN SOCIOLOGY. I; 2 cr. Recent research analyzed: individual projects according to direction of interest. Prerequisites: Sociology 177 and graduate standing, or consent of instructor.

264. SEMINAR: MARRIAGE AND FAMILY. II; 2 cr. Recent research surveyed and analyzed. Prerequisites: Sociology 159 and graduate standing, or consent of instructor.

289. SEMINAR: SOCIAL ORGANIZATION. I; 2 cr. An examination of the underlying principles of social organization, and critique of major theories developed to explain them. Prerequisites: Sociology 1 or 151 and graduate standing, or consent of instructor.

293. SEMINAR: INDUSTRIAL SOCIOLOGY. II; 2 cr. The nature of the sociology of industry; research problems and methods of research in industrial sociology. Prerequisites: Graduate standing and consent of instructor. Mr. Clinard or Mr. Hart.

III. ANTHROPOLOGY

3. MAN AND CULTURE: AN INTRODUCTION TO ANTHROPOLOGY. I, II; 3 cr. A course planned to give the general student understandings of man in relation to the cultures he has built. It deals with man's evolutionary development; his capacities for society; and the development of the world's major cultures. Open to freshmen. Not open to students who have had I.L.S. 21. Staff.

AREA COURSES

113. ETHNOGRAPHY AND ARCHAEOLOGY OF THE AMERICAN SOUTHWEST. II; 3 cr. A sub-area course to study the cultures of the American Southwest in terms of its prehistoric development, its cultures at the time of initial contact with European civilizations and present problems of acculturation. Prerequisites: Anthropology 3 and junior standing. Staff.

114. The Indians of North America. I; 3 cr. A description and analysis of native cultures, and the role of environmental and historical factors in North America. Prerequisites: Anthropology 3 and junior standing. Mr. Baerreis.

115. The Indians of Central and South America. II; 3 cr. Aboriginal and contemporary Indian cultures south of Mexico, including descriptions of the higher civilizations. Prerequisites: Anthropology 3 and junior standing. (Anthropology 114 desirable.) Mr. Baerreis.

116. Peoples of Asia. I; 3 cr. A survey of modern and ancient societies and cultures of Asia. Prerequisites: Anthropology 3 and junior standing. Mr. Barnett.

118. Peoples of Africa. II; 3 cr. The native peoples and cultures of Africa, with their changes and status under European domination. Prerequisites: Anthropology 3 and junior standing. Mr. Ames.

119. Peoples of the Pacific. II; 3 cr. Native races and cultures of the Pacific as material for study of cultural development. Prerequisites: Anthropology 3 and junior standing. Mr. Hart.

A. PHYSICAL ANTHROPOLOGY

101. Human Evolution and Racial History. I; 3 cr. Human evolution; man as a mammal, primate, and anthropoid; ancient man and the formation and spread of races. Prerequisites: Anthropology 3 and sophomore standing, or junior standing. Mr. Howells.

103. Advanced Physical Anthropology. II; 3 cr. The human skeleton and racial types, with laboratory training in methods used, and application of such methods to problems in race mixture, human biology, etc. Prerequisites: Anthropology 101 and junior standing. Mr. Howells.

104. Man and Population. II; 3 cr. Factors influencing human breeding and population changes in modern and primitive societies; human qualities (mentality, vitality, etc.) as influenced by heredity and environment; racial differences and race mixtures. Prerequisites: Anthropology 3 or 101 and junior standing. Mr. Howells.

202. Seminar: Race and Variation. I; 2 cr. A review of literature, points of view, and methods covering the study of individual and group variation in living mankind. Prerequisite: Graduate standing. Mr. Howells.

B. ARCHAEOLOGY

42. Prehistoric Archaeology: Origins of Civilization. I; 3 cr. The development of human culture from its earliest beginnings to the historic period in the Old World as revealed by archaeological studies. Prerequisite: Sophomore standing. Mr. Baerreis.

108. Archaeology of North America. II; 3 cr. A survey of the main pre-Columbian cultures and evidences of ancient man on the North American continent north of Mexico. Prerequisites: Anthropology 3 and junior standing. Mr. Baerreis.

109. Archaeology of Mexico, Central and South America. I; 3 cr. The development of the higher native civilization of the Middle and South American region as seen through archaeology, with particular emphasis on the Aztecs, Mayas, and Incas. Prerequisites: Anthropology 3 and junior standing. Mr. Baerreis.

242. Seminar: Archaeological Problems. II; 2 cr. Discussions of current archaeological literature and methods, and work on assigned problems. Prerequisite: Graduate standing. Mr. Baerreis.

C. CULTURAL ANTHROPOLOGY

40. Cultural Anthropology. II; 3 cr. A survey of the fields of anthropology dealing with man's culture. Prerequisites: Anthropology 3 or Sociology 1 and sophomore standing, or Psychology 1. Mr. Hart.

112. Technical Arts of Primitive Peoples. II; 3 cr. The laboratory study of such

material crafts as stone-working, pottery, weaving, etc., and the significance of these techniques in primitive economies, as well as their meaning in the study of cultural development and archaeology. Prerequisites: Anthropology 3, junior standing, and consent of instructor. Mr. Baerreis.

140. ANTHROPOLOGICAL THEORY. I; 3 cr. A survey of the main theoretical movements in anthropology, including both historical and contemporary schools and movements. Prerequisites: Anthropology 40 and senior standing or consent of instructor. Mr. Hart.

141. APPLIED ANTHROPOLOGY. II; 3 cr. A course dealing with the fields and methods used in the application of anthropology to modern problems, from the administration of dependent peoples and colonial areas to the use of applied anthropology in industry. Prerequisites: Anthropology 3 and junior standing. Mr. Hart.

143. PRIMITIVE RELIGION. II; 3 cr. The origins, elements and forms of primitive religion, with their integration and role in society. Prerequisite: Junior standing. Mr. Howells.

145. THE INDIVIDUAL AND HIS CULTURE. I; 3 cr. A comparative analysis of cultures in relation to their influence on personality development and the adjustment of the individual. Prerequisites: Anthropology 3, Sociology 139a or 139b, and junior standing. Mr. Barnett.

146. THE CHILD IN DIFFERENT CULTURES. II; 3 cr. The relationship of child development to particular cultural *milieux;* methods of child training in different cultures; the effects on the direction of development in a culture. Prerequisites: Anthropology 3, Sociology 139a or 139b, and junior standing. Mr. Barnett.

147. FIELD PROBLEMS AND METHODS. II; 3 cr. A survey of the methods of field work in cultural anthropology; the design of field studies; techniques for the collection and analysis of empirical data; and experimental field projects. Prerequisites: Anthropology 40 or 140 and senior standing or consent of instructor. Staff.

240. SEMINAR: PROBLEMS IN CULTURAL ANTHROPOLOGY. II; 2 cr. Discussion of current anthropological literature and methods, and work on assigned problems. Prerequisite: Graduate standing or consent of instructor. Mr. Hart.

D. LINGUISTICS

*120. THE LANGUAGES OF THE WORLD. I; 3 cr. Types of language; the geographical distribution of language groups; the relation of linguistics to other divisions of knowledge. Prerequisite: Sophomore standing. Mr. Fowler.

*121. PHONEMICS. II; 3 cr. Exercises in phonemic analysis followed by ten hours of practical work with a native speaker of a foreign language. Prerequisites: Sophomore standing and some knowledge of one language other than English. Mr. Fowler.

*122. MORPHEMICS. II; 3 cr. Exercises in morphemic analysis followed by concentrated work on a descriptive statement of the structure of English. Prerequisite: Anthropology 121. Mr. Fowler.

E. INDEPENDENT WORK

100. SENIOR THESIS. Yr; 2 cr. Staff.

180. INDEPENDENT WORK IN ANTHROPOLOGY. I, II, or Yr; *cr. See page 43 of this bulletin for requirements and procedures. Staff.

200. RESEARCH AND THESIS. Yr; *cr. Prerequisite: Advanced graduate standing. Staff.

280. READING AND RESEARCH IN ANTHROPOLOGY. I, II, or Yr; *cr. Prerequisites: Graduate standing and consent of major professor. Staff.

F. INTERDEPARTMENTAL COURSE

290. INTERDEPARTMENTAL SEMINAR IN LATIN-AMERICAN PROBLEMS II; 2 cr. An interdisciplinary inquiry into the factors influencing the use of resources in various regions in Latin America. Prerequisites: Graduate standing and 5 credits in courses in the Latin-

* May *not* be counted toward the Social Studies credits required for the B.A. or B.S. degrees.

American fields in the co-operating departments, or consent of the committee in charge. Offered 1951–52. Mr. Baerreis, Mr. Barnett, and members of other departments.

IV. SOCIAL DISORGANIZATION

2. Social Disorganization. I, II; 3 cr. Conditions and processes in personal and social maladjustment: nature of social disorganization and social problems; their relation to social change and basic ideological, technological and institutional structures and processes. Open to freshmen. Mr. Clinard and staff.

153. Police Administration. I; 3 cr. History, organization, and general policies of police administration—federal, state, rural and suburban, and municipal. Prerequisites: Sociology 2 and junior standing or consent of instructor. Mr. Hakeem.

154. Treatment and Prevention of Social Disorganization. II; 3 cr. Proposed practical solutions to social disorganization and their evaluation in terms of a systematic theory of social disorganization. Eugenic, psychiatric, economic, sociological, and other suggested solutions. The role of group values in treatment programs. Prerequisites: Sociology 2 and junior standing, or consent of instructor. Mr. Clinard.

156. Juvenile Delinquency. II; 3 cr. Definitions and interpretations, causation, prevention; organization and functions of community agencies; police, juvenile court, probation, correctional schools, youth services, and correction authorities. Prerequisites: Sociology 1 or 2 and sophomore standing. Mr. Hakeem.

158. Clinical and Legal Aspects of Criminology. I; 2–3 cr. An introduction to clinical concepts in dealing with individual delinquents and criminals; crime control as a scientific and a social process; the practice of criminology including the symtomatology, diagnosis and methods of individualized and socialized treatment of criminals; the interrelationship of the social sciences and norms and procedures of criminal law. Prerequisite: Sociology 161 or concurrent registration, or consent of instructor. Mr. Hakeem, Mr. Remington.

161. Criminology. I; 3 cr. (Formerly Sociology 61.) Crime as a form of deviant behavior; its relation to societal values and social structure; personality and community factors in criminal behavior; the professional criminal and organized crime; theories of treatment and control; correctional methods and the administration of justice. Prerequisites: Sociology 2 and sophomore standing. Mr. Clinard.

164. Problems of American Minority Groups. II; 3 cr. The nature of minority groups and their problems. Social and economic adjustments in our society of the Negro, Mexican, Indian, Asiatic and various nationality groups. The problem of anti-Semitism. Proposals for the reduction of inter-group tensions. Prerequisites: Sociology 1 or 2 and junior standing, or consent of instructor. Mr. Clinard.

*165. Scientific Crime Detection. II; 2 cr. Lectures, demonstrations and case studies illustrating modern scientific techniques used in crime detection including firearms identification, finger printing, the lie detector, drunkometer, microscopic and chemical examination of metals, wood, textiles, blood, hair, and other evidence, and examination of questioned documents. Prerequisites: Sociology 161 or junior standing, or consent of instructor.

168. Probation and Parole. II; 3 cr. Place of probation and parole in the correctional process, history, nature and theory; federal, state and local systems; personnel, procedures, prediction studies, criticisms and trends. Prerequisites: Sociology 161 and junior standing, or consent of instructor. Mr. Hakeem.

169. Processes of Social Disorganization. I; 3 cr. Factors and conditions which underlie cultural disintegration and disagreement upon fundamental values; their relation to personal and social maladjustment; social disorganization in comparative societies; social cohesion, social mobility and social stratification as affected by disturbances in valuation;

* For sociology majors, may be counted toward 20 hours of related social science, but not toward the 30 credits in sociology.

ideological aspects of social disorganization. Prerequisites: Sociology 2 and junior standing, or consent of instructor. Mr. Clinard.

170. INSTITUTIONAL TREATMENT OF OFFENDERS. I; 3 cr. Place of jails, prisons and reformatories, in the correctional process. The Clinical School of Criminology; federal, state and local institutions; the dynamics of institutional treatment—personnel structure, custody, discipline, treatment procedures, administrative problems. Prerequisites: Sociology 161 and junior standing, or consent of instructor. Mr. Hakeem.

179. INTERNSHIP: CORRECTIONAL ADMINISTRATION. I, II; * cr. (Formerly SOCIOLOGY 270.) Field work under supervision for 10 weeks full time or equivalent in a correctional institution or agency. Periodic conferences and reports on work assignments, final report, and oral examination. Prerequisite: Consent of instructor. Mr. Hakeem.

189. THE SOCIAL PROBLEMS OF OLD AGE. I; 3 cr. The extent of our present and future old-age problem; a comparative view of the role of old people in various societies; the factors that account for the changed position of the aged in our society. The incidence of psychoses and other problems among the old and proposed solutions for dealing with disorganization among the aged. Prerequisites: Sociology 1 or 2 and junior standing, or consent of instructor.

235. SEMINAR: RESEARCH IN SOCIAL DISORGANIZATION. II; 2 cr. Qualitative and quantitative methods of research with reference to various types of social disorganization; relationships between the case study and statistical method. Analysis of important research studies in social disorganization. Prerequisites: Graduate standing and consent of instructor. Mr. Clinard.

255. SEMINAR: DEVELOPMENT OF THEORIES OF SOCIAL PATHOLOGY. Yr; 6 cr. History of social thought on personal and social disorganization. Research in the writings of social philosophers dealing with deviant behavior from ancient to modern writers. Prerequisites: Graduate standing and consent of instructor. Offered 1951–52. Mr. Gillin.

256. SEMINAR: ADMINISTRATION OF THE CRIMINAL LAW. II; 2 cr. (Conducted jointly by the Department of Sociology and Anthropology and the Law School.) Problems of interest to both the lawyer and the social scientist in those areas in the administration of the criminal law including the detection and apprehension of criminals, the functions of the district attorney, the judge, the jury, the prison administrator and probation, parole and prevention services, and their interrelationships. Prerequisite: Consent of instructor. Mr. Hakeem, Mr. Remington, Mr. Young.

258a–b. SEMINAR: CORRECTIONAL POLICIES. I, II; 3 cr. Clinical studies of individual prisoners and case records, of classification and case-work procedures, of educational, medical, industrial, recreational, custodial and other institutional and community programs and policies for dealing with criminals. Prerequisite: Graduate standing or consent of instructor. Mr. Hakeem.

282. SEMINAR: CRIMINOLOGY. I; 2 cr. Conditions and processes in the development of criminal careers: social and psychogenic theories of crime; case studies of individual offenders; development of methods of research. Prerequisites: Graduate standing and consent of instructor. Mr. Clinard.

CURRICULUM IN CORRECTIONAL ADMINISTRATION

Because of the need in the administration of the criminal law for personnel trained in the social sciences, the Department of Sociology and Anthropology offers a special curriculum in correctional administration. For undergraduates, this curriculum leads to a bachelor's degree with a major in Correctional Administration in sociology. It comprises required basic courses in sociology and related fields and special courses in criminology, juvenile delinquency, police administration, probation and parole, and institutional treatment of offenders. Elective courses in sociology and in the related fields of social work, psychology, education, physical education and recreation, library science, home economics, political

science, economics, commerce, and law are also available. On the graduate level, special curricula in sociology, social work, and law, leading to graduate degrees are recommended for those who have completed the required undergraduate courses and who wish to acquire special professional competence in a particular area. (See bulletin of the Graduate School.)

Students should consult the Department of Sociology and Anthropology regarding both required and elective courses for undergraduates and graduates. It is suggested that plans for a major in Correctional Administration should be considered early in the college course and not later than the beginning of the junior year if possible. The requirements for the major are given on page 214.

BASIC COURSES*

Sociology 1, or	Man in society: An introduction to sociology, 3 cr.
Anthropology 3	Man and culture: An introduction to anthropology, 3 cr.
Sociology 2	Social disorganization, 3 cr.
Sociology 32, or	Interpretive social statistics, 3 cr.
Sociology 132	Introductory social statistics, 3 cr.
Sociology 139a	Introductory social psychology: Personality, 3 cr.
Sociology 151, or	General aspects of social relations, 3 cr.
Anthropology 40	Cultural anthropology, 3 cr.
Psychology 1	Introduction to psychology, 4 cr.
Psychology 105	Human adjustment, 3 cr.
Commerce, Economics, Education, Home Economics, Political Science, Social Work	Courses totaling 6 credits to be selected from these fields, with the approval of the student's adviser (subject to Section 17).

SPECIAL COURSES**

Sociology 153	Police administration, 3 cr.
Sociology 156	Juvenile delinquency, 3 cr.
Sociology 158	Clinical and legal aspects of criminology, 3 cr.
Sociology 161	Criminology, 3 cr.
Sociology 165	Scientific crime detection, 3 cr.
Sociology 168	Probation and parole, 3 cr.
Sociology 170	Institutional treatment of offenders, 3 cr.

V. RURAL SOCIOLOGY

Below is a duplicate listing of those courses offered by the Department of Rural Sociology which may be elected by majors in Sociology and other qualified students.

25. Rural Life. I; 3 cr. Rural society; its groups as families, neighborhoods, villages, interest groups, town-country and rural-urban relations; its people; its social institutions. Prerequisite: Sophomore standing. Mr. Kolb.

27. Rural Organizations and Leadership. II; 2 cr. History, scope and function of rural organizations in social life. Characteristics and activities of social, educational, recreational and occupational groups. History, description and analysis of selected types in Wisconsin. Problems of organization and leadership. Prerequisite: Sophomore standing or Sociology 25. Mr. Barton.

125. Structure and Functioning of American Rural Society. I; 3 cr. A functional analysis of the group, institutional and status structure of contemporary American rural society. Prerequisite: An introductory course in rural or general sociology. Mr. Wilkening.

* Students must offer a total of 28 credits in the *Basic Courses*.
** Students must offer a total of 15 credits in *Special Courses*.

126. Rural Standards of Living. II; 2 cr. Consumption behavior in the main commodity groups: food, housing, clothing, education, recreation, etc.; growth of consumer consciousness and governmental and co-operative agencies which give it expression. Prerequisites: Junior standing and introductory course in rural or general sociology or consent of instructor. Mr. Barton.

127. Rural Community Organization. II; 2 cr. History of the rural community and its social organization; principles including leadership and processes of conflict and co-operation; agencies serving the rural community; studies of selected cases. Prerequisites: Junior standing and introductory course in rural or general sociology or consent of instructor. Mr. Wileden.

128. Methods of Research in Rural Sociology. I; 2 cr. A review of the methods currently employed by rural social research agencies, with special emphasis on the more recent developments in interviewing techniques, schedule and scale construction, attitudes and opinion measurement and experimental design. Prerequisites: Introductory statistics, junior standing and consent of instructor. Mr. Wilkening.

129. The Family in Rural Society. I; 2 cr. Consideration will be given to the institutional nature of the rural family, its role in the community including its relation to educational, religious, welfare and other community institutions, its influence on personality development, and its problems in a changing culture. Prerequisites: An introductory course in rural or general sociology, junior standing and consent of instructor. Mr. Sewell.

130. Rural Population Trends and Public Policies. II; 2 cr. Demographic, nativity, social and cultural changes and their relation to national population policies. Prerequisite: Junior standing and an introductory course in rural or general sociology or economics or consent of instructor. Mr. Marshall.

131. Rural Community and Welfare Agencies. I; 3 cr. The organization of rural communities in the United States, rural problem areas, and the institutions and agencies through which a rural welfare program must function. (This course is being required of all Social Work majors.) Prerequisites: Junior standing and either Sociology 25 or Social Work 145. Mr. Barton.

185. Modern American Communities. II; 3 cr. Rural backgrounds of American culture. Development of American social institutions, social structure and values as seen in selected rural and urban communities. European images of America and evaluation of America's social strengths. Prerequisite: Major in American Institutions or junior standing. Mr. Barton. (For sociology majors may be counted toward 20 hours of related social science, but not toward the 30 credits in sociology.)

225. Seminar in Rural Social Research. Yr; 2 cr. An examination of current research problems, theories and methods. Subject matter to vary according to current research interests. Prerequisites: Graduate standing and consent of instructor. Mr. Kolb, Mr. Sewell.

VI. STATISTICS

32. Intergretive Social Statistics. I; 3 cr. For majors in sociology, anthropology, and social work, who do not plan to do graduate work. The logic and interpretation of typical statistical articles and reports met with in sociological, anthropological, and social work literature. Lectures and laboratory. Prerequisite: Sophomore standing. Mr. Anderson.

132. Introductory Social Statistics. II; 3 cr. A first course in statistics for graduate students and those undergraduate majors in sociology, anthropology, and social work who expect to do advanced work. The theory and application of elementary statistics as a method of social research and analysis. Lectures and laboratory. Prerequisite: Junior standing; and for Sociology and Anthropology majors, one semester of college algebra or equivalent. Mr. Anderson.

182. Correlation in Sociological Research. I; 3 cr. The application of correlation techniques to sociological research, with special reference to student theses. Gross, partial,

and multiple correlation, quantitative and qualitative. Prerequisite: Sociology 132 or equivalent. Mr. McCormick.

183. Sampling in Sociological Research. II; 3 cr. The theory and practice of sampling applied to sociological problems, with special attention to student theses. Includes analysis of variance. Prerequisite: Sociology 132 or equivalent. Mr. McCormick.

232a. Statistical Research in Sociology. I; 3 cr. Individual staff research. Definition of problem, preparation of questionnaires, instructions, tables, preliminary trials. Prerequisites: Sociology 182 and 183 or equivalent, graduate standing, and consent of instructor. Mr. McCormick.

232b. Statistical Research in Sociology. II; 3 cr. Individual staff research, continued. Organization of field work, editing returns. Hand and machine methods, analysis and report writing. Prerequisites: Sociology 182 and 183 or equivalent, graduate standing, and consent of instructor. Mr. McCormick.

VII. SOCIAL PSYCHOLOGY

39. General Elementary Social Psychology. II; 3 cr. (This course is listed elsewhere as Psychology 39.) Introduction to the study of personality development and collective behavior in contemporary social life. A more general and elementary course than Sociology 139a or 139b. Prerequisite: Sociology 1 or Sociology 2 or Anthropology 3 or Psychology 1. Mr. McCormick or Mr. Gilchrist. (May not be counted toward major in sociology.)

136. Public Opinion. I; 3 cr. Organized and unorganized communication processes. Press, radio, motion pictures as agencies of mass-impression. Analysis of symbolic processes, publics and audiences. Censorship and propaganda, their personnel and strategy. Prerequisites: Sociology 1 and junior standing. Mr. Gerth.

139a. Introductory Social Psychology: Personality. I; 3 cr. (This course is listed elsewhere as Psychology 139a.) Modern personality theory and its application to personality development in various social settings. Emphasis will be placed upon contemporary American personality patterns. Prerequisites: Psychology 1 and Sociology 1 or Psychology 1 and Anthropology 3. May not be taken for credit if student has received credit for Psychology 127 or Sociology 39 or 139. Mr. Gilchrist, Mr. McCormick.

139b. Introductory Social Psychology: The Individual in the Group. II; 3 cr. (This course is listed elsewhere as Psychology 139b.) Group formation, group processes, institutions, attitudes and public opinion as they affect and are affected by the individual. Emphasis on attitudes, public opinion, morale, leadership, social movements. Prerequisite: Psychology 139a or Sociology 139a or Psychology 127. Mr. Barnett, Mr. Gilchrist.

150. Collective Behavior. II; 3 cr. The social psychology of organized and unorganized social movements, mobs, crowds, masses, fashions, extraordinary psychic states; charlatans, experts and culture heroes. Voluntary and compulsory associations; their leadership, social composition, organization, and tactics. The power structure and dynamics of social movements. Prerequisites: Sociology 1 and junior standing. Mr. Gerth.

155. Ideological Conflict. II; 3 cr. General aspects of conflict, its ideological concomitants, and its alternatives. Techniques of influencing morale, both "constructively" and in so-called "psychological warfare." Attention to World War II and its aftermath. Prerequisites: Sociology 1, 2, or Anthropology 3 and junior standing. Mr. Becker.

190. Small Group Research. I; 3 cr. Comparative analysis and critical evaluation of concepts, hypotheses, techniques and results of research on small groups (including group dynamics, interaction analysis, sociometrics, sociodrama, etc.); training in applied experimental methods and the development of research instruments. Prerequisites: Sociology 139a or 139b and junior standing, or consent of instructor. Mr. Morris.

192. Problems in Empirical Social Behavior Research. I, II; 2-3 cr. (This course is listed elsewhere as Journalism 192, Pol. Sci. 192, Social Studies 192, and Social Work 192.)

Supervised individual or joint work on problems in research, including carrying out of projects and/or independent reading on methodology. Prerequisite: Consent of instructor. Mr. Fisher.

194. INTRODUCTION TO PUBLIC OPINION RESEARCH. I; 3 cr. (This course is listed elsewhere as AGR. ECON. 194, AGR. JOURNALISM 194, JOURNALISM 194, POL. SCI. 194, PSYCHOLOGY 194, RURAL SOCIOLOGY 194, SOCIAL STUDIES 194, and SOCIAL WORK 194.) Theory and practice of *survey* techniques. Planning, design, sampling, types of data, questionnaire construction, interviewing, field operations, content analysis and coding, machine tabulation, analysis of data, utilization of findings. Examples in a variety of fields. Two hours lecture, two hours laboratory or field work. Prerequisites: Junior standing. Mr. Fisher.

197. PERSONALITY AND SOCIAL STRUCTURE. II; 3 cr. An analysis of relations between personality, social interaction and culture. Prerequisites: Sociology 139a or b or a course in psychology, and junior standing. Mr. McCormick.

237. SEMINAR: PUBLIC OPINION. I; 2 cr. A social-psychological and sociological analysis of propaganda, lobby and pressure groups, and censorship. Role of leader in public opinion and other forms of social control. Prerequisites: Sociology 139a or b, graduate standing, and consent of instructor. Mr. Gerth.

239. SEMINAR: ADVANCED SOCIAL PSYCHOLOGY. II; 2 cr. The theoretical and systematic foundations of social psychology. Prerequisites: Sociology 139a or b, graduate standing, and consent of instructor. Mr. Gerth.

250. SEMINAR: MASS MOVEMENTS. II; 2 cr. Mass psychology and socio-political movements. Their forms of leadership, recruitment, organization, symbols, tactics and stratagems in democratic and totalitarian societies. Prerequisites: Graduate standing and consent of instructor. Mr. Gerth.

262. SEMINAR: ANALYSIS OF PREJUDICE AND DISCRIMINATION. I; 2 cr. Intensive analysis of the social psychological factors underlying prejudices and discrimination. Prerequisites: Sociology 139a or b or 164, graduate standing, and consent of instructor. Mr. Barnett.

294. SEMINAR IN THE DESIGN AND PROCESS OF SURVEY RESEARCH. II; 3 cr. (This course is listed elsewhere as JOURNALISM 294, POL. SCI. 294, SOCIAL STUDIES 294, and SOCIAL WORK 294.) Presentation of initial study designs or of research in progress by members of the seminar, for critiques leading both to further development of the project itself and to illustration of research problems in the social sciences. Prerequisite: Consent of instructor. Mr. Fisher.

297. SEMINAR: PERSONALITY. II; 2 cr. Research topics which relate the development of personality to social-cultural environment. Prerequisites: Sociology 139a or b or 197, graduate standing, and consent of instructor. Mr. McCormick.

VIII. POPULATION

104. MAN AND POPULATION. II; 3 cr. Factors influencing human breeding and population changes in modern and primitive societies; human qualities (mentality, vitality, etc.) as influenced by heredity and environment; racial differences and race mixtures. Prerequisites: Anthropology 3 or 101 and junior standing. Mr. Howells.

130. RURAL POPULATION TRENDS AND PUBLIC POLICIES. II; 2 cr. Demographic, nativity, social and cultural changes and their relation to national population policies. Prerequisites: Junior standing and an introductory course in rural or general sociology or economics or consent of instructor. Mr. Marshall.

163. MODERN POPULATION PROBLEMS. I; 3 cr. Population growth and composition in relation to natural resources, cultural achievement, migration and war. Birth control and differential fertility. Prerequisites: An introductory course in sociology, economics, or Geography 6, and junior standing. Mr. Anderson.

166. ECONOMICS OF POPULATION. II; 3 cr. (This course is listed elsewhere as ECONOMICS 166.) Interrelations between population developments and economic developments. Eco-

nomic effects of migration, changes in the size and composition of populations, economic aspects of population theories. Prerequisites: Sociology 1 or 2 or Economics 1a and junior standing. Mr. Morgan.

167. Population Policies. I; 3 cr. (This course is listed elsewhere as Economics 167.) Population policies in various countries. Quantitative and qualitative bases. Standards of living concepts in population policy. Migration policies. Prerequisites: Sociology 1 or 2 or Economics 1a and junior standing. Mr. Morgan.

181. Population and Society. II; 3 cr. The influence of population numbers, birth rate, death rate, marriage rate, differential fertility, sex ratio, age composition, and migration on social values, social action, and social structure. Prerequisites: Introductory course in sociology, economics or political science, and junior standing. Mr. McCormick.

184. Statistics in Population Research. II; 3 cr. Correction of basic data. Refined measures of fertility, marriage, population increase, etc. Construction and use of life tables. Migration, post-censal population estimates, vital phenomena and business cycles. Prerequisites: Sociology 132 and 163 or their equivalent. Mr. Anderson.

267. Seminar: Population Problems. II; 2 cr. Prerequisites: Sociology 163 or equivalent, graduate standing, and consent of instructor. Mr. McCormick.

271. Seminar on the Geography of Population Problems. 2–3 cr. (This course is listed elsewhere as Geography 271.) Mr. Trewartha.

IX. SOCIAL WORK

This is a duplicate listing of those courses offered by the Department of Social Work which may be elected by majors in Sociology and other qualified students.

113. Theory and Practice of Group Leadership. Yr; 2–3 cr. Importance and meaning of group experience. Needs of group members. Qualities of leadership. Section a: 3 cr. Field work in selected recreational agencies. Section b: 2 cr. Class work only. Prerequisites: Senior standing, demonstrated leadership ability and consent of instructor. Staff.

145. Introduction to the Field of Social Work. I, II; 3 cr. Fields and methods of social work. For social work students and those preparing for allied professions as law, medicine, ministry, teaching. Prerequisite: Junior standing. Staff.

162. Child Welfare. I, II; 3 cr. Problems of dependent, neglected and delinquent children: methods of study and treatment utilized by federal, state and local governments and by private agencies. Prerequisites: Junior standing and consent of instructor. Miss Orchard.

177. Social Legislation. I; 3 cr. Statutes and court decisions on marriage, divorce, adoption, illegitimacy, poverty, etc. The reciprocal effects of law and social work. Prerequisites: Junior standing and Social Work 145 or concurrent registration. Miss Clarke.

185. Introduction to Social Welfare Administration. II; 3 cr. Administrative process in public and voluntary social agencies. Analysis of federal, state and local welfare structure. Comparison of administrative techniques in public and voluntary agencies. Prerequisites: Section 1: Graduate standing; Section 2: Junior standing and Social Work 145 or concurrent registration. Mr. Miles, Mr. Downing.

SPANISH AND PORTUGUESE

Professors Herriott, Kasten, *chairman,* Neale-Silva; Associate Professors Hesse, Mulvihill, Rosaldo, Sanchez-Barbudo, Singleton; Assistant Professors Lyon, Sanchez; Instructor Dowling; Acting Instructors Rosa, Rodriguez-Alcalá.

Nature of the Courses. The elementary courses have been planned to meet the needs of students who take up Spanish for the first time at the University of Wisconsin, as well as of those who have begun the study in high school. There are two types of beginning Spanish courses: (1) the traditional course, 4 hours, carrying 4 credits; (2) the oral Spanish course,

4 hours of class plus 4 hours of oral practice, with a proportionate reduction in the amount of home study. This course also carries 4 credits.

In the regular second-year courses, 10a and 10b, emphasis is placed on the acquisition of a reading knowledge of the language. Special sections are provided for those who have had oral training at Wisconsin. Spanish 13 is a second-year, rapid reading course not open to majors or minors in Spanish. The second-year practice courses are 15 and 16, intended to supplement the training offered in 10a and 10b. Spanish 13 and 15 may be taken only concurrently with Spanish 10a and 10b. Not more than one of these courses (13, 15, 16) may be taken in any one semester, along with 10a or 10b. The regular third-year course is 21, comprising reading of representative masterpieces with a background of literary history. Oral sections of Spanish 21 are provided for students with previous oral language training. The other third-year course is Spanish 23, which is not open to students majoring in Spanish or Hispanic Studies. International Relations majors may substitute Spanish 23 for 21. The third-year practice courses are 25 and 27, which are intended to supplement the training offered in 47 and 21. Courses 47 and 48 are special third-year courses intended to be introductory to the study of Spanish and Spanish-American civilization. Comparative Literature 55 is a course offering an approach to Spanish and Portuguese literature to students without a knowledge of these languages. Comparative Literature 56, similar in nature, covers the literatures of the Latin-American countries.

Courses in elementary, intermediate, and advanced Portuguese are also offered. Portuguese is important in a comparative study of Romance languages, and of practical value as the language of Brazil.

The advanced practice courses in Spanish are 112, 117, 124, 127 and 190; 112 and 124 offer training in general advanced composition and conversation, and 117 emphasizes the use of the language in commerce and industry.

Several of the advanced courses in literature and civilization are given in Spanish. A careful rotation is established so that students specializing in literature may have adequate instruction in all genres and periods. The philological courses are intended for graduate students, but 128 is open to undergraduates.

New students are assigned to classes on the basis of their ratings in a placement test, as described in Section 16, page 40. The foreign-language requirements for the B.A. degree are set forth in Section 21, page 44. The requirements for the B.S. (general) degree are found in Section 25, page 48.

MAJOR. 28 credits in advance of 1b of which at least 8 must be in second- or third-year practice courses (16, 25) 6 in Spanish 21, and 10 in courses of the 100-group. In the 100-group courses a minimum of 2 credits must be in language (112, 124, 127, 128, 190 and a minimum of 4 must be in literature. Qualified students may apply to the chairman of the department for permission to write a thesis.

By faculty requirement students choosing a foreign-language major must present at least 8 credits in a second language taken either in high school or college. It is recommended that students majoring in Spanish fulfill this requirement by electing Portuguese.

All who intend to specialize in Spanish are advised to elect related courses in classical and modern languages and literatures. comparative literature, history, philosophy, art history and criticism, and the courses included in the field of Hispanic Studies.

A major in Portuguese consists of 16 credits beyond 10b, and must include 4 credits in composition and conversation.

TEACHING MAJOR AND MINOR. See School of Education.

HISPANIC STUDIES AS A FIELD OF CONCENTRATION. Students interested in this major field should consult page 74.

REPORTING HISPANIC AFFAIRS. (See JOURNALISM 121.) Does not carry credit in Spanish. Prerequisite: Spanish 10b or equivalent. Mr. Hesse, Mr. Rosaldo.

MAJOR IN INTERNATIONAL RELATIONS. (Specialization in the Latin-American region.) Students interested in this major field should consult page 72.

FOREIGN NEWS SERVICE. This branch of journalism, which emphasizes the Hispanic field, is described in the special section on the School of Journalism.

SEMINAR OF MEDIEVAL SPANISH STUDIES. A well-equipped seminar for independent research in this field, founded by Professor Solalinde, is now under the direction of Professor Kasten. It has separate quarters at 1212 West Johnson Street.

LECTURES ON HISPANIC LIFE AND CIVILIZATION. The department presents every year a series of open lectures on phases of Spanish and Spanish-American life and civilization. To give the lectures wide range of content and professional competence the lecturers are chosen from different departments of the University, and guest speakers of reputation are invited from other institutions of learning.

"THE WISCONSIN SPANISH TEACHER." This mimeographed bulletin is published twice a year by the department. It is devoted to the presentation of educational matters of interest to all teachers of Spanish in the state of Wisconsin.

SPANISH CLUB. The Club Cervantes-Camões meets once a month and presents interesting programs during the year. A number of Spanish plays are staged, thus affording an opportunity to the student for participating in Spanish dramatics.

ANTONIO G. SOLALINDE SCHOLARSHIP. Through the efforts of Psi chapter of Sigma Delta Pi (national Spanish honor society), a scholarship in memory of Professor Solalinde has been established to be granted on the basis of scholastic merit and financial need. For further information, apply to the chairman of the department.

H. C. BERKOWITZ SCHOLARSHIP. From a fund established in honor of Professor H. C. Berkowitz, a scholarship amounting to fifty dollars is awarded annually to an undergraduate student in the department on the basis of scholarship and general merit.

SPANISH

1a. FIRST-SEMESTER SPANISH. I, II; 4 cr. Spanish grammar, elementary reading, oral practice and cultural background. For students who have had no Spanish. Two types of sections: grammar-reading sections and oral sections. The latter meet eight times a week, home work being proportionately reduced. Mr. Hesse, Mr. Sánchez, and staff.

1b. SECOND-SEMESTER SPANISH. I, II; 4 cr. Continuation of above course. Prerequisite: Spanish 1a or one year of high-school Spanish. Mr. Hesse, Mr. Sánchez, and staff.

10a. THIRD-SEMESTER SPANISH. I, II; 3 cr. Intensive class reading; study of vocabulary, idioms and constructions. Prerequisite: Spanish 1b or two years of high-school Spanish. Mr. Hesse and staff.

10b. FOURTH-SEMESTER SPANISH. I, II; 3 cr. Continuation of the above course. Prerequisite: Spanish 10a or three years of high-school Spanish. Mr. Hesse and staff.

13a. RAPID READING. I; 1 cr. Emphasis on sight reading. Should be taken concurrently with 10a and 10b. Can be credited by semesters. Not open to majors or minors in Spanish. Prerequisite: Spanish 1b. Mr. Hesse and staff.

13b. RAPID READING. II; 1 cr. Continuation of above course. Mr. Hesse and staff.

15a. ELEMENTARY CONVERSATION. I, II; 2 cr. Should be taken concurrently with 10a or 10b. Can be credited by semesters. Cannot be taken after finishing 10b. Prerequisite: Spanish 1b or equivalent. Mr. Neale-Silva and staff.

15b. ELEMENTARY CONVERSATION. II; 2 cr. Continuation of above course. Mr. Neale-Silva and staff.

16a. ELEMENTARY COMPOSITION, CONVERSATION, AND GRAMMAR REVIEW. I; 2 cr. Should also be taken concurrently with 10a. Can be credited by semesters. Prerequisite: Spanish 1b or equivalent. Mr. Neale-Silva and staff.

16b. Elementary Composition, Conversation, and Grammar Review. II; 2 cr. Continuation of above course. Prerequisite: Spanish 16a. Mr. Neale-Silva and staff.

25a. Intermediate Composition and Conversation. I, II; 2 cr. Majors should combine Spanish 25 with Spanish 21. Prerequisite: Spanish 16b. Mr. Neale-Silva and staff.

25b. Intermediate Composition and Conversation. I, II; 2 cr. Continuation of the above course. Mr. Neale-Silva and staff.

27. Spanish Commercial Letter Writing. I, II; 2 cr. Prerequisite: Consent of instructor. Mr. Lyon.

ADVANCED PRACTICE COURSES

112. Composition and Conversation. Yr; 2 cr. Study of constructions, idioms; oral work. Prerequisite: Spanish 25b. Mr. Neale-Silva and staff.

117. Commercial and Industrial Language Practice in Hispanic Countries. II; 2 cr. Study of commercial and technological Spanish. Mr. Rosaldo.

124. Advanced Composition and Conversation. Yr; 2 cr. Analysis of important questions of syntax and style; emphasis on idiomatic, everyday Spanish. Prerequisite: Spanish 112 or graduate standing. Mr. Neale-Silva.

127. Advanced Spanish Grammar. II; 2 cr. A general review of Spanish syntax with practice in the writing of sentences. Mr. Lyon.

190. Spanish Phonetics. I; 2 cr. Theory of Spanish sounds with practical training in pronunciation. Mr. Lyon.

195. Versification and Diction. II; 2 cr. Study of metric forms; analysis, readings. Prerequisite: Spanish 190. Mr. Neale-Silva.

TEACHERS' COURSE

Teaching of Spanish. See School of Education.

PHILOLOGY

128. Historical Spanish Grammar. Yr; 2 cr. An introductory course in Spanish phonology, morphology, and syntax. Prerequisite: Spanish 190 or consent of instructor. Offered 1953–54. Mr. Herriott, Mr. Kasten.

CIVILIZATION

47. Spain of Today. II; 3 cr. Readings and illustrated lectures on the social, economic, political, and intellectual status of present-day Spain. Prerequisite: Spanish 10b. Mr. Mulvihill.

48. Spanish America of Today. I; 3 cr. Readings and lectures on social, economic, and political conditions in Spanish America. Prerequisite: Spanish 10b. Mr. Neale-Silva, Mr. Rosaldo.

150. Spanish Civilization. Yr; 2 cr. Main aspects of the cultural evolution of Spain as a frame of reference for literary manifestations. Conducted in Spanish; illustrated lectures. Prerequisite: 6 credits in third-year reading courses 21 or 23. Offered 1953–54. Mr. Sánchez-Barbudo.

151. Spanish-American Civilization. Yr; 2 cr. Cultural evolution of Latin America from pre-Hispanic days to the present. Conducted in Spanish; illustrated lectures. Prerequisite: 6 credits in third-year reading courses 21 or 23. Offered 1952–53. Mr. Neale-Silva, Mr. Rosaldo.

LITERATURE

(Prerequisite to all 100-courses in Spanish or Spanish-American literature: 6 credits in third-year reading courses 21 or 23. A total of only 6 credits may be credited in third-year reading courses.)

21a. Elementary Survey of Spanish Literature. I; 3 cr. Introduction to the study of Spanish literature (eighteenth to twentieth centuries); readings, discussions, and literary history. Prerequisite: Spanish 10b or equivalent. Mr. Dowling and staff.

21b. Elementary Survey of Spanish Literature. II; 3 cr. Continuation of above course. (Twelfth to seventeenth centuries.) Mr. Dowling and staff.

23a–b. Modern Spanish Readings. Yr; 3 cr. Selected Spanish and Spanish-American novels, dramas, and poems produced since 1898. Historical and literary background. Lectures, translations, analysis and discussions. Prerequisite: Spanish 10b. Mr. Dowling and staff.

80. Supervised Individual Reading. Yr; 2 cr. Not open to Spanish majors. For information see the Chairman of the Department of Spanish and Portuguese. For students of superior standing with a 2.0 average.

100. Thesis. Yr; 2 cr. Mr. Neale-Silva and staff.

101. Advanced Readings in Spanish Literature. Yr; 3 cr. Reading and analysis of representative works of Spanish literature. May not be counted toward an advanced degree. Mr. Mulvihill.

131. Advanced Survey of Spanish Literature. Yr; 3 cr. Literary history of Spain with abundant illustrative readings. Mr. Kasten.

132. Survey of Medieval Literature. Yr; 2 cr. Reading of texts, lexicography, and history. Offered 1953–54. Mr. Kasten.

134. Spanish Renaissance. Yr; 2 cr. A study of the most significant authors and their works from the *Celestina* to Cervantes. Offered 1954–55. Mr. Herriott.

135. Survey of Golden-Age Literature. Yr; 3 cr. Picaresque novel, poetry, and theater of the classical period. Offered 1953–54. Mr. Hesse.

137. Survey of Eighteenth-Century Literature. Yr; 2 cr. Prose, poetry and drama of the classical period. Offered 1953–54. Mr. Lyon.

138. Survey of Nineteenth-Century Literature. Yr; 3 cr. A study of literary manifestations from Romanticism to the generation of 1898. Lectures and discussions. Offered 1953–54. Mr. Sánchez-Barbudo.

139. Survey of Twentieth-Century Literature. Yr; 3 cr. The generation of 1898 and its successors. Offered 1952–53. Mr. Sánchez-Barbudo.

144. Survey of Spanish Poetry. Yr; 2 cr. Principal works and authors of Castilian lyric poetry from the thirteenth century to the present. Offered 1952–53. Mr. Sánchez-Barbudo.

146. Survey of Spanish-American Literature. Yr; 3 cr. Poetry, novel and drama from the colonial period to the present. Offered 1952–53. Mr. Neale-Silva, Mr. Rosaldo.

155. Survey of Hispanic Thought. Yr; 3 cr. Chief intellectual figures and currents of thought in the Hispanic world. Mr. Sánchez-Barbudo.

164. Golden-Age Drama. Yr; 2 cr. Study of the drama from 1580 to 1700. Offered in 1952–53. Mr. Hesse.

165. Cervantes. Yr; 2 cr. Development of Cervantes as craftsman and thinker. Linguistic and philosophical commentary on *Don Quijote* and significant minor works. Mr. Singleton.

170. Nineteenth-Century Drama. Yr; 2 cr. A study of representative dramatists of the period (1800–1898). Lectures, readings, discussions, reports. Mr. Lyon.

176. Spanish-American Essay and Novel. Yr; 2 cr. Principal novelists and essayists of the nineteenth and twentieth centuries. Mr. Neale-Silva, Mr. Rosaldo.

180. Advanced Independent Reading. For students of superior standing with at least a 2.0 average. Consult chairman of department.

200. INDIVIDUAL RESEARCH. Yr; credit commensurate with work accomplished. For graduates only. Staff.

SPANISH AND PORTUGUESE MASTERPIECES IN TRANSLATION. (See COMPARATIVE LITERATURE 55.) Does not carry credit in Spanish.

LATIN-AMERICAN LITERATURE IN ENGLISH TRANSLATION. (See COMPARATIVE LITERATURE 56.) Does not carry credit in Spanish. Mr. Rosaldo.

CERVANTES AND THE SPANISH GOLDEN AGE. (See COMPARATIVE LITERATURE 143.) Does not carry credit in Spanish.

GRADUATE COURSES

201. METHODS OF INVESTIGATION AND BIBLIOGRAPHICAL INFORMATION. Yr; 2 cr. Spanish paleography, problems of textual criticism and bibliographical research. Required of candidates for the doctorate who have not had this training elsewhere. Offered 1954–55. Mr. Kasten.

202. LITERARY CRITICISM IN SPAIN AND SPANISH AMERICA. Yr; 2 cr. Study of the principal currents in literary criticism and literary theory in Spain and Hispanic America.

203. INTRODUCTION TO METHODS OF LITERARY AND LINGUISTIC INVESTIGATION. Yr; 2 cr. Mr. Singleton.

211. SPANISH DIDACTIC LITERATURE. Yr; 2 cr. Moral, philosophical and historical literature of the Middle Ages and the Golden Age. Mr. Kasten.

213. FIFTEENTH CENTURY. Yr; 2 cr. Development of Spanish literature of genres, both prose and verse. Italian influences. Mr. Herriott.

215. SPANISH CHRONICLERS OF THE NEW WORLD. Yr; 2 cr. The idea of the New World and its development in the Hispanic writers of the colonial period. Mr. Rosaldo.

217. EIGHTEENTH-CENTURY LITERATURE. Yr; 2 cr. Studies in the chief trends and authors of the period. Discussion, reports, lectures. Mr. Lyon.

219. COSTUMBRISMO. Yr; 2 cr. The early nineteenth-century "artículo de costumbres" and some of its antecedents. Discussions, reports, lectures. Mr. Lyon.

221. INTRODUCTORY SEMINAR IN SPANISH-AMERICAN LITERATURE: Poesía hispanoamericana contemporanea. Yr. 2 cr. Offered 1953–54. Mr. Neale-Silva, Mr. Rosaldo.

223. INTRODUCTORY SEMINAR IN MEDIEVAL LITERATURE: THE SPANISH EPIC. Yr; 2 cr. Mr. Kasten.

225. INTRODUCTOUY SEMINAR IN DRAMATIC LITERATURE OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Yr; 2 cr. An intensive study of the plays of one dramatist: Lope de Vega, Tirso de Molina or Calderón. Mr. Hesse.

227. INTRODUCTORY SEMINAR IN NON-DRAMATIC LITERATURE OF THE SIXTEENTH AND SEVENTEENTH CENTURIES: CERVANTES. Yr; 2 cr. Offered 1952–53. Mr. Singleton.

229. INTRODUCTORY SEMINAR IN MODERN SPANISH LITERATURE: CONTEMPORARY SPANISH POETRY. Yr; 2 cr. Mr. Mulvihill, Mr. Sánchez-Barbudo.

255. PHILOLOGICAL SEMINAR: OLD SPANISH. Yr; 2 cr. Mr. Kasten.

258. SEMINAR IN HISTORICAL SPANISH SYNTAX AND LEXICOGRAPHY. Yr; 2 cr. Chronological study of representative Spanish texts. Mr. Kasten.

273. ROMANCE PHILOLOGY. Yr; 2 cr. Mr. Kasten.

276. SEMINAR IN SPANISH-AMERICAN LITERATURE: LA NOVELA DE LA SELVA. Yr; 2 cr. Offered 1952–53. Mr. Neale-Silva, Mr. Rosaldo.

282. SEMINAR IN MEDIEVAL LITERATURE. Yr; 2 cr. Mr. Kasten.

284. Seminar in Dramatic Literature of the Sixteenth and Seventeenth Centuries. Yr; 2 cr. Mr. Hesse.

286. Seminar in Non-Dramatic Literature of the Sixteenth and Seventeenth Centuries: Cervantes. Yr; 2 cr. Mr. Singleton.

288. Seminar in Modern Spanish Literature. Yr; 2 cr. Offered 1952–53. Mr. Mulvihill, Mr. Sánchez-Barbudo.

290. Interdepartmental Seminar on Latin America. II; 2 cr. An interdisciplinary inquiry into the factors influencing the use of resources in various regions in Latin America. Prerequisites: Graduate standing, and two semesters of courses on Latin America (or equivalent experience) and consent of the instructor. Mr. Rosaldo and members of other cooperating departments. This course does not carry credit in Spanish or Portuguese.

Romance Philology. (See Comparative Philology 273.) Mr. Kasten.

PORTUGUESE

1a–1b. Elementary Portuguese. Yr; 4 cr. Portuguese grammar, conversation and reading. Mr. Rosa and staff.

10a. Third-Semester Portuguese. I; 3 cr. Reading of Portuguese and Brazilian texts. Prerequisite: Portuguese 1b. Mr. Rosa and staff.

10b. Fourth-Semester Portuguese. II; 3 cr. A continuation of 10a. Prerequisite: Portuguese 10a. Mr. Rosa and staff.

15. Elementary Conversation. Yr; 2 cr. Prerequisite: Portuguese 1b.

25. Intermediate Composition and Conversation. Yr; 2 cr. Grammar review and oral practice. Prerequisite: Two years of Portuguese. Mr. Rosa.

112. Advanced Composition and Conversation. Yr; 2 cr. Advanced oral practice and writing. Prerequisite: Portuguese 25 or consent of instructor. Mr. Rosa.

128. Historical Grammar of Portuguese. I; 3 cr. Prerequisite: Three years of college Portuguese or consent of instructor. Offered 1952–53. Mr. Kasten.

131. Advanced Survey of Portuguese and Brazilian Literatures. Yr; 3 cr. I. Literary history of Portugal; II. Literary history of Brazil with emphasis on the modern period. Mr. Kasten, Mr. Rosa.

150. Portuguese and Brazilian Civilization. Yr; 2 cr. Lectures, readings and class discussions. Prerequisite: Portuguese 10b. Mr. Kasten.

176. Modern Brazilian Novel. Yr; 2 cr. Study of outstanding contemporary Brazilian novelists. Prerequisite: Portuguese 10b. Mr. Kasten.

180. Advanced Independent Reading. Mr. Kasten.

200. Individual Research. Credit commensurate with work accomplished.

204. Camões. Yr; 2 cr. Problems in the drama, lyric and epic poetry of Camões. Mr. Kasten.

SPEECH

Professors Borchers, Ewbank, Haberman, Irwin, Mitchell, Weaver, *chairman;* Associate Professors Brockhaus, Curvin, Dietrich, Gard; Assistant Professors Brembeck, Buerki, R. Stanley; Lecturer J. H. Stanley; Instructor Brittin.

The courses in this department have two main functions: 1. The education of students in the fundamentals of speech (private and public) covering both scientific and artistic aspects —organized knowledge and personal proficiency; 2. The preparation of specially qualified students to become teachers in one or more of the following sections of this field: (a) argu-

mentation and debate, and the composition and delivery of public speeches; (b) reading, acting, and dramatic production; (c) disorders of speech and corrective methods; (d) the psychology and pedagogy of reading and speaking; (e) voice science and phonetics; (f) radio and television speaking, programming, and production. The courses are so arranged as to make possible systematic and progressive study during the sophomore, junior, and senior years. Unless specifically indicated to the contrary, courses in speech are not open to freshmen.

MAJOR. A minimum of 30 credits including courses 1, 2, 3* or 4, 6, 18 or 25, and 141. Twelve credits must be in courses numbered above 100. Upper-group students who have done distinguished work in speech will be permitted to write theses.

THEATER. The well-equipped Wisconsin Union Theater provides unusual facilities for training students in acting and in producing plays. A number of plays are staged each semester.

RADIO. The State stations, WHA and WHA-FM, offer many attractive opportunities for practical experience to competent students who are interested in radio.

SPEECH CLINICS. The Speech and Hearing Clinic, a general diagnostic and training center for all types of speech and hearing disorders, serves as a laboratory for advanced courses in Speech Correction and Pathology, and provides for treating a limited number of university students with defects of speech. Those who desire remedial help should apply early each semester.

The Easter Seal Cerebral Palsy Center in Children's Orthopedic Hospital also provides special training opportunities for qualified students.

FORENSIC ACTIVITIES. The department sponsors and supervises an extensive program of intramural and intercollegiate debates and other speech contests which provide special training for students with unusual talent.

PUBLIC READING. Students especially proficient in reading are given the opportunity to appear on a program of public readings.

**1. FUNDAMENTALS OF SPEECH. I, II; 3, 2, or 1 credits. For *one credit,* lecture course designed to give the student an understanding of the speech function and the principles of effective speech. For *two credits,* recitation devoted to practice, analysis of individual performance in speech, and suggestions for improvement. For *three credits,* recitation and lecture as described above.

Students who expect to take further work in the department should elect Speech 1 in their sophomore year if possible. Not more than 3 credits may be earned in any combination of Speech 1 and Speech 7 and such combination must include the lecture hour of Speech 1. Open to all students except freshmen. Lecture and several recitation sections. Mr. Weaver and staff.

**2. APPLICATION OF SPEECH FUNDAMENTALS. I, II; 3 cr. Application of Speech 1 principles. Concentration on body, voice, language, audience attitude, subject-matter. Emphasis on individual evaluation through rating scales, recordings, sound pictures, reports. Prerequisite: Speech 1. Miss Borchers and staff.

**3. ARGUMENTATION AND DEBATE. I; 3 cr. A study of the theory of argument with practice in preparation and delivery of various types of argumentative speeches. Prerequisite: 2 credits in an elementary course. Mr. Brembeck.

4. ELEMENTS OF PERSUASION. II; 3 cr. An elementary consideration of the psychology of persuasion with practice in the preparation and delivery of various types of persuasive speeches. Prerequisite: 2 credits in an elementary course. Mr. Dietrich.

**6. VOICE TRAINING. I, II; 3 cr. Training and practice designed to improve vocal conditions for all speech purposes. Exercises for flexibility, range, relief from tension, articulation

* See bulletin of the School of Education.
** May be taken by students seeking to meet the Speech proficiency requirement for the University Teachers' Certificate under Option B.

and enunciation. Prerequisite: For majors and minors, Speech 1,* which may be taken concurrently; for other, consent of instructor. Not open to senior majors or minors. Mr. Curvin and staff.

**7. PUBLIC SPEAKING. I, II; 2 cr. For those who wish to develop fundamental skill in direct public address. Special emphasis upon purpose, audience, occasion, and types of speeches. Students taking or having taken Speech 7 may elect the lecture in Speech 1. Not more than 3 credits may be earned in any combination of Speech 1 and Speech 7 and such combination must include the lecture hour of Speech 1. Mr. Brembeck and staff.

8a. EXTEMPORE SPEAKING. I, II; 2 cr. A special course in public speaking open only to freshman physical education men and freshman engineers. Mr. Dietrich and staff.

8b. EXTEMPORE SPEAKING. I, II; 2 cr. A continuation of 8a. Mr. Dietrich and staff.

9. EXTEMPORE SPEAKING. I, II; 3 cr. Lectures and recitation. A special course in public speaking open only to freshman mechanical engineers. Mr. Dietrich and staff.

**13. ADVANCED PUBLIC SPEAKING. II; 2 cr. Continuation of Speech 7. Prerequisite: 2 credits in Speech 1 or 7. Mr. Brembeck.

16. ELEMENTS OF EXPRESSIVE ACTION. I, II; 2 cr. Consideration of bearing, posture, and gesture, individually and in groups. Basic preparation for all types of speech activities. Prerequisites: For majors and minors, Speech 1* and 6 or concurrent registration; for others, sophomore standing and consent of instructor. Not offered 1952–53.

18. ORAL INTERPRETATION OF LITERATURE. II; 2 cr. Emphasis on understanding and appreciation of literature and on ways of arriving at meanings through denotation, connotation, imagery, mood, and theme. Prerequisites: For majors and minors, Speech 6; for others, junior standing and consent of instructor. Mr. Curvin.

19. ELEMENTS OF DRAMATIC PRODUCTION. II; 2 cr. Theater organization and business management; play analysis: fundamentals of acting, directing, staging, lighting, costuming, and make-up. Prerequisites: Sophomore standing and consent of instructor. Mr. Mitchell.

22. DRAMATIC READING AND PLATFORM ART. I; 3 cr. Study and oral interpretation of different types of literature. Problems of interpretative and impersonative forms. Cutting of stories. Development of taste, judgment, appreciation. Consideration of contest problems. Prerequisites: Speech 18. Mr. Curvin.

25. CORRECTION OF SPEECH DISORDERS. I; 3 cr. An elementary consideration of the disorders of speech and their treatment. Prerequisites: Speech 1* and junior standing. Mr. Irwin.

29. FUNDAMENTALS OF ACTING. I; 2 cr. Prerequisites: For majors and minors, Speech 16 or concurrent registration; for others, junior standing and consent of instructor. Mr. Dietrich.

39. HISTORY OF THE THEATER. II; 2 cr. A history of the physical theater and the written drama. Prerequisite: Sophomore standing. Mr. Mitchell.

40. FUNDAMENTALS OF STAGECRAFT. I; 2 cr. History of scenic art. Elementary theory and practice of stagecraft. Prerequisite: Consent of instructor. Mr. Buerki.

100. SENIOR THESIS. Yr; 2 cr. Upper-group status. Staff.

**105. SPEECH COMPOSITION. I; 3 cr. An advanced course stressing theories of style, study of model speeches and writing of speeches. Prerequisite: For majors and minors, Speech 2, 3, or 4; for others, consent of instructor. Mr. Haberman.

107. ART HISTORY OF THE THEATER AND THE STAGE FROM ANTIQUITY TO PRESENT. I. (See ART HISTORY 107.)

* Wherever listed as a prerequisite, Speech 1 signifies 1 credit in the lecture hour of Speech, plus 2 practice hours in either Speech 1 or 7.

** May be taken by students seeking to meet the Speech proficiency requirement for the University Teachers' Certificate under Option B.

108. British Drama 1660–1860. I. (See English 109.)

109. British Drama 1860 to the Present. II. (See English 109.)

**110. Elements of Broadcasting. I, II; 2 or 3 cr. General introduction to broadcasting, practice in preparing, rehearsing, and producing programs of various types. Prerequisites: For majors and minors, Speech 6; for others, junior standing and consent of instructor. Mr. Ewbank and staff.

114. Regional Writing, The Story and the Play. II; 2 cr. Work in collecting regional materials and adapting them to story, dramatic, and radio forms. Prerequisite: Consent of instructor. Mr. Gard.

115. Broadcasting Workshop. II (limited enrollment); 3 cr. Acting, directing and producing various types of radio programs. Prerequisite: Speech 110. Mr. Stanley.

116. Radio, Television and Society. I; 2 or 3 cr. The history of radio program development; comparative study of broadcasting practices in other countries; radio and television as social forces and cultural influences Prerequisite: Junior standing. Mr. Ewbank.

117. Writing for Radio. I; 2–3 cr. Analysis of model scripts. Writing continuity and various types of radio programs. Prerequisite: Speech 110. Mrs. Stanley.

119. Stage Direction. Yr; 3 cr. Principles and practice of play direction. Prerequisites: For majors and minors, Speech 29 and 39; for others, senior standing and consent of instructor. Mr. Dietrich.

120. Playwriting. I; 3 cr. Prerequisites: Junior standing and consent of instructor. Mr. Mitchell.

121. Voice Science. I; 3 cr. The anatomy, physiology, and physics of voice production with a survey of experimental work. Prerequisites: For majors and minors, Speech 2 and junior standing; for others, consent of instructor. Mr. Weaver.

122. Advanced Dramatic Reading and Platform Art. II; 3 cr. Study and presentation of sonnets and ballads, and dialects in monolog, story, and play. Audience problems in choice and arrangement of programs. Cutting and public reading of novels. Prerequisite: Speech 22 or consent of instructor. Mr. Curvin.

123. Interpretation of Classic Literature. II; 3 cr. An advanced application of principles and techniques of oral interpretation to classic forms of literature. Prerequisites: For majors and minors, Speech 22 and consent of instructor; for others, senior standing and consent of instructor. Mr. Curvin.

125. Speech Pathology. I; 3 cr. An advanced study of the nature and underlying causes of disorders of speech. Prerequisites: For majors and minors, Speech 2 and 25; for others, Speech 25 or consent of instructor. Mr. Irwin.

126. Advanced Correction of Speech Disorders. II; 3 cr. A technical and professional course in the rehabilitation of speech. Clinical practice. Prerequisites: For majors and minors, Speech 2 and 25; for others, Speech 25 or consent of instructor. Mr. Irwin.

127. Language Disturbances Related to Brain Injury. I; 3 cr. A study of speech diagnostic and therapeutic procedures in cerebral palsy and aphasia. Integrated with work in diagnostic and training centers at University Hospitals. Prerequisites: Speech 125 and consent of instructor. Miss Brittin.

129. Advanced Problems in Acting. II; 2 cr. Acting problems arising from differences in the type and style of dramatic production with emphasis upon individual and group performance. Prerequisites: Speech 29 or consent of instructor. Mr. Dietrich.

130. The American Theater. Colonial Period to Civil War. I; 3 cr. History of the theater as an institution of national life and culture. Prerequisite: Junior standing. Mr. Curvin.

131. The American Theater. Civil War to Present Day. II; 3 cr. Prerequisite: Junior standing. Mr. Curvin.

135. Advanced Argumentation and Debate. II; 3 cr. Offered 1952–53 and in alternate years. Analysis of classic debates and practice in argumentative writing and speaking. Prerequisite: Speech 3 or 4 or consent of instructor. Mr. Brembeck.

136. Theory and Practice of Group Discussion. II; 3 cr. Analysis of and practice in various types of discussion. Objective studies of the influence of discussion on opinions and attitudes. Prerequisite: Speech 3 or 4 or consent of instructor. Mr. Ewbank.

140. Stage Design. (See Art Education 140.) Yr; 2 cr. I. General principles of design in relation to scenic designing. Individual and group presentations on model stage. II. Advanced application of these principles; scenic construction and lighting. Prerequisite: Speech 40, or graduate standing in speech, or junior standing in art education. Mr. Buerki, Mr. Logan.

141. Psychology of Speech. II; 3 cr. The place and function of speech in individual and group social behavior. Prerequisites: For majors and minors, junior standing and Speech 2; for others, consent of instructor. Mr. Weaver.

143. Modern Acoustic Instrumentation. (See Education 143.) II; 3 cr. Electronic principles employed in the audiometer and hearing aids. Selection and maintenance of group and individual instruments. Prerequisites: Consent of instructor. Mr. Irwin.

154. History of Ancient Public Address. II; 3 cr. A survey of orators, oratory, and oratorical theory in Greece and Rome from 900 B.C. to 200 A.D. Prerequisite: Consent of instructor. Mr. Haberman.

155. History of Public Address, 200 A.D. to 1700 A.D. II; 3 cr. A history of public address with emphasis on 17th-century England. Prerequisite: Consent of instructor. Offered 1953–54. Mr. Haberman.

156. History of American Public Address. I; 2–3 cr. The history of American public address from 1788–1930 with a consideration of outstanding public speakers in various areas of national life. Prerequisite: Consent of instructor. Mr. Ewbank.

157. History of British Public Address. II; 3 cr. A study of British public address from 1750 to the present. Prerequisite: Consent of instructor. Offered 1952–53.

179. Field Work in Speech Correction. Yr; 3 cr. Prerequisite: Senior standing in the Child Development major. Mr. Irwin.

185. Introduction to Phonetics. (See English 185.) I, II; 3 cr. Prerequisites: For majors and minors, Speech 2 or 25 or consent of instructor; for others, consent of instructor. I, Mr. Hanley; II, Mr. Irwin.

186. Advanced Phonetics. II. (See English 186.)

200. Research. Yr; 1–4 cr. Mr. Weaver and staff.

205. Seminar, Rhetoric and Oratory. I; 2 cr. Mr. Haberman.

206. Seminar, British and American Theories of Public Address. II; 2 cr. Mr. Haberman.

210. Seminar, Radio. II; 2 cr. Mr. Ewbank.

219. Seminar, Dramatic Production. II; 2 cr. Mr. Mitchell.

220. Seminar, Theory of Oral Interpretation. II; 2 cr. Mr. Curvin.

223. Lecture-Recital and Criticism. I; 3 cr. Oral study of classic literature. Esthetic principles in criticism of material, situation, and performance. Lecture-recital developed and presented. Prerequisite: Speech 122 or consent of instructor. Mr. Curvin.

227. Seminar, Speech Pathology. Yr; 2 cr. Mr. Irwin.

229. SEMINAR, DRAMATURGY. I; 2 cr. Mr. Curvin.

255. SEMINAR, PERSUASION. I; 2 cr. Mr. Ewbank.

TEACHERS' COURSES

METHODS OF REHABILITATION OF SPEECH. II. See School of Education.

METHODS IN SPEECH READING FOR CHILDREN. I. See School of Education.

TEACHING OF SPEECH IN HIGH SCHOOL. I, II. See School of Education.

TEACHING OF SPEECH IN COLLEGE. I. See School of Education.

HEARING REHABILITATION. II. See School of Education.

ZOOLOGY

PROFESSORS EMLEN, *chairman*, HASLER, HERRICK, MCSHAN, MEYER, NOLAND, WOLFE; ASSOCIATE PROFESSORS BILSTAD, CROW, MORRISON, RIS; ASSISTANT PROFESSORS FRASER, KRAMER, NEESS, WHITEHEAD.

MAJOR. Instruction in the Department of Zoology is designed to give the student basic training in zoology and an opportunity to concentrate in one of four fields: (a) invertebrate zoology; (b) vertebrate zoology; (c) ecology; (d) physiology. The basic training must include Zoology 1, 141, 142, 143 and 144, or their alternatives as listed in the table:

FIELD	GENERAL COURSE	ALTERNATIVES
Introductory	Zool. 1	Zool. 2, 17 or I.L.S. 33–34; plus Zool. 6 or 107
Invertebrate zoology	Zool. 141	Zool. 119; and 112 or 118
Vertebrate zoology	Zool. 142	Zool. 104 or 105
Ecology	Zool. 143	Two of the following: Zool. 115, 124, 140
Physiology	Zool. 144	Physiology 3 or 115

A minimum of 30 credits is required, including not more than one introductory course (Zool. 1, 2, 17 and I.L.S. 33–34). Zoology majors in the School of Education are required to take Botany 1 or 17 as part of the major. Those preparing for graduate study in zoology or related fields should take at least one year each of botany, chemistry, and physics; mathematics through calculus; and should have a reading knowledge of two foreign languages.

Success in planning the undergraduate and graduate training depends to a great extent upon early student-adviser conferences. Therefore, freshmen and sophomores who anticipate majoring in this department should discuss their program with some member of the zoology staff as soon as possible. Those wishing to do research under Zoology 100 (thesis) should discuss the proposed work with a professor in zoology before the close of the junior year.

1. ANIMAL BIOLOGY. I, II; 5 cr. Anatomy and physiology of the vetebrate body; introduction to histology, embryology, heredity and evolution. Miss Bilstad, Mr. Fraser, Mr. Wolfe and staff.

2. GENERAL ZOOLOGY. I; 5 cr. Classification, structure, physiology, and life history of representative types which are of interest to man. Bird trips. Mr. Hasler and staff. (May be elected as alternative to Zoology 1 for fulfilling the Letters and Science requirement in science by nonprofessional and non-zoology majors.)

6. HEREDITY. I, 3 cr. (Same as GENETICS 6.) Principles of heredity and their application to plants, animals and man. This course is designed for students who desire a general elementary course. (Those who desire a laboratory course and who can satisfy the prerequisites should elect Zoology 106.) Lectures and discussion. Mr. Crow, Mr. Shackelford.

17. SURVEY OF ZOOLOGY. II; 3 cr. Introduction to the study of zoology for nonprofessional students. Open to freshmen but not to students who take Zoology 1. Mr. Neess and staff.

100. SENIOR THESIS. Yr; 2 cr. Original individual work for zoology majors of upper-group status. Requires permission of adviser in zoology. Staff.

104. Comparative Anatomy of Vertebrates. I; 5 cr. Lectures comparing structure of organ systems in the different vertebrate groups. Laboratory dissection of shark, mudpuppy and cat. Prerequisite: Introductory course in zoology. Mr. Wolfe.

105. Vertebrate Embryology. II; 5 cr. The early embryology of vertebrates and the development of organ systems. Prerequisite: Introductory course in zoology. Mr. Meyer.

106. Genetics. I; 3 cr. (Same as Genetics 106.) Principles of genetics and their application to plants, animals and man. (For a non-laboratory course without prerequisites, see Zoology 6.) Lectures, discussion, and laboratory. (Laboratory alone may be elected for 1 credit.) Prerequisites: College algebra and a year each of college biology and chemistry, or consent of instructor. Mr. Crow, Mr. Shackelford.

107. Organic Evolution. II; 2 cr. A discussion of organic evolution and how it has taken place. Prerequisites: Introductory course in zoology and junior standing or consent of instructor. Mr. Emlen.

108. Protozoology. II; 3 cr. Structure, physiology, life history, and adaptations of protozoa, especially the non-parasitic forms. Prerequisite: One year of biological science. Offered 1953–54 and in alternate years. Mr. Noland.

109. Advanced Vertebrate Embryology. I; 3 cr. The development of organs considered from the functional and comparative standpoints. Each student undertakes a special problem in organogenesis. Offered 1952–53 and in alternate years. Prerequisites: Zoology 105 and consent of instructor. Mr. Meyer.

110. Insect Physiology. II; 3 cr. (Same as Entomology 110.) Physiology of the organs of the insect body. Prerequisite: General entomology. Offered 1953–54 and in alternate years. Mr. Beck.

111. Microtechnique. I, II; 3 cr. Training in the preparation of histological material. Fixing, imbedding, sectioning and staining of animal tissues. Prerequisite: Introductory course in zoology. Miss Bilstad, Mrs. Whitehead.

112. Medical Entomology. I; 3 cr. (Same as Entomology 112 and Veterinary Science 112.) A study of arthropods and how they affect their hosts together with a consideration of the pathogenic protozoa which may be transmitted by them. Prerequisite: Introductory course in zoology or Veterinary Science 1. Offered 1952–53 and in alternate years. Mr. Herrick, Mr. Dicke.

113. Comparative Animal Histology. I; 4 cr. A comparative study of the tissues of vertebrates. Prerequisite: Zoology 104 or 105. Miss Bilstad.

114. Fishes, Amphibians and Reptiles. I; 3 cr. The classification, natural history and geographic distribution of fishes, amphibians and reptiles. Prerequisite: Introductory course in zoology. Offered 1952–53 and in alternate years. Mr. Neess.

115. Field Ornithology. II; 3 cr. Identification and life histories of Wisconsin birds. Objectives and methods of modern field studies of birds. Laboratory, field trips. Prerequisite: A college course in a biological science. Mr. Emlen.

116. Fundamentals of Cytology. I; 3 cr. (Same as Botany 116.) Microscopic structure, chemical composition and function of cytoplasmic and nuclear components. Mitosis and meiosis. Relations to heredity, reproduction, development and cellular physiology. Prerequisites: A college course in zoology or botany, Chemistry 1, junior standing. Mr. Ris, Mr. Sander.

118. General Entomology. II; 3 cr. Structure, physiology, classification, natural history and evolution of insects. Laboratory includes making a collection of local insects. Prerequisite: Introductory course in zoology. Mr. Kramer.

119. Animal Parasites of Man. II; 3 cr. Morphology, life history, diagnosis and control of the important animal parasites affecting man. For medical students and others interested

in public health problems. Prerequisite: Introductory course in zoology. Mr. Herrick, Mr. Lysenko.

120. HELMINTHOLOGY. I; 3 cr. (Same as VETERINARY SCIENCE 120.) A study of the helminths of various animals including man. Prerequisite: Introductory course in zoology or Veterinary Science 1. Offered 1953–54 and in alternate years. Mr. Herrick.

121. INTERNAL ANATOMY AND HISTOLOGY OF INSECTS. I; 3 cr. (Same as ENTOMOLOGY 121.) Anatomy and histology of the internal organs of representative insects from various orders; slide mount techniques for whole insects and their parts; individual study on an insect of the student's choice. Prerequisite: A course in general entomology. Mr. Kramer.

122. ENDOCRINOLOGY. II; 3 cr. The physiology of the glands of internal secretion, including those concerned with reproduction. Prerequisite: Zoology 142 or 104 or 105; Chemistry 1a, or consent of instructor. Mr. Meyer.

124. CONSERVATION OF AQUATIC RESOURCES. I; 2 cr. General limnology; study of aquatic habitats and communities and their conservation. Prerequisite: Introductory course in zoology. Mr. Hasler.

125. ECOLOGY OF FISHES. II; 3 cr. Physiological, taxonomic, ecological and behavioral aspects in fishes. Laboratory, field trips. Prerequisites: One semester each of zoology and chemistry and consent of instructor. Offered 1953–54 and in alternate years. Mr. Hasler, Mr. Neess.

126. FIELD ZOOLOGY. I; 3 cr. Field trips; observing habitats and collecting of local animals; identification and study of collected species in the laboratory. Prerequisite: Zoology 141 or consent of instructor. Mr. Neess.

127. COMPARATIVE PHYSIOLOGY. II; 2 cr.; with laboratory, 4 cr. The physiology of vertebrates and invertebrates in relation to their taxonomy and environment. Prerequisite: A course in animal physiology. Mr. Morrison.

128. MAMMALOGY. I; 3 cr. Classification, structural and physiological adaptations, life processes and environmental relations of mammals; laboratory and field work. Prerequisite: Zoology 143 or consent of instructor. Offered 1952–53 and in alternate years. Mr. Emlen.

129. ADVANCED ORNITHOLOGY. II; 3 cr. Structure, phylogenetic relations and adaptations of birds. Laboratory dissection of representative birds; studies of museum skins. Prerequisites: Zoology 104 or 142 and 115 or its equivalent. Offered 1953–54 and in alternate years. Mr. Emlen.

132. INVERTEBRATE EMBRYOLOGY. I; 3 cr. A comparative study of development in insects, molluscs and other invertebrates. Prerequisites: Zoology 119 or 141, and consent of instructor. Mr. Fraser.

136. HUMAN GENETICS. II; 2 cr. (Same as GENETICS 136.) Principles of heredity and variation in man. Prerequisite: Zoology 6 or Genetics 6. Mr. Crow.

140. INSECT ECOLOGY. II; 3 cr. (Same as ENTOMOLOGY 140.) Insects in relation to their environment. Prerequisite: A course in zoology or entomology. Offered 1953–54 and in alternate years. Mr. Medler.

141. GENERAL INVERTEBRATE ZOOLOGY. II; 3 cr. Structure, function, classification and life histories of the major groups of invertebrates. Prerequisite: Introductory course in zoology. Mr. Fraser.

142. GENERAL VERTEBRATE MORPHOLOGY. I; 3 cr. Morphological characteristics of the Chordata including the early embryology of the frog. Prerequisite: Introductory course in zoology. Offered 1953–54 and in alternate years. Mr. Wolfe.

143. ECOLOGY. I; 3 cr. The relationships between living things and their environment; the dependence of one form of life on another; community organization; succession; behavior of populations. Prerequisites: Introductory course in zoology; one semester of chemistry or consent of instructor. Mr. Neess.

144. General Physiology. I; 3 cr. Introduction to functional mechanisms common throughout the animal kingdom; especially for majors in zoology and related sciences. Prerequisites: 10 credits of chemistry, 10 credits of zoology, physics advised. Mr. Morrison.

151. Advanced Invertebrate Zoology. II; 4 cr. Lectures on classical and current invertebrate research; dissection of invertebrates in laboratory; reports and discussion. Prerequisite: General invertebrate zoology. Offered 1952–53 and in alternate years. Mr. Noland.

180. Special Studies in Zoology. I, II; 2–5 cr. Advanced zoological work not covered in regular courses. Prerequisites: Upper-group status and consent of instructor. See Section 18, page 43. Staff.

200. Graduate Research. I, II; 2–5 cr. Staff.

201. Proseminar. I, II; 1 cr. History of zoology. Not given in first semester 1952–53. Mr. Kramer and Staff.

202. Invertebrate Zoology Journal Club. Yr; 1 cr. Mr. Fraser, Mr. Kramer, Mr. Noland.

211. Special Research Techniques. I; 3 cr. Theory and practice of certain special techniques used in zoological research; laboratory projects in which these techniques are employed. Prerequisites: Chemistry 120, 121 and consent of instructor. Mr. McShan.

216. Cytology. Yr; 3 cr. An introduction to cytological technique and the general field of cellular biology. Prerequisites: Microtechnique and Chemistry 1a. Mr. Ris.

217. Zoological Serology. II; 3 cr. Development and application of serological techniques. Laboratory projects. Prerequisites: Zoology major or consent of instructor and Chemistry 120. Offered 1952–53 and in alternate years. Mr. Wolfe.

218. Cytology Journal Club. Yr; 1 cr. Mr. Ris.

219. Parasitology Journal Club. Yr; 1 cr. Mr. Herrick.

220. Seminar. Yr; 0 cr. Oral reports and discussions of advanced zoological subjects. Mr. McShan.

222. Endocrinology Journal Club. Yr; 1 cr. Mr. Meyer, Mr. McShan.

223. Endocrinology of Reproduction. I; 3 cr. The anatomy and physiology of the reproductive organs; the chemistry and action of hormones concerned with reproduction. Prerequisites: Senior or graduate standing and consent of instructor. Offered 1953–54 and in alternate years. Mr. Meyer.

224. Limnology Journal Club. Yr.; 1 cr. Mr. Hasler, Mr. Neess.

229. Journal Club in Ornithology and Mammalogy. Yr; 1 cr. Mr. Emlen.

230. Journal Club in Zoological Serology. Yr; 1 cr. Mr. Wolfe.

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ROWLANDS, WALTER AUGUSTUS, *B.S.*, Professor of Agricultural Economics; **Director of Branch Stations**
RUSY, BEN FRANKLIN, *B.S.*, Professor of Agricultural Extension

SARLES, WILLIAM BOWEN, *Ph.D.*, Professor of Bacteriology
SCHAARS, MARVIN ARNOLD, *Ph.D.*, Professor of Agricultural Economics
SCHOENEMAN, JOHN ALFRED, *B.S.*, Instructor in Horticulture
SCHORGER, ARLIE WILLIAM, *Ph.D.*, Professor of Wildlife Management
SCHWALBACH, JAMES ALFRED, *M.S.*, Assistant Professor of Rural Sociology
SCHRINER, SAMUEL WINSTON, *B.S.*, Instructor in Agricultural Education
SEWELL, WILLIAM HAMILTON, *Ph.D.*, Professor of Rural Sociology
SHACKELFORD, RICHARD MAX, *Ph.D.*, Assistant Professor of Genetics
SHANDS, HAZEL LEE, *Ph.D.*, Professor of Agronomy
SHANDS, RUEBUSH GEORGE, *Ph.D.*, Professor of Agronomy
SHENEFELT, ROY DAVID, *Ph.D.*, Associate Professor of Entomology
SHOEMAKER, KARL GARDNER, *M.A.*, Associate Professor of Agricultural Economics
SIMON, JOSEPH, *D.V.M.*, Assistant Professor of Veterinary Science
SMITH, DALE WILFRED, *Ph.D.*, Associate Professor of Agronomy
SMITH, DAVID CLYDE, *Ph.D.*, Professor of Agronomy
SMITH, VEARL ROBERT, *Ph.D.*, Professor of Dairy Husbandry
SMITH, WILLIAM KENNETH, *Ph.D.*, Associate Professor of Genetics and Agronomy
SNELL, ESMOND EMERSON, *Ph.D.*, Professor of Biochemistry
SOMMER, HUGO HENRY, *Ph.D.*, Professor of Dairy Industry
SORDEN, LELAND GEORGE, *B.S.*, Assistant Professor of Agricultural Extension
SORENSEN, DALE KENWOOD, *M.S.*, *D.V.M.*, Instructor in Veterinary Science
SPRAIN, DONALD GEORGE, *B.S.*, Instructor in Dairy Husbandry
STAHMANN, MARK ARNOLD, *Ph.D.*, Associate Professor of Biochemistry
STALLARD, JOHN EARL, *B.S.*, Assistant Professor of Dairy Husbandry
STANIFORTH, SYDNEY DALTON, *Ph.D.*, Assistant Professor of Agricultural Economics
STANLEY, DUANE DOUGLAS, *B.S.*, Instructor in Agricultural Education
STEENBOCK, HARRY, *Ph.D.*, *Sc.D.*, Professor of Biochemistry
STITH, DICK JORDAN, *B.S.*, Instructor in Agricultural Engineering

STONE, WILLIAM HAROLD, *M.S.*, Instructor in Genetics
STRANG, ALLEN JOHN, *B.A.*, Lecturer in Agricultural Engineering
STROMMEN, ARTHUR MALCOLM, *M.S.*, Professor of Agronomy
STRONG, FRANK MORGAN, *Ph.D.*, Professor of Biochemistry
STRUCKMEYER, BURDEAN ESTHER, *Ph.D.*, Associate Professor of Horticulture
SUMNER, WILLIAM ALLISON, *Ph.M.*, Professor of Agricultural Journalism
SUND, JULIAN MAGNUS, *M.S.*, Assistant Professor of Agronomy
SUNDE, MILTON LESTER, *Ph.D.*, Assistant Professor of Poultry Husbandry
SWANSON, ARTHUR MARTIN, *Ph.D.*, Associate Professor of Dairy Industry
SWANSON, RANDALL COVER, *B.S.*, Associate Professor of Agricultural Engineering

TANNER, CHAMP B., *Ph.D.*, Assistant Professor of Soils
THOMSEN, LOUIS CHARLES, *B.S.*, Professor of Dairy Industry
TODD, ARLIE C., *Ph.D.*, Associate Professor of Veterinary Science
TORRIE, JAMES HIRAM, *Ph.D.*, Professor of Agronomy
TRENK, FRED BENJAMIN, *M.S.*, Professor of Agricultural Engineering
TRUOG, EMIL, *M.S.*, Professor of Soils
TYLER, WILBER JONES, *Ph.D.*, Associate Professor of Dairy Husbandry

ULBERG, LESTER C., *M.S.*, Instructor in Genetics

VANDERVEST, WALTER LOUIS, *M.S.*, Assistant Professor of Agronomy
VERGERONT, GLEN WALLACE, *B.A.*, Assistant Professor of Dairy Husbandry
VOIGT, GARTH KENNETH, *Ph.D.*, Instructor in Soils

WADE, EARL KENNETH, *M.S.*, Assistant Professor of Plant Pathology
WAHL, MILTON REGINALD, *B.S.*, Instructor in Dairy Plant
WALKER, JOHN CHARLES, *Ph.D.*, Professor of Plant Pathology
WALLENFELDT, EVERT, *M.S.*, Professor of Dairy Industry
WECKEL, KENNETH GRANDVILLE, *Ph.D.*, Professor of Dairy Industry
WEISBLAT, ABRAHAM MELVIN, *B.A.*, Instructor in Agricultural Economics
WERNER, GEORGE MCKINLEY, *B.S.*, Professor of Dairy Husbandry
WHITE, MAURICE EVERETT, *M.S.*, Assistant Professor of Agricultural Journalism
WILDE, SERGIUS ALEXANDER, *F.E., Sc.D.*, Professor of Soils
WILEDEN, ARTHUR FREDERICK, *M.S.*, Professor of Rural Sociology
WILKENING, EUGENE ARTHUR, *Ph.D.*, Assistant Professor of Rural Sociology
WILKINSON, J. FRANK, *B.S.*, Associate Professor of Agricultural Education; Director, Farm Short Course
WILLIAMS, JESSE NOAH, JR., *Ph.D.*, Assistant Professor of Biochemistry
WILSON, GEORGE DONALD, *M.S.*, Instructor in Animal Husbandry
WILSON, JOE BRANSFORD, *Ph.D.*, Associate Professor of Bacteriology
WILSON, PERRY WILLIAM, *Ph.D.*, Professor of Bacteriology
WINDER, WILLIAM CHARLES, *Ph.D.*, Assistant Professor of Dairy Industry
WIPF, F. LOUISE, *Ph.D.*, Instructor in Veterinary Science
WITZEL, STANLEY ARTHUR, *M.S.*, Professor of Agricultural Engineering
WOJTA, ALFRED JOSEPH, *B.S.*, Assistant Professor of Agricultural Engineering and Soils
WORNER, NANCY WATTS, *B.S.*, Instructor in Genetics
WRIGHT, ANDREW HAMILTON, *M.S.*, Professor of Agronomy
WRIGHT, EARL ORVILLE, *B.S.*, Instructor in Dairy and Food Industry
WRIGHT, GEORGE L., *B.S.*, Associate Professor of Agricultural Extension
WRIGHT, MADISON JOHNSTON, *Ph.D.*, Assistant Professor of Agronomy

ZEASMAN, OTTO REINHART, *B.S.*, Professor of Soils
ZEHNER, CLOYD ERNEST, *B.S.*, Assistant Professor of Dairy Husbandry
ZIEGLER, GEORGE ALBERT, *B.S.*, Assistant Professor of Horticulture

COLLEGE OF AGRICULTURE

The College of Agriculture performs three distinct functions for the citizens of Wisconsin: (1) It provides, with the co-operation of the other schools and colleges of the University, collegiate instruction in agriculture and its related fields; (2) it conducts, through the organization of its Experiment Station, research in the natural and social sciences as they relate to agriculture and homemaking; and (3) it disseminates to the farmers and homemakers of the state, through its Agricultural Extension organization, information on the latest research findings that pertains to the problems of farming and homemaking. The content of this bulletin deals exclusively with the instructional function of the College of Agriculture.

OPPORTUNITIES IN AGRICULTURE

Young men, particularly those with a farm background or those who have lived in rural communities and understand rural problems, will find many opportunities in the broad field of agriculture. These opportunities fall into four general classifications, namely: (1) farming; (2) agricultural teaching and extension work; (3) agricultural commerce and industry; and (4) agricultural research.

FARMING—There is opportunity for success in farming. The agricultural college graduate may be trained in the application of modern up-to-date methods which today are indispensable to profitable farming. He has had an opportunity to broaden greatly his perspective and to increase his capacity to deal effectively with farm problems. Consequently, the qualified graduate may do well in a managerial capacity for another farm owner or in directing his own farming enterprise.

TEACHING AND EXTENSION WORK—In many rural communities, vocational agriculture instructors are teaching high-school youth the techniques of improved scientific farming methods. County agricultural agents, agricultural college extension specialists, and agricultural extension representatives in the United States Department of Agriculture are effectively disseminating among the farm youth and farmers of the various states information on the latest agricultural methods and practices made available by the agricultural experiment stations. Only men with adequate farm background and good training in an agricultural college may hope for placement in agricultural teaching or extension work.

AGRICULTURAL COMMERCE AND INDUSTRY—In the business world a considerable demand for agricultural college graduates exists. Private and governmental financial institutions engaged in farm loan activities, and newspaper, advertising and radio broadcasting agencies have taken many agriculturally trained graduates. Others have been absorbed by canning, feed and seed, fertilizer, dairy products, meat packing, commercial hatchery, and farm implement companies.

AGRICULTURAL RESEARCH—Agricultural experiment stations and various federal and privately owned agencies find need for trained men who have specialized in some one phase of natural or social science relating to agriculture. To equip himself best for a position in the field of agricultural research, a student should continue his study beyond the usual four years of college and plan to earn a master's or doctor of philosophy degree in the field of his special interest.

FACILITIES AND STAFF

The College of Agriculture possesses splendid physical facilities for conducting its research and instructional work. Prepared to provide training in nineteen related agricultural fields, the College of Agriculture has a staff of highly trained men of professional rank.

CAMPUS ACTIVITIES

Students enrolled in the College of Agriculture will find several active student organizations on the agricultural campus. In addition to maintaining the *Wisconsin Country Magazine,* student monthly publication, from which those who are interested may receive rich, practical experiences in writing, soliciting advertising, circulation problems, newspaper financing, or editing, students also support the following organizations:

Alpha Zeta—A chapter of the national honorary agricultural fraternity; *Agricultural Engineers*—for students in agricultural engineering; *Babcock Dairy Science Club*—for students interested in dairy industry; *Blue Shield*—a club for students interested in rural life and those who want to become rural workers and leaders; *Future Farmers of America*—a collegiate club consisting of former F.F.A. members and others who plan to teach vocational agriculture; *Landscape Council Ring*—an organization for students in landscape gardening; *Saddle and Sirloin Club*—for students interested in the breeding of livestock. This club sponsors the annual Wisconsin Little International Livestock and Dairy Shows; *U. W. 4-H Club*—former 4-H Club members comprise the membership of this group; and *U. W. Poultry Club*—for students interested in the poultry industry.

Serving to integrate the activities of the above mentioned agricultural organizations, in addition to those which are open only to students in Home Economics, is the *Agricultural–Home Economics Student Council* which has two representatives from each of the established groups. The council sponsors all of the agricultural campus all-student functions and seeks to promote a closer relationship between the faculty and student body.

ADMISSION

Requirements for admission to the College of Agriculture will be found in the General Information bulletin.

STUDENT EXPENSE

For information regarding living costs, tuition and fees, and student employment, consult the General Information bulletin.

LOAN FUNDS AND UNDERGRADUATE SCHOLARSHIPS

Students should consult the General Information bulletin for a list of available scholarships and loan funds. Many of these are open to all students in the University while others are limited. Attention is directed to the funds establishing scholarships and loans for students enrolled in Agriculture.

Twenty-seven scholarships, varying from $100 to $150 each, will be awarded to *freshmen* in the agricultural courses who are residents of Wisconsin. An essay on an assigned topic must be presented, together with references and other information, before July 15.

Henry Steenbock Fellowship—Endowed by Professor Harry Steenbock and his sister Mrs. Robert Bruce Brinsmade, in honor of their father, for seniors in Agriculture.

Peter Young Scholarships—Awarded to junior students who qualify for the senior year in Agriculture and Home Economics. For information consult the Associate Dean, College of Agriculture.

Agricultural Loan Fund—For information address the Associate Dean, College of Agriculture.

E. R. Jones Loan Fund—For students in the College of Agriculture.

Henry A. and Minnie P. Huber Scholarship Loan Fund—For scholarship loans to farm boys and girls who are interested in the study of agriculture and farm management.

Agricultural Student Council Loan Fund—For students enrolled in the College of Agriculture.

Daughters of Demeter Loan Fund—For students enrolled in the College of Agriculture.

For further information regarding application for the above loans, scholarships or Babcock House, write Associate Dean V. E. Kivlin, College of Agriculture, Madison 6, Wisconsin.

ROOM AND BOARD

THE UNIVERSITY RESIDENCE HALLS

Halls for Men. The university halls for men are on Lake Mendota away from the city, yet only a short distance from class and lecture, in a beautiful natural setting. The location has every physical advantage: the lake offers many opportunities for summer and winter recreation; the university intramural playing fields are adjacent; there is the privacy of a little community, with inclusion in the University as a whole. The halls are modern and fireproof, the student rooms attractive and well furnished. (See General Information bulletin for complete information.)

The Wisconsin Union. In the Union the University provides a variety of dining services for students, operated on a cost basis and under the supervision of trained dietitians. The combined dining rooms in the Union accommodate 3,500 students a day; the cafeteria, the largest room, serves three meals daily, featuring a low-cost student special. Every type of dining preference is met by the Union and costs are very low.

Co-operative Houses for Men. The University owns and operates five co-operative houses for men located in the first block east of the campus near the library, the Wisconsin Union, the gymnasium, student churches, the lake, tennis courts, and the business district. Together they accommodate 120 men.

Babcock House, a co-operative house for men students in the College of Agriculture, is but two blocks from the university campus. Managed by an upperclass student in Agriculture, who confers with a faculty counseling committee, this house provides board and room for the student at a cost of approximately $360 per year. Residents of the house, approximately 24 in number, do a certain amount of work each day in order that living costs may be kept low. Further information may be secured by writing to Associate Dean V. E. Kivlin, College of Agriculture, Madison 6, Wisconsin.

SELF-SUPPORT

The University Student Employment Bureau is maintained to assist men and women students who are partly or wholly self-supporting during their attendance at the University. More than half of the students at the University of Wisconsin must depend upon themselves for part or all of their resources.

A student should not expect to secure a definite job before he arrives in Madison to stay. The employer usually requires a personal interview. He often wants help on very short notice so that it is necessary to send a student who is in Madison and ready for immediate employment. The number of applicants is usually far greater than the number of available jobs.

THE LONG COURSE

OBJECTIVES—The Long Course in Agriculture is the regular four-year collegiate course leading to the degree of Bachelor of Science in Agriculture. Four years of university work, or the equivalent, are necessary to complete the work for a degree. Serving a two-fold purpose, namely to give a broad, general training and a specific technical knowledge of agriculture, the Long Course prepares students for the more desirable commercial, managerial, and professional positions.

ADMISSION—The methods by which one may be admitted to the Long Course in the College of Agriculture are the same as for any other college or school in the University. See General Information bulletin.

FEES, BOOKS, AND MISCELLANEOUS COSTS—The student in Agriculture who is a resident of the state of Wisconsin should expect to spend from $100 to $150 each semester for his general fees and books. The only additional expenses the student need be concerned about are board, room, clothes, laundry, and entertainment. For further details see General Information bulletin.

MAJORS—Each student enrolled in Agriculture has two choices in planning his curriculum: (1) He may take his major work in one department which requires that he have a minimum of 15 and a maximum of 25 elective credits in the department; or, (2) he may choose to specialize in a field of work involving two or more departments; in this case he will take a split major which requires that he have a minimum of 25 elective credits of suitably related work in two or more departments. For either the department major or the split major, a maximum of 25 credits in any one department is allowed toward graduation. This includes the four-credit thesis, if a thesis is required.

In planning a course of study the student should make certain that he includes all the courses required for a degree, including the major requirements of a minimum of 15 *elective* credits in the department. The staff members of any department will be glad to discuss with prospective majors the opportunities which their particular field has to offer and recommend the courses that should be taken in preparing for a specific objective.

A FLEXIBLE COURSE OF STUDY

The Long Course is designed to permit the student a liberal selection of subjects. The only subjects which the Long Course student *must* take to fulfill the requirements for graduation are those listed below, which normally are taken in the freshman and sophomore years. Beyond those, the student may select any undergraduate subjects to which he is eligible, in any part of the University he chooses, provided: (1) he takes a minimum of 45 (50)* *elective and required* credits within the College of Agriculture; (2) he takes a minimum of 20 (24)* *elective* credits outside the College of Agriculture; and (3) he satisfies the requirements for a major.

An outline of the course of study for a four-year period is given herewith. A total of 124 (133)* credits and 124 (133)* grade-points is required for graduation. *The reader should give particular attention to notations included beneath each year's curriculum.*

THE LONG COURSE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition[1]	3
Chemistry 1a—General chemistry	5	Chemistry 1b—Qualitative analysis	5
Agronomy or Animal-Dairy Husbandry[2]	3	Agronomy or Animal-Dairy Husbandry	3
Freshman Elective (a)	3–5	Freshman Elective (b)	3–5
Freshman Lectures[3]	1	Military Science	0
Military Science	0	Physical Education[4]	0
Physical Education[4]	0		
	15–17		14–16

SOPHOMORE YEAR

Bacteriology 1—General survey	4	Agr. Econ. 4—Principles of agricultural economics[2]	3
Econ. 1a—General economics	4	Biochemistry 1—Elementary biochemistry[5]	4
Soils 1—Soils and soil fertility[5]	4	Sophomore Elective (d)	3–5
Sophomore Elective (c)	3–5	Electives	4
Military Science	0	Military Science	0
	15–17		14–16

[1] Students earning a grade of *A* in English 1a may be excused from English 1b. They may even be exempt from the full year of freshman English provided they pass the exemption tests which are given during the second week of residence.

[2] Students majoring in landscape gardening may substitute Art Education 50 for Animal Husbandry 1 and may take Agricultural Economics 117 in place of Agricultural Economics 1.

[3] See information on Freshman Lectures on page 254.

[4] See information on Military Science and Physical Education Requirements on page 254.

[5] A choice is offered between Soils 1 and Biochemistry 1. Only one is required but both may be taken if desired.

* Figures in parentheses ( ) apply to students in agriculture who entered college before September 1, 1939.

Freshman and Sophomore Electives a, b, c, and d must include *four courses* totaling from 12–20 credits from the following:

Mathematics	2 courses or a maximum of 10 credits
Physics 1	2 courses or a maximum of 10 credits
Botany 1	Not more than 1 course, or maximum of 5 credits
Zoology 1	Not more than 1 course, or maximum of 5 credits
Agriculture courses	1 or 2 courses 3–5 crs. each, but if 2 courses are taken they must be selected from different departments

JUNIOR AND SENIOR YEARS

The student ordinarily will carry from 15 (16)* to 17 (18)* credits per semester during his junior and senior years. At the beginning of his junior year the student with the help of his adviser, should plan a program, well balanced with respect to elective and required subjects, especially in the major or split major, so that he may easily complete all of the requirements for the degree during the senior year.

REQUIREMENT IN AMERICAN HISTORY AND AMERICAN INSTITUTIONS

Undergraduate students whose programs allow them at least 21 credits of liberal (non-professional) electives will be required to complete satisfactorily either:

A. A year course in American History chosen from the following:
History of the United States (History 4)
Representative Americans (History 112)
History of American Thought and Culture (History 113)
The Origin, Growth and Development of the Constitution (History 117)
Social Development of the American People (History 121)
American Economic Life (History 122)

OR

B. A three-credit course in American History and a semester chosen from the following:
American Government and Politics (Political Science 7)
History of American Political Thought (Political Science 165)
The American Economy (Economics 1a)
A course in American History numbered above 100

Undergraduate students in programs which allow them less than 21 credits of liberal electives may be regarded as having fulfilled the requirement when they have satisfactorily completed a three-credit course in American History.

An undergraduate student may absolve the requirement at any time prior to the beginning of his junior year by passing an attainment examination in which the material covered is that of History 4.

This requirement shall be effective for those students who receive their bachelor's degree after June, 1954.

THE MIDDLE COURSE

Students who are interested in taking regular academic work in Agriculture at the University, with emphasis on the practical aspects of agriculture, for a period of two years, may enroll in the Middle Course in Agriculture. Entrance requirements for the Middle Course are the same as for the Long Course (see page 250). Upon satisfactory completion of this course, a student is eligible to receive the title of Graduate in Agriculture.

Students enrolled in the Middle Course are required to take Physical Education and Military Science.

A minimum of 64 credits and 64 grade-points is necessary to complete the requirements for graduation. Of the 64 credits a maximum of 15 elective credits may be taken outside the College of Agriculture. Courses taken in the College of Letters and Science to meet requirements of the Long Course are considered in the Middle Course as electives outside the College of Agriculture.

The Middle Course provides the maximum opportunity for choosing work for a vocational objective. Students should have a definite objective in mind when enrolling so that the proper choice of courses may be made.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a—General chemistry	5	Chemistry 1b—General chemistry	5
Electives	6	or Biochemistry[3]	4
Freshman Lectures	1	Electives	8–9
Military Science[1]	0	Military Science[1]	0
Physical Education	0	Physical Education	0
	15		16

In the sophomore year 16–17 credits of elective work must be carried each semester.

Students enrolled in the Middle Course who wish to transfer to the Long Course should expect to spend more than the usual four years in order to complete the requirements for a bachelor's degree. Further information may be obtained by writing Associate Dean V. E. Kivlin, College of Agriculture, Madison 6, Wisconsin.

PRE-FORESTRY

The University of Wisconsin does not offer a course in forestry. However, it does offer, in the College of Agriculture, two years of work in pre-forestry study. Upon the satisfactory completion of the pre-forestry course, a student may transfer to another institution where forestry is given and there complete his work toward a degree in forestry.

The pre-forestry work suggested is similar to the prerequisite training required by most forestry schools. However, it is advisable that the student, in the spring semester of his freshman year, confer with his adviser relative to the forestry institution he should plan to attend after he will have completed his two-year pre-forestry course. This will enable the student and his adviser to plan more thoroughly the student's course of study for his sophomore year at the University of Wisconsin. Practically all institutions that offer degrees in forestry require that training in the summer forestry camp be completed before the beginning of the junior year. The following curriculum for the freshman year is recommended for students intending to take forestry:

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a—General chemistry	5	Chemistry 1b—Qualitative analysis	5
Agronomy 1—Principles and practices in crop production	3	Botany 1—General botany	5
Math. 1a—Algebra or Math. 3a—Algebra and trigonometry	4	Entomology 1—Elementary entomology (farm insects)	3
Freshman Lectures	1	Military Science[1]	0
Military Science[1]	0	Physical Education	0
Physical Education	0		
	16		16

[1] See information on Military Science and Physical Education requirement on page 254.

SOPHOMORE YEAR

The courses chosen during the sophomore year should be those that will conform to those requirements of the institution to which the student hopes to transfer to complete his work in forestry.

The following suggested program should enable students, who qualify scholastically, to meet the requirements for admission to most forestry schools:

First Semester	Credits	Second Semester	Credits
*Bacteriology 1—General survey	4	Agr. Econ. 4	3
Economics 1a—General economics	4	Zoology 1	5
*Soils 1—Soils and soil fertility	4	Physics 1	5
Geology 1—General geology	5	Social Science Elective	4
Military Science 1	0	Military Science 1	0
	17		17

Students may elect courses in geography, political science, sociology, speech and additional courses in entomology, physics, botany, and zoology.
* Required for the B.S. degree in agriculture.

PRE-VETERINARY

The University of Wisconsin does not confer the Doctor of Veterinary Medicine degree. The institutions that do confer such degrees require their students to have a minimum of two years of pre-veterinary work. It is important for prospective veterinary science students to know that veterinary colleges operate on a restricted enrollment basis. Only the student who ranks high scholastically while taking his pre-veterinary work may expect to gain admission to a veterinary college.

Normally, a student in a veterinary college is required to take four years of professional study regardless of the number of years of pre-veterinary study he may have had. To enable residents of Wisconsin to obtain the necessary college work that will qualify them for entrance to a veterinary college, the College of Agriculture offers the following pre-veterinary course:

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a—General chemistry	5	Chemistry 1b—Qualitative analysis	5
Agronomy or Animal-Dairy Husbandry 1	3	Agronomy or Animal-Dairy Husbandry 1	3
Zoology 1 or Botany 1	5	Zoology 1 or Botany 1	5
Freshman Lectures	1	Military Science	0
Military Science	0	Physical Education	0
Physical Education	0		
	17		16

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Biochemistry 1—Elem. biochemistry	4	Elective	4
Economics 1a—General economics	4	Agr. Econ. 4—Principles of agr. econ.	3
Physics 1a (or 61) or Math. 1a	4–5	Physics 1a (or 61) or Math. 1a	4–5
Sophomore elective	3–4	Bacteriology 1—General survey	4
Military Science	0	Speech 7—Public speaking	2
		Military Science	0
	15–17		17–18

MISCELLANEOUS RULES AND REGULATIONS

For Freshmen

Freshman Lectures—All students in agriculture are required to take Freshman Lectures, which allows one credit. The course must be taken during the first semester of the freshman year. Only transfer and advanced standing students who enter the course in agriculture with sophomore standing or above shall be excused from this requirement.

Military Science and Physical Education Requirement—All male freshmen are required to enroll in military science at the time of registration with the provision that the following will be exempted from taking military science: (a) students who qualify and are accepted for membership in the Regimental Band; (b) students who do not meet the established physical requirements for military science as certified by the Student Health Department; and (c) students who for other reasons are exempted or excluded by the Department of Military Science. Subject to the aforementioned conditions governing enrollment in military science, undergraduate men are required to complete: (1) two hours of physical education per week for freshmen and (2) three hours of military science for four semesters. (Additional information may be found in the first-semester time table.)

For Sophomores

Majors—Majors should be chosen not later than the close of the sophomore year in order that the student may secure a well-balanced program. For majors and split majors see page 250 and pages 284–290.

Sophomore Honors and Sophomore High Honors are awarded on the basis of a minimum of two full years of work, not less than 60 credits, completed in residence in the College of Agriculture for the first half of the four-year course. A student who earns, during these two years, 135 grade-points plus one and one-half grade-points for each credit above 60, will be awarded Sophomore Honors. A student earning 165 grade-points, plus two grade-points for each credit above 60, during these two years, will be awarded Sophomore High Honors.

For Juniors

Major Requirements—Juniors should plan their study schedules so that they will begin to meet the requirements for their majors. The major cannot be chosen after registration for the first semester of the senior year. See page 250.

For Seniors

Senior Summary—Students beginning their first semester of work in the senior year are given their senior summaries at the associate dean's office before they make out their study schedules so that they may check their past work and be certain that all the requirements for graduation will be satisfied during the senior year.

Senior Honors and Senior High Honors are awarded on the basis of a minimum of two full years of work, not less than 60 credits, completed in residence in the College of Agriculture, for the second half of the four-year course. The student who earns, during this two-year period, 135 grade-points plus one and one-half grade-points for each credit above 60, will be awarded Senior Honors. The student earning 165 grade-points plus two grade-points for each credit above 60 during these two years will be awarded Senior High Honors.

Senior-Graduate—Seniors in the College of Agriculture who are within six credits of having completed all the requirements for graduation and who have the minimum required grade-point average of 1.75 may be admitted to the Graduate School and earn residence credit to apply toward an advanced degree at the same time they are completing their requirements for the bachelor's degree.

MISCELLANEOUS RULES AND REGULATIONS

FOR ALL STUDENTS

Although the rules are, in general, the same for all students in Agriculture, there are a few exceptions. Students who entered college before September 1, 1939, are governed by rules slightly different from those prevailing where students entered after September 1, 1939. In the rules given under the following three sub-headings, namely: *Requirements for Graduation, Minimum and Maximum Study Loads, and Promotions,* the statements are applicable to *all* students. Figures shown in parentheses ( ) are the only exceptions and they apply to students who entered college *before* September 1, 1939, only.

Requirements for Graduation—1—Completion of the required courses as indicated on page 16. 2—A total of 124 (133)* credits and 124 (133)* grade-points. 3—No unsatisfied failures, conditions, or incompletes. 4—An average of one grade-point per credit during the last two semesters of work. 5—A major of 15 to 25 credits in a department or a split major of 25 or more credits of suitably related work in two or more departments. Not more than 25 elective credits in one department may count toward graduation. 6—A minimum of 20 (24)* elective, or non-required, credits outside the College of Agriculture. 7—A minimum of 45 (50)* credits including required, optional, major and elective courses within the College of Agriculture.

Minimum and Maximum Study Loads—Each student is required to take class and laboratory work totaling from 12 (12)* to 17 (18)* credits per semester, including Freshman Lectures and the Military Science or Physical Activity requirement as required of all freshmen. (See preceding page.) A student desiring to take less than 12 (12)* or more than 17 (18)* credits must secure permission in advance from the Executive Committee of the College.

Promotions—A student becomes a sophomore on the completion of 25 (26)* credits and 25 (26)* grade-points; a junior on the completion of 58 (60)* credits and 58 (60)* grade-points; and a senior on the completion of 88 (95)* credits and 88 (95)* grade-points.

Course Restriction—(1) Freshman and sophomore students are not permitted to take courses numbered 100 or above offered in the College of Agriculture but may take courses outside the college on the same basis as other students are permitted to enroll in them; undergraduates may not take courses numbered 200 or above. (2) Undergraduates below the rank of senior are not permitted to carry topical work (Course 180). (3) Undergraduates may not receive credit for more than two semesters of seminar in a single department.

Advisers—After completing the freshman year, a student in Agriculture may select any member of the agricultural teaching staff to be his adviser. During his last two semesters, a senior student must choose an adviser from the department in which he is majoring.

Quality of Work—To remain in good scholastic standing, a student is expected to maintain a minimum average of *C* (1.0) in all of the subjects which he is taking.

Failures—Unless he is excused from doing so by the Executive Committee, any student who receives a grade of "fail," indicated by "F," must remove the failure by repeating the course and securing a passing grade as soon as the subject is again offered during the period such student is in residence at the University. A course that has been failed shall take precedence over other courses in being fitted into the student's study schedule when it is next offered. A failure cannot be removed by correspondence study or by repeating the subject at another collegiate institution.

Conditions—A student who receives a grade of "condition," indicated by "E," may convert it to a passing grade by passing a special examination during the next semester he is in residence at the University; otherwise the grade will lapse into a failure which must be removed as specified above.

Incompletes—A student who receives an "incomplete," shown as "INC," must complete the subject not later than the close of the semester in which it is again offered during the student's residence at the University. If not so completed, the grade for the subject will lapse into a failure unless the time for completion has been extended by the Executive Committee.

Change of Schedule—Any change in the student's schedule, however small or seemingly insignificant, must be requested by the student's going to his adviser, indicating his request, and securing his adviser's approval on the proper forms and taking the forms to the associate dean's office where the Executive Committee will either approve or reject the request. Any course dropped without permission of the Executive Committee will be recorded as a "fail," and must be removed in the same manner as any other failure, as specified above.

Thesis—The undergraduate thesis when required as part of the major requirement, shall consist of no more and no less than four credits.

Agricultural and Non-Agricultural Courses—Courses taken outside the College as a part of the major are not considered as a portion of the 45 (50)* credits required in the College of Agriculture. Courses taught in departments outside the College of Agriculture, though listed in departments of the College of Agriculture, are not to be considered as part of the 45 (50)* required credits. Courses given by staff members of the Forest Products Laboratory, approved by the College of Agriculture, shall be considered as agriculture. Credits in Education 75 may be counted toward graduation only by those students who complete the requirements for the University Teachers' Certificate.

* Figures in parentheses ( ) apply to students in agriculture who entered college *before* September 1, 1939.

OTHER COURSES IN THE COLLEGE OF AGRICULTURE

HOME ECONOMICS COURSE

A four-year course in Home Economics leading to the degree of Bachelor of Science (Home Economics) is given at the University under the direction of the College of Agriculture. A bulletin containing detailed information on the course in Home Economics may be obtained by writing to the Associate Dean for Home Economics, Home Economics Building, Madison 6, Wisconsin.

GRADUATE WORK IN AGRICULTURE

Graduate work is offered in each of the nineteen departments in Agriculture. Students wanting to take work toward a master's or doctor of philosophy degree will enroll in the Graduate School. For further details and information relating to scholarships and fellowships, procure Graduate School bulletin from the Dean of the Graduate School, Bascom Hall, Madison 6, Wisconsin.

THE FARM SHORT COURSE

The Farm Short Course is designed for young men between the ages of 19 and 26 years, who expect to farm. Covering two winter periods of 15 weeks each, the course, which is held from the middle of November to the middle of March, provides training in both the natural and social sciences as they relate to the problems of Wisconsin farmers. The satisfactory completion of the work offered in the Farm Short Course entitles one to a certificate awarded by the University of Wisconsin. Further information including a bulletin, may be obtained by writing to the Director of the Farm Short Course, College of Agriculture, Madison 6, Wisconsin.

THE WINTER DAIRY COURSE

To train men in the dairy industry to understand the more modern manufacturing methods, the College of Agriculture provides the eighteen-week Winter Dairy Course, beginning early in September. No entrance examination is required. However, anyone who attends must be at least 16 years of age, must have had an eighth-grade education, and must have had at least six months of practical experience in a creamery, cheese factory, or other dairy manufacturing plant. High-school graduates may be admitted without having had practical experience. A bulletin containing detailed information on the Winter Dairy Course, the Summer Dairy Course, the Swiss-Cheese Makers' Course, and the Special Dairy Manufacturers' Conference may be obtained by writing to the Chairman of the Department of Dairy Industry, College of Agriculture, Madison 6, Wisconsin.

SPECIAL SHORT COURSES

In addition to the courses mentioned heretofore, the College of Agriculture sponsors a number of short service courses which vary from one day to two weeks in length. All of these courses have been held on the campus in the past but some of them are now given throughout the state on an extension basis. The courses are as follows:

Agricultural and Home Economics Teachers' Summer Conference
Animal Breeders' School
Canners' Short Course
Cooperative Management School
County Agents' and Home Demonstration Agents' Conference
Farm and Home Week
Farmers' Field Days
4-H Club Week
Garden Club Short Course
Greens-keepers' Short Course
State Judging Contests
State Junior Conservation Camp
Town-Country Leadership Summer School
Wisconsin Fertilizer Conference
Wisconsin Junior Livestock Exposition
Wisconsin Rural Life Conference

Although it is not definitely established that all of the above-mentioned courses will be offered again, it is likely that they will be given, though not necessarily on an annual basis. Persons interested in detailed information concerning any of the above courses should write to Associate Dean V. E. Kivlin, College of Agriculture, Madison 6, Wisconsin.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—course continues through the year; I—given during the first semester; II—given during the second semester; I and II—repeated each semester; Cr—credits, i.e., hours of credit per semester; *—credits to be arranged.

In some instances a course may be offered in more than one department within the College of Agriculture and in departments of other colleges. In such case the course is duplicated in the numerical listing of courses in those departments; likewise in some instances the name of the instructor is also duplicated in the faculty list following the departmental heading.

AGRICULTURAL ECONOMICS

PROFESSORS BEUSCHER (also Law), FROKER, HALL, HOBSON, MCNALL, PARSONS, PENN, *chairman*, SCHAARS; ASSOCIATE PROFESSORS BAKKEN, CARSTENSEN (also History), COOK, HALVORSON, KROSS, LOOMER, MORTENSON, SHOEMAKER; ASSISTANT PROFESSORS CLODIUS, DAY, EBLING, FOLLETT, MITCHELL, RAUP, STANIFORTH; INSTRUCTOR KANEL.

Agricultural Economics courses are intended to give students a knowledge of economic principles relating to agriculture. The courses deal with farm management, production, marketing, co-operation, processing industries, credit, prices, agricultural data, land tenure, land utilization, land policies, rural local government, taxation, the place of agriculture within the economy, farmer movements, and agricultural policies.

Students may take Agricultural Economics: first, as a full major by those who decide to make it a main line of study preparatory to teaching, research, or other economic work; second, as a joint major with work in other departments; and third, as a full major by students interested in agricultural commerce. The agricultural commerce program of study should be arranged by the student in consultation with his adviser in the Department of Agricultural Economics.

Students are advised to take Economics 1a and 1b and Agricultural Economics 4 and 8 in the sophomore year.

4. INTRODUCTION TO THE ECONOMICS OF AGRICULTURE. II; 3 cr. A general introduction to the economics of agriculture; economic problems and principles in the organization of agriculture; the place of agriculture in modern life; general relations of government to agriculture. Required of all agricultural students. Prerequisite: Economics 1a. Mr. Parsons.

8. FARM RECORDS AND ACCOUNTS. I; 2 cr. Includes principles and techniques of double entry bookkeeping; interpretation of farm financial and operating statements. Mr. Mitchell.

10. FARM ORGANIZATION AND MANAGEMENT. II; 3 cr. Methods and practices applied to farm business management. Prerequisite: Junior standing. Mr. Mitchell.

26. MARKETING FRUITS AND VEGETABLES. (Same as HORTICULTURE 26.) I; 3 cr. Economic development of the produce industry, marketing channels, functions, and agencies; economic factors involved in grading, inspection, standardization, and merchandising; pricing problems; terminal and country markets; governmental programs. Offered in 1953–54 and alternate years. Prerequisite: Agricultural Economics 4. Mr. Kross.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

106. BASIC ECONOMIC DATA IN AGRICULTURE. I; 3 cr. A survey of major agricultural data bodies from federal and state sources; their origins, characteristics, elements of organization

and processing and sources. Prerequisite: Agricultural Economics 4 or Economics 1b. Mr. Ebling.

107. Agricultural Data Systems and Methods. II; 3 cr. A critical analysis and evaluation of the various systems and methods used in providing data on agriculture; historical development of systems and methods. Prerequisite: Agricultural Economics 106 or consent of instructor. Mr. Ebling.

111. Advanced Farm Management. I; 3 cr. Economic analysis of practical farm operations with case studies; attention to farm planning and basic theoretical concepts. Prerequisite: Senior standing. Mr. Day.

114. Farm Law. II; 3 cr. Legal problems in connection with buying, leasing, operating and transferring a farm; land contracts, leases, mortgages, notes, wills, and inheritance laws. Prerequisite: Junior standing. Mr. Beuscher.

117. Outlines of Land Economics. I; 3 cr. Economic principles underlying utilization and conservation of land and natural resources. Prerequisites: Economics 1a and junior standing. Mr. Penn, Mr. Loomer.

122a. Agricultural Economic Life. I; 3 cr. History of American agriculture. Prerequisite: Junior standing. Mr. Carstensen.

125. Marketing Agricultural Products. I; 3 cr. Principles and practices of agricultural marketing; market prices and costs; case studies. Prerequisite: Economics 1a. Mr. Schaars.

126. Economics of Agricultural Processing Industries. I; 3 cr. Economic theory of production, pricing and market control applied to agricultural processing; government regulation and public policy; case studies. Prerequisite: A course in marketing or equivalent. Mr. Clodius.

127. Co-operation. I, II; 3 cr. Analysis of marketing organizations, methods and theory underlying producer and consumer co-operatives at home and abroad. Prerequisite: Junior standing. Mr. Bakken, Mr. Schaars.

128. Marketing Dairy Products. I; 3 cr. Economic factors involving marketing milk and milk products; trade channels, market organizations, sales, pricing plans, costs, regulation, consumer demand. Prerequisites: A course in economics and a course in agricultural marketing or consent of instructor. Mr. Cook.

129. Co-operative Management Problems. II; 2 cr. Consideration of business structure of co-operative associations; problems involving organization, membership relations, financing, trade and sales practices, administrative policies. Prerequisite: Agricultural Economics 127 or equivalent. Mr. Schaars.

134. Rural Local Government. (Same as Political Science 134.) I; 3 cr. The structure and functions of rural local government in the United States. Prerequisite: Political Science 7 or junior standing. Mr. Clarenbach.

152. Farmer Movements. I; 3 cr. History of farmers' efforts to improve their status through organizations designed to control markets and influence legislation. Prerequisite: Economics 1a or consent of instructor. Mr. Penn.

155. Prices of Agricultural Products. II; 3 cr. Analysis and interpretation of factors affecting agricultural prices; study of price trends and cycles, governmental policies affecting farm prices. Prerequisite: Two courses in economics. Mr. Halvorson.

160. Economic Problems of Underdeveloped Areas. I; 3 cr. Problems of development, selected areas; agricultural technology, economic institutions and population pressure; consumption, savings and capital formation; principles of economic development. Prerequisites: Senior standing and two courses in economics or equivalent. Mr. Parsons.

162. Agricultural Policies. II; 2 cr. Policies adopted by governmental, agricultural

and other agencies affecting the economic position of agriculture; current policy problems. Prerequisite: Senior standing. Mr. Penn and staff.

179. URBAN LAND ECONOMICS. I; 3 cr. Urbanization, location, and structure of cities, urban land utilization, home ownership and tenancy, housing, credit, zoning, city and regional planning. Prerequisites: Economics 1a and junior standing. Mr. Ratcliff.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

194. INTRODUCTION TO PUBLIC OPINION RESEARCH. (Same as AGR. JOURNALISM, RURAL SOCIOLOGY, SOCIOLOGY AND ANTHROPOLOGY.) I; 3 cr. Theory and practice of survey techniques. Planning, design, sampling, types of data, questionnaire construction, interviewing, field operations, content analysis of data, utilization of findings. Examples in a variety of fields. Prerequisite: Junior standing. Mr. Fisher.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Farm Management, Mr. McNall; General Agricultural Economics, Farmer Movements and Agricultural Policies, Mr. Hobson, Mr. Parsons; Land Economics, Mr. Penn, Mr. Loomer; Marketing Co-operation, and International Trade in Agricultural Products, Mr. Hobson, Mr. Schaars, Mr. Bakken, Mr. Mortenson, Mr. Cook; Prices and Agricultural Data, Mr. Halvorson, Mr. Ebling.

210. SEMINAR IN THE ECONOMICS OF AGRICULTURAL PRODUCTION. I; 2 cr. Economic analysis and research procedure applied to the organization of agricultural production; economic theory in relation to the farm business. Staff.

211. SEMINAR IN FARM MANAGEMENT. II; 2 cr. History and development of farm management; survey and evaluation of research and research methods. Staff.

213. SEMINAR: LOCAL GOVERNMENT. I; 2 cr. Selected problems of current and longer-run import in rural government. Individual research, reports, and group discussion. Prerequisite: Graduate standing or consent of instructor. Staff.

221. LAND ECONOMIC THEORY. II; 2 cr. Economics of land utilization, theories of rent, principles of land valuation and taxation. Staff.

225. SEMINAR: AGRICULTURAL MARKETING. I; 2 cr. Basic problems; organization and methods of marketing research; review of economic literature in marketing; marketing legislation. Offered 1952–53 and alternate years. Staff.

226. SEMINAR: LAND PROBLEMS. Yr; 2 cr. Land tenure and utilization research and policy problems. Prerequisite: Graduate standing. Staff.

227. SEMINAR: LEGAL-ECONOMIC ASPECTS OF CO-OPERATIVES. II; 2 cr. (Joint listed with Law School.) The relationship of economic and legal problems in co-operative organization, stressing similarities to and difference with general corporation law. Staff.

228. SEMINAR: THEORY OF MARKETS AND MARKETING. II; 2 cr. Studies of the historical development of markets, modern market institutions such as auctions, clearing houses, exchanges, and boards of trade. Staff.

229. SEMINAR: ADVANCED AGRICULTURAL ECONOMICS. II; 3 cr. The field of agricultural economics with respect to its origin and main issues. Staff.

255. SEMINAR: PRICE ANALYSIS. II; 2 cr. Application of statistical and other methods involved in analyzing agricultural price and related problems. Prerequisite: Economics 196 or equivalent. Staff.

280. SPECIAL WORK IN AGRICULTURAL ECONOMICS. I, II; *cr. Staff.

AGRICULTURAL EDUCATION

PROFESSORS JAMES, *chairman*, KIVLIN; ASSOCIATE PROFESSORS JORGENSEN, KREITLOW, WILKINSON; ASSISTANT PROFESSOR BJORAKER.

Students in the College of Agriculture who wish to prepare for the teaching of agriculture in secondary schools must complete an academic minor in general science, biology, or in community relationships, and elective courses in animal husbandry, dairy husbandry, poultry husbandry, dairy industry, agronomy, horticulture, soils, agricultural engineering, and agricultural economics as a background of agriculture and also the 18 credits in education required for the University Teachers' Certificate as outlined below. Farm experience beyond summers is necessary; the farm-reared students are desired. A scholarship record of 1.3 grade-points per credit is necessary to begin teacher-training preparation.

Students completing the requirements for graduation in Agriculture as suggested above and qualifying for a University Teachers' Certificate will receive the degree Bachelor of Science (Agriculture and Education) and a license to teach issued by the State Superintendent of Public Instruction. Such students must (a) register for the certificate in the School of Education at the beginning of the junior year; (b) receive the recommendation of the teacher-training committee of the College of Agriculture; and (c) complete the following courses:

	Credits
Educ. 73—The child: his nature and his needs	3
or	
Educ. 74—The school and society	
Educ. 75—The nature and direction of learning	5
Agr. Educ. 1—Rural education	2
Agr. Educ. 50—Teaching of agriculture	5
Agr. Educ. 128—Program building in vocational agriculture	3

Students beginning work for a certificate may arrange their courses most satisfactorily by starting the requirements during the second semester of the sophomore year. Credits in Education 75 may be counted toward graduation only by students who complete the requirements for the University Teachers' Certificate. Students spend a total of five weeks in high-school vocational agricultural departments during the junior and senior years.

MAJOR. Not more than 5 credits in education taken in the School of Education may count toward the major in agricultural education. These 5 credits shall in no way be counted as a portion of the minimum number of 45 credits required in the strictly agricultural subjects. Course 16, 2 credits, given jointly by the Departments of Agronomy and Horticulture, may be counted as a portion of the 5 credits of the major requirement outside the Department of Agricultural Education.

1. RURAL EDUCATION. I; 2 cr. Origin and development of vocational education for rural communities. Problems, principles, and practices of rural education. Prerequisite: Sophomore standing. Mr. Bjoraker.

25. RURAL LIFE. (See RURAL SOCIOLOGY 25.) I; 3 cr. May be included as part of a major in agricultural education. Prerequisite: Sophomore standing. Mr. Kolb.

50. TEACHING OF AGRICULTURE. I, II; 1–5 cr. Directed teaching based upon participation in agricultural activities of vocational departments of agriculture. Prerequisite: Junior standing. Mr. Bjoraker.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

101. EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS. I; 3 cr. Relationships and legal status of the various services for agriculture and home economics. Methods of organization and instruction used with adults and boys and girls. Mr. Jorgensen and staff.

103. SEMINAR. I, II; *cr. Problems in rural education for extension workers, teachers, and rural leaders. Staff.

105. LEADERSHIP IN AGRICULTURAL EDUCATION. II; 2 cr. An analysis of the leadership function with consideration of the responsibilities of specific rural leaders; techniques of effective leadership, and methods of developing local leaders. Prerequisite: Junior standing. Mr. Bjoraker.

128. PROGRAM BUILDING IN VOCATIONAL AGRICULTURE. I, II; 3 cr. The program of work, directed practice, part-time and evening school, adapted to teaching agriculture in secondary schools. Prerequisites: Major in agricultural education and senior standing. Mr. James.

155. PRINCIPLES OF ADULT EDUCATION. I; 2–3 cr. (Same as EDUCATION 155.) Philosophy and practice of adult education as evidenced through programs of forums, discussion groups, institutes, extension and correspondence courses, evening-school programs. Mr. Kreitlow.

168. RURAL EDUCATION—COMMUNITY BACKGROUND. II; 3 cr. (Same as EDUCATION 168.) Influence of rural community life on the educational program. Principles involved in determining educational needs and in making needed adaptations in rural schools. Prerequisite: Senior standing. Mr. Kreitlow.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Problems of vocational agriculture, extension, rural education, or demonstration work. Prerequisites: Graduate standing and consent of instructor. Mr. James, Mr. Bjoraker, Mr. Jorgensen, Mr. Kreitlow.

220. ISSUES IN RURAL EDUCATION. II; 3 cr. (Same as EDUCATION 220.) Survey and analysis of major issues and problems confronting rural education. Implications for rural life. Evaluations of proposed solutions. Prerequisite: Consent of instructor. Mr. Kreitlow.

AGRICULTURAL ENGINEERING

PROFESSORS DUFFEE, *chairman*, BRUHN, LAROCK, TRENK, WITZEL, ZEASMAN; ASSOCIATE PROFESSORS BERGE, SWANSON; ASSISTANT PROFESSORS ABBOTT, BRUNS, MOULTON, NEITZKE, WOJTA; INSTRUCTOR BARRINGTON; LECTURER STRANG.

A five-year course combining agriculture with either civil or mechanical engineering is organized for the training of agricultural engineers. The complete curriculum for civil or mechanical engineering as combined with agriculture may be obtained from the departmental office. The degrees B.S. Agriculture and B.S. Mechanical Engineering; or B.S. Agriculture and B.S. Civil Engineering are granted at the end of five years, if all requirements have been met. Freshman majors in professional agricultural engineering should consult the chairman of the Agricultural Engineering Department before registration for the first semester, to arrange the proper sequence of courses.

For those interested in selling farm machinery, farm building and farm electrification equipment, a four-year curriculum has been organized. Copies may be obtained from the departmental office. Those who expect to follow this curiculum should report to an adviser in Agricultural Engineering by the beginning of the sophomore year.

1. SURVEYS AND STRUCTURES. I, II; 4 cr. Agricultural surveying, drainage; farm building economics, costs, requirements, and planning. Mr. Moulton.

5. FARM MACHINERY. I, II; 3 cr. Construction, operation, adjustment, and management of farm field machinery and water systems. Mr. Duffee.

7. FARM ELECTRIFICATION. II; 2 cr. Elementary electricity, wiring, motors, and farm electrical applications. Mr. Duffee.

9. FARM MECHANICS. I, II; 3 cr. The fundamentals of farm shop work, such as selection, sharpening, care, and correct use of shop tools and equipment. Mr. Hodges.

11. ELEMENTARY DRAINAGE AND FARM STRUCTURES. I, II; 2 cr. Drainage; farm building economics; costs; requirements and planning. Open only to Agricultural Engineering majors

in the professional fields of Farm Structures, or Drainage, Irrigation and Soil Conservation and those not having had Agricultural Engineering 1. Mr. Moulton.

18. ARCHITECTURAL DRAWING. I, II; 3 cr. (Same as ART EDUCATION 18.) Prerequisite: Drawing 10 or Drawing 12. Mr. Moulton.

28. HOME ARCHITECTURE I. I; 3 cr. (Same as COMMERCE 28 and HOME ECONOMICS 28.) This course undertakes to develop an appreciation of the problems of architectural design both with respect to exterior and interior space planning. Prerequisite: Sophomore standing. Mrs. Leindorff.

29. HOME ARCHITECTURE II. II; 3 cr. (Same as COMMERCE 29.) Structural systems, use of materials, mechanical equipment, the relating of structure and plan, and the problems of cost estimating. Prerequisite: Agricultural Engineering 28 or consent of instructor. Mr. Strang, Mr. Weiler.

30. HOME ARCHITECTURE III. I; 3 cr. (Same as COMMERCE 30.) Each student is required to design a house, draw the plans, write the specifications, and prepare a detailed cost estimate. This course will be open only to students who have had some work in mechanical or architectural drawing. Prerequisite: Agricultural Engineering 29 or consent of instructor. Mr. Weiler, Mr. Strang.

40. FARM FORESTRY. II; 3 cr. Principles of improving existing farm woodlands, determining volume and growth, trees as a factor in erosion control, establishing new forests, management for special products, timber marketing, management plans and records. One weekend field trip of two days' duration to a university woodland area required as part of the laboratory exercises. This course cannot be counted toward a major in Agricultural Engineering. Mr. Trenk, Mr. Abbott.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

101. DRAINAGE AND IRRIGATION ENGINEERING. I; 2 cr. Field surveys and designs for farm and community drainage systems. Design of irrigation systems. Prerequisites: Agricultural Engineering 1 or Civil Engineering 11 and 12, or Civil Engineering 15 and 16. Offered 1952–53 and in alternate years. Mr. Witzel, Mr. Zeasman.

103. FARM TRACTORS. II; 3 cr. Construction, operating principles, care and adjustment of farm tractors. Prerequisite: Agricultural Engineering 5. Mr. Bruhn.

105. FARM TRACTORS AND MACHINERY. II; 4 cr. Construction, operating principles, design and testing of tractors and equipment. For professional agricultural engineers. Prerequisites: Agricultural Engineering 5 and Mathematics 102b. Mr. Bruhn.

106. SOIL EROSION CAUSES AND CONTROL. I; 4 cr. (Same as SOILS 106.) Causes and control of erosion by means of soil management and engineering practices. Only two credits of this course may be applied toward a major in agricultural engineering. Prerequisites: Soils 1 and Agricultural Engineering 1 or consent of instructor. Mr. Zeasman, Mr. Ekern.

121. SEMINAR. I; 1 cr. Review of current literature and studies of agricultural engineering problems. Prerequisite: Senior standing. Staff.

130. FARM ARCHITECTURE. II; 4 cr. Functional and structural design and construction of farm service buildings. Prerequisites: Agricultural Engineering 18 and Mechanics 3 or consent of instructor. Mr. Witzel.

180. SPECIAL PROBLEMS. I, II; *cr. Open only to students in professional agricultural engineering. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

AGRICULTURAL JOURNALISM

PROFESSOR SUMNER; ASSOCIATE PROFESSORS KEARL, *chairman,* LANGDON; ASSISTANT PROFESSORS BEELER, HAZARD, JORNS, WHITE; INSTRUCTORS JONES, MARKS, POWERS, ROSS.

An increasing demand for students adequately trained in technical journalism has been evident since the beginning of the department. More requests for graduates in agricultural and home economics journalism are received each year than are trained. Wisconsin is one of the few institutions where it is possible to secure training in this field.

An increasing use of the printed page in agriculture and home economics education suggests the need of journalistic training to students in these two fields. The ability to write simply and understandably is invaluable to any student.

Greater activity in the fields of radio, visual aids, and technical information work offer interesting careers to technically trained graduates.

For students returning to the farm, Agricultural Journalism 1 and 3 are suggested. For prospective teachers of agriculture and extension workers courses 1, 3, and 103 are recommended. Prospective teachers and workers in home economics extension are advised to take courses 8 and 103. For research workers Agricultural Journalism 1 or 8 and 115 are advised.

Majors in the department will be expected to takes courses 1 or 8, 103, 111, or 112, and 115. Courses in the School of Journalism in the College of Letters and Science should be taken in addition, and not to exceed 5 credits from the following may count toward a major: Journalism 2, 3, and 4.

1. AGRICULTURAL NEWS WRITING. I, II; 3 cr. Prerequisite: Sophomore standing or consent of instructor. Mr. Ross and staff.

2. PRACTICE IN EDITING. I, II; 1 cr. Prerequisite: A semester's work on the *Country Magazine* or consent of instructor. Mr. Ross.

3. AGRICULTURAL ADVERTISING. I, II; 3 cr. Prerequisite: Sophomore standing or consent of instructor. Mr. Sumner.

8. HOME ECONOMICS NEWS WRITING. I; 3 cr. Prerequisites: Sophomore standing or consent of instructor. Miss Jones.

10. NEWS PHOTOGRAPHY. I, II; 3 cr. Special problems of photography for newspapers and magazines; practice with various cameras. Limited enrollment to majors with consent of instructor. Mr. Beeler.

18. FARM AND HOME RADIO WRITING. I; 2 cr. Includes a general survey of radio; continuity writing; script editing; news gathering and preparation; program planning and auditing; radio style. Prerequisites: Junior standing, Speech 110, or consent of instructor. Mr. White.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

103. PUBLICITY MEDIA AND METHODS. II; 2 cr. Prerequisite: Agricultural Journalism 1 or 8. Mr. Kearl.

104. INTERPRETATION OF CONTEMPORARY AFFAIRS. (Same as JOURNALISM 104.) I; 3 cr. Training in editorial research and the preparation of background and editorial articles. Prerequisite: Consent of instructor. Mr. Hovey.

111. ADVANCED AGRICULTURAL WRITING. I; 2–3 cr. May be taken for 3 credits by majors in agricultural journalism. Prerequisite: Student in agriculture or consent of instructor. Mrs. Marks.

112. ADVANCED HOME ECONOMICS WRITING. II; 2–3 cr. May be taken for 3 credits by majors in home economics journalism. Prerequisite: Student in home economics or consent of instructor. Mrs. Marks.

115. EDITING BULLETINS AND CIRCULARS. I; 3 cr. Planning, writing, editing, laying out,

and producing educational publications. Prerequisite: Senior or graduate standing. Miss Langdon.

130. Art, Photography, and Layout in Agriculture and Home Economics Journalism. I; 3 cr. Printing and engraving processes, principles of publication design, effective use of text and illustration in presenting technical information through the press, bulletins, exhibits, and other media. Prerequisite: Consent of instructor. Mr. Beeler, Mr. Jorns.

180. Special Problems. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

194. Introduction to Public Opinion Research. I; 3 cr. (See Agr. Econ. 194.)

200. Research. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Mr. Kearl, Mr. Sumner.

208. Seminar. Yr; 2 cr. Reader interest. Staff.

230. Seminar. I; 2 cr. Rural communications media. Staff.

AGRICULTURAL LIBRARY

Assistant Professor Pittenger, *librarian*

1. Library Practice. I; 2 cr. Library classification and arrangement, bulletin filing, use of card catalogues, periodical indexes, abstract journals, public documents, standard reference works, and the compiling of bibliographies. Mr. Pittenger.

AGRONOMY

Professors Ahlgren, Briggs, Burcalow, Graber, Neal, H. L. Shands, R. G. Shands, D. C. Smith, *chairman*, Strommen, Torrie, Wright; Associate Professors Andrew, Arny, Buchholtz, Holden, Medler, Dale Smith, W. K. Smith; Assistant Professors Hagedorn, James, Sund, Vandervest, Wright; Instructors Arawinko, Davis.

Not to exceed five credits from the following courses may be counted as a portion of the major requirements in Agronomy: Soils 26, Soils 106, Soils 127, Plant Pathology 7 or 101, Botany 117, Botany 129, and Genetics 104.

Students may point their majors toward the Canning Industry, the Seed Industry, and the Grain Marketing and Processing Industry by electing courses covering Dairy Industry, Entomology, Horticulture, Plant Pathology, Soils, and Genetics.

1. Principles and Practices in Crop Production. I, II; 3 cr. A survey of plant science with emphasis on the applications to agronomic practice. Required of all agricultural students. Mr. Ahlgren, Mr. Andrew.

16. Crop Identification and Standards. I; 2 cr. (Same as Horticulture 16.) A laboratory study of the classification, identification and standards of excellence of field, orchard and garden crops. Only one credit of this course may be counted toward a major in agronomy. Prerequisite: Junior standing. Mr. Holden.

100. Thesis. Yr; 2 cr. Subject should be chosen early. Prerequisites: Senior standing and consent of instructor. Staff.

101. Ecology of Agronomic Plants. II; 3 cr. A study of climatic, soil, and biological factors of environment and their relationships to crop distribution and production. Prerequisite: Agronomy 1 or Botany 1.

102. Pastures and Pasture Problems. I; 2 cr. Principles relating to the establishment and improvement of pastures in humid and arid regions. Prerequisite: Agronomy 1 or consent of instructor. Mr. Ahlgren.

104. Grain Crops. I; 3 cr. Taxonomic aspects, origin and distribution, cultural and

commercial relations. Prerequisite: Agronomy 1 or consent of instructor. Mr. H. L. Shands.

106. FORAGE PROBLEMS. II; 3 cr. Problems related to the culture of alfalfa, clovers, grasses, and other forages, with emphasis on growth, food reserves, morphology, and survival. Prerequisite: Junior standing. Mr. Graber, Mr. Dale Smith.

120. SEED AND WEED CONTROL. I; 3 cr. Methods of weed control and principles involved. Identification of weeds and their seeds or fruits. Prerequisite: Agronomy 1. Mr. Buchholtz.

130. THE IMPROVEMENT OF AGRONOMIC PLANTS. I; 2 or 3 cr. Techniques and principles involved in breeding and maintaining crop varieties. Prerequisite: Genetics 6 or equivalent. Mr. D. C. Smith and staff.

131. SEMINAR. Yr; 1 cr. A review of current literature and studies of agronomic problems. Prerequisite: Senior standing or consent of instructor. Staff.

136. BIOMETRY. I; 3 cr. Introduction to the logic and use of statistics in the planning, analysis and interpretation of biological data. Prerequisites: Mathematics 1a or 3a and junior standing. Mr. Torrie.

150. ADVANCED PLANT BREEDING. II; 3 cr. Problems and methods in the improvement of cereal, legume, grass, fiber, sugar, and other agronomic species. Pathological and physiological relationships will be considered. Prerequisites: Agronomy 130 or equivalent and Genetics 104. Mr. D. C. Smith and staff.

180. SPECIAL PROBLEMS. I, II; *cr. Offered at Madison and the branch experiment stations. Prerequisites: Senior standing and consent of instructor. Staff.

190. EXPERIMENTAL DESIGN. II; 3 cr. The application of statistical methods to laboratory and field experiments. Prerequisite: A course in statistics or consent of instructor. Mr. Torrie.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

220. SEMINAR. Yr; 1 cr. Graduate standing. Staff.

ANIMAL HUSBANDRY

PROFESSOR BOHSTEDT, *chairman;* ASSOCIATE PROFESSORS BRAY, GRUMMER, POPE; ASSISTANT PROFESSOR HAUSER; INSTRUCTOR WILSON.

The courses offered in this department, and as supplemented by courses in related departments, teach the principles of livestock production. They prepare students for teaching, investigation, and extension; for positions in industries such as meat packing and feed manufacturing; livestock marketing (buying and selling); herdsmen, and livestock farm management.

Not to exceed five credits from the following courses may be counted as a portion of the major requirement in Animal Husbandry: Biochemistry 105, Genetics 6, Veterinary Science 29 and 30.

1. LIVESTOCK PRODUCTION. I, II; 3 cr. (Same as DAIRY HUSBANDRY 1.) Present status of livestock development; judging, market classification and practical problems; lectures, and laboratory exercises. Required of all agricultural students. Mr. Pope, Mr. Grummer, and Dairy Husbandry staff.

2. BREEDS OF LIVESTOCK. II; 2 cr. Origin and development of breeds of beef cattle, horses, sheep, and swine. Biography and methods of foundation breeders, pedigrees, breed character study, distribution, and utility. Prerequisite: Animal or Dairy Husbandry 1 or consent of instructor. Mr. Hauser.

3. LIVESTOCK SELECTION. I, II; 2 cr. Standards of excellence for market, and breeding

animals. Prerequisites: Sophomore standing and Animal or Dairy Husbandry 1. Mr. Hauser.

5. MEAT PRODUCTION AND CARCASS VALUE. I, II; 3 cr. A study of meat characteristics; the effect of type, feed and condition on the quality, yield, and value of carcasses of beef, mutton, and pork. Prerequisite: Animal or Dairy Husbandry 1. Mr. Bray.

30. ADVANCED LIVESTOCK SELECTION. I; 3 cr. An advanced course in meat animal standards of perfection, conformation and breed type as related to breeding, feeding and processing. Type trends as influenced by feed supplies and consumer demands. Students will have an opportunity of visiting outstanding purebred breeders' establishments, commercial live stock feeders, and leading markets. Prerequisite: Animal Husbandry 3. Mr. Hauser.

50. MEAT, SELECTION AND USE. I, II; 1 cr. Meat nutrition; meat identification, grading, and inspection; prices and uses of retail cuts. Use of freezer lockers for meat storage. Available to women only. Mr. Bray.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

102. GENETIC IMPROVEMENT OF LIVESTOCK. (Same as GENETICS 102.) II; 2 cr. Genetic fundamentals particularly applicable in livestock improvement. Prerequisite: Genetics 6 or 106. Mr. Chapman.

103. REPRODUCTION OF FARM ANIMALS. (Same as GENETICS 103.) II; 3 cr. The reproductive process in farm mammals and poultry; factors affecting the process; fertility; artificial insemination. Lecture, demonstration laboratory. Prerequisite: Genetics 6 or 106 or Physiology 3 or Veterinary Science 1. Mr. Casida and co-operating members of animal, dairy and poultry husbandry departments.

105. MEAT, SELECTION AND UTILIZATION. II; 2 cr. The evaluation of livestock in terms of grade and yield; the composition and characteristics of meat from different animals; identification, preservation, comparative values and utilization of various grades and cuts. Prerequisite: Animal Husbandry 5 or consent of instructor. Mr. Bray.

126. LIVESTOCK FEEDING. (Same as DAIRY HUSBANDRY 126.) I; 4 cr. A study of the principles of feeding and the composition of feeds; practice in formulating rations for the various classes of livestock. May not be elected by those having elected Dairy Husbandry 126. Mr. Bohstedt.

130. SWINE AND SHEEP PRODUCTION. II; 3 cr. A study of systems of production, management practices and methods of marketing. Prerequisite: Animal or Dairy Husbandry 1. Mr. Grummer, Mr. Pope.

131. BEEF CATTLE AND HORSE PRODUCTION. I; 3 cr. Development and status of the beef cattle and horse industries; production and marketing of purebred and commercial animals. Prerequisite: Animal or Dairy Husbandry 1. Mr. Hauser.

134. LIVESTOCK BREEDING. (Same as DAIRY HUSBANDRY 134.) I; 3 cr. Scientific methods of breeding farm livestock; survey of known inheritance in farm animals; control of characters of economic importance; progeny tests and herd analysis. May not be elected for credit by those having elected Dairy Husbandry 134. Prerequisite: Animal or Dairy Husbandry 1, Genetics 6, or consent of instructor. Mr. Heizer, Mr. Bayley.

135. SEMINAR. II; 1 cr. Review of literature and discussion of research and educational work in animal husbandry. Prerequisite: Senior standing. Staff.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites; Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Study of a specific problem in animal husbandry. Prerequisites: Graduate standing and consent of instructor. Staff.

235. SEMINAR. Yr; 1 cr. Study and discussion of research and problems in animal production. Staff.

BACTERIOLOGY

PROFESSORS ALLEN, BALDWIN, FOSTER, FRAZIER, *chairman*, FRED, MCCOY, SARLES, P. W. WILSON; ASSOCIATE PROFESSORS KNIGHT, J. B. WILSON.

Students majoring in this department may take Medical Microbiology 102 or 104 and count five of these credits toward the major requirement.

1. GENERAL SURVEY OF BACTERIOLOGY. I, II; 4 cr. Required of all agricultural students. Prerequisite: Chemistry 1a. Staff.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing, Bacteriology 1 or 103, and consent of instructor. Staff.

103. GENERAL SURVEY. II; 4 cr. For chemistry course and graduate students. Prerequisite: Chemistry 120a. Mr. P. W. Wilson, Mr. Knight.

107. HEREDITY IN MICROORGANISMS. (Same as GENETICS 107.) I; 2 cr. Genetic problems in bacteria, fungi and protozoa. Mutation and variation; adaptation and natural selection. Prerequisites: A course in microbiology or equivalent and consent of instructor. Mr. Lederberg.

120. ADVANCED GENERAL MICROBIOLOGY. I, II; 3 cr. Study of morphological, cultural and physiological characteristics of important groups of microorganisms. Prerequisites: Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. Sarles, Mr. Allen.

121. DAIRY BACTERIOLOGY. II; 4 cr. The bacteriology of milk and its products. Prerequisites: Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. Frazier, Mr. Foster.

123. SOIL BACTERIOLOGY. (Same as SOILS 123.) I; 4 cr. Study of soil microorganisms. Prerequisites: Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. Allen.

125. FOOD BACTERIOLOGY. I; 4 cr. The microbiology of foods and of food fermentations. Prerequisites: Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. Frazier, Mr. Foster.

127. INDUSTRIAL MICROBIOLOGY. (Complementary with BIOCHEMISTRY 227.) I; 4 cr. Principal bacteria, yeasts, and molds of industrial importance. Methods of isolating, identifying, and handling stocks and starter cultures, conditions affecting their efficiency in industrial application. Prerequisites: Bacteriology 1, 103, or Medical Microbiology 102 and consent of instructor. Miss McCoy.

128. INFECTION AND IMMUNITY IN ANIMAL DISEASES. (Same as VETERINARY SCIENCE 128.) II; 4 cr. An experimental study of the principles and applications of infection and immunity. Prerequisites: An advanced course in bacteriology and Veterinary Science 1, Zoology 1 or equivalent. Mr. Brandly, Mr. J. B. Wilson and staff.

129. PRESENTATION OF BACTERIOLOGICAL REPORTS. I; 2 cr. Composition and presentation of research reports. Prerequisite: Senior major or graduate standing. Mr. P. W. Wilson.

131. PROSEMINAR. II; 1 cr. For senior majors and students in early part of graduate study. History of bacteriology. Staff.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. A detailed study of a definite problem in the field of agricultural bacteriology. Prerequisites: Graduate standing, six credits in bacteriology, and consent of instructor. Staff.

226. PHYSIOLOGY OF BACTERIA. II; 4 cr. The chemistry and physics of bacterial processes. Prerequisites: Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. P. W. Wilson, Mr. Knight.

228. EPIZOOTIOLOGY. (Same as VETERINARY SCIENCE 228.) I; 3 cr.

230. TAXONOMY AND NOMENCLATURE OF BACTERIA. II; 4 cr. Lectures on taxonomy, nomenclature, problems of classification. Laboratory work on selected groups of microorganisms and on ecological relationships. Two lectures, 2 cr.; laboratory, 2 cr. Prerequisites: Bacteriology 120 and consent of instructor. Miss McCoy.

231. SEMINAR. Yr; 1 cr. Reviews of bacteriological subjects and reports on research work in the department. Staff.

BIOCHEMISTRY

PROFESSORS BAUMANN, BURRIS, ELVEHJEM, *chairman*, JOHNSON, LARDY, LINK, PHILLIPS, STEENBOCK, STRONG; ASSOCIATE PROFESSOR STAHMANN; ASSISTANT PROFESSORS L. ANDERSON, BOCK, WILLIAMS.

The elementary courses offered in this department are intended to give a broad view of biochemistry useful to the general agricultural or home economics student. Courses 105 and 106 are planned for undergraduate majors in biochemistry and other science departments of the University and for graduate students who are interested in a single fundamental course in biochemistry. All other advanced courses leading to greater specialization are open to undergraduates and graduates who have the necessary preliminary training. Courses in biochemistry should be preceded or accompanied by work in organic chemistry, biology, bacteriology and physiology.

1. ELEMENTARY BIOCHEMISTRY. I; 2 or 4 cr. Introduction to the chemistry of living matter. Laboratory work includes chemical analysis of biological materials. Prerequisite: Chemistry 1b. Mr. Williams.

3. SURVEY OF BIOCHEMISTRY. II; 4 cr. Lectures and laboratory work on the chemical nature and properties of those materials of biological origin which find greatest application in everyday life, with special reference to foods and their utilization by the body. Based on one semester of general college chemistry. Prerequisite: Chemistry 1a. Mr. Strong.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

105. PRINCIPLES OF BIOCHEMISTRY. Lectures. I; 3 cr. The chemistry and metabolic significance of the important constituents of living matter. Prerequisites: Chemistry 11a, 120a, 121a. Mr. L. Anderson, Mr. Lardy.

106. PRINCIPLES OF BIOCHEMISTRY. Laboratory. I; 2 cr. Prerequisite: Biochemistry 105 or concurrent registration. Mr. L. Anderson.

119. PLANT BIOCHEMISTRY. Lectures. II; 3 cr. Chemical processes in the growth of plants, including the effect of environmental factors. Prerequisites: Biochemistry 105 and 106 or equivalent. Mr. Burris.

120. PLANT BIOCHEMISTRY. Laboratory. II; 2 cr. Prerequisite: Biochemistry 119 or concurrent registration. Mr. Burris.

121. DAIRY CHEMISTRY. (Same as DAIRY INDUSTRY 121.) Lectures. II; 3 cr. Chemistry of milk secretion, composition of milk products, chemical changes in manufacture and storage, and analytical methods to determine composition, deterioration and adulteration. Prerequisites: Chemistry 12, 120a, 121a, and Biochemistry 1 (or 105 and 106). Mr. Sommer.

122. DAIRY CHEMISTRY. (Same as DAIRY INDUSTRY 122.) Laboratory. II; 2 cr. Prerequisite: Biochemistry 121 or concurrent registration. Mr. Sommer.

124. ANIMAL METABOLISM AND VITAMINS. Lectures. II; 2 cr. Caloric relations, metabolism of carbohydrates, fats and proteins, chemistry and physiology of the vitamins. Prerequisite: Biochemistry 105 or equivalent. Mr. Baumann.

125. ANIMAL METABOLISM AND VITAMINS. Laboratory. II; 1 or 2 cr. Blood and urine analysis, feeding experiments with animals. Prerequisites: Biochemistry 106 and 124 or concurrent registration; consent of instructor. Mr. Baumann.

126. Modern Views of Animal Nutrition and Their Application. II; 2 cr. Prerequisites: Biochemistry 105, 106 and 124, or concurrent registration in 124. Mr. Phillips, Mr. Elvehjem.

133. Seminar (Junior). Yr; 1 cr. First semester: Mr. Link, Mr. Baumann. Second semester: Staff.

180. Special Problems. Yr; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. Research. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

209. Proteins and Nucleic Acids. I; 2 cr. Lectures on the occurrence, nature and properties of proteins and nucleic acids. Prerequisites: Chemistry 130, 131, and Biochemistry 105. Mr. Stahmann.

211. Advanced Biochemical Techniques. I; 3 cr. Use of special techniques and equipment in isolation, identification, and analysis of biological compounds. One lecture and two laboratory periods. Prerequisites: Chemistry 120, 121, 130a, 131a and Biochemistry 105 and 106 or equivalent. Mr. Strong.

224. Carbohydrates. (Same as Chemistry 224.) I; 1 cr. Lectures on the occurrence, nature, and properties of carbohydrates. Prerequisites: Chemistry 120, 121, and Biochemistry 105. Mr. Link.

227. Fermentation Biochemistry. Lectures. II; 2 cr. Lectures on the chemical composition of microorganisms and the mechanism of fermentation processes. Prerequisites: Chemistry 120, 121 and Biochemistry 105. Mr. Johnson.

228. Fermentation Biochemistry. Laboratory. II; 2 cr. Work on products of fermentation. Prerequisites: Biochemistry 106 and 227 or concurrent registration, and Bacteriology 1. Mr. R. Anderson.

233. Seminar (Senior). Yr; 1 cr. Original articles of importance are studied in detail to broaden the understanding of biochemical problems and to stimulate further research. Staff.

DAIRY HUSBANDRY

Professors Allen, Heizer, *chairman*, Smith, Werner; Associate Professors Niedermeier, Tyler; Assistant Professors Bayley, Collentine, Cramer, Crowley, Stallard, Vergeront, Zehner.

Instruction in dairy husbandry is designed to serve the needs of students looking forward to a given field of activity, such as (1) dairy farm operation and herd management; (2) investigation, teaching or extension; or (3) work in industries allied to agriculture.

The dairy farm operator or herdsman will be especially interested in training in all phases of breeding, feeding, management, and selection of dairy cattle. Students planning a career in research, teaching, or extension may wish to specialize in some one phase of work after acquiring a fundamental background in dairy husbandry. Those interested in commercial work may include such courses in dairy husbandry as will serve them best in the field they have in view.

1. Livestock Production. (Same as Animal Husbandry 1.) I, II; 3 cr. Present status and history of livestock development, judging, market classifications; practical problems, lectures and laboratory exercises. Required of all agricultural students. Mr. Niedermeier, Mr. Zehner, and Animal Husbandry staff.

4. Elements of Dairy Husbandry. I; 2 cr. Dairy cattle production problems and management practices. Designed primarily for students not majoring in dairy husbandry. Prerequisite: Animal or Dairy Husbandry 1. Mr. Niedermeier.

5. Dairy Cattle Selection. II; 2 cr. Evaluation of dairy type and its application to

selection. Prerequisite: Animal or Dairy Husbandry 1. Mr. Niedermeier, Mr. Zehner.

6. DEVELOPMENT OF DAIRY BREEDS AND FAMILIES. II; 3 cr. Dairy breeds in their native lands and America. Factors which have contributed to the success or failure of leading breeding establishments. Pedigree studies of important families. Prerequisite: Animal or Dairy Husbandry 1. Mr. Heizer.

50. ADVANCED DAIRY CATTLE SELECTION. I; 2 cr. An advanced course in selection of dairy cattle for breeding and commercial purposes. Students will have an opportunity of visiting outstanding purebred and commercial herds. Prerequisite: Dairy Husbandry 5. Mr. Zehner, Mr. Neidermeier.

60. ARTIFICIAL BREEDING OF CATTLE. I; 3 cr. A specialized course in artificial breeding of cattle. Emphasis is placed on collection, dilution, storage, and shipping of semen, inseminating techniques, sire management, and application of artificial breeding to herd improvement. Prerequisites: Dairy Husbandry 1 and Genetics 6, or consent of instructor. Mr. Smith, Mr. Bayley.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

126. LIVESTOCK FEEDING. (Same as ANIMAL HUSBANDRY 126.) I; 4 cr. A study of the principles of feeding and the composition of feeds; practice in formulating rations for the various classes of livestock. May not be elected for credit by those having elected Animal Husbandry 126. Mr. Bohstedt.

128. DAIRY CATTLE NUTRITION. II; 3 cr. The application of the latest knowledge of digestion and metabolism in ruminants, and their nutritional requirements, to the specific problems of feeding the dairy herd. Prerequisite: Animal or Dairy Husbandry 126. Mr. Allen.

130. MILK SECRETION. I; 3 cr. Anatomy and evolution of the mammary gland. Hormonal control of mammary development. Theories of milk secretion. Factors affecting the amount and composition of milk. Modern methods of milking. Prerequisites: Physiology 3 and Biochemistry 1. Mr. Smith.

133. DAIRY HERD MANAGEMENT. I; 3 cr. Dairy herd management, care, and replacement. One or more field trips will be included at a small cost to the student. Prerequisites: Animal or Dairy Husbandry 1 and preferably Dairy Husbandry 126. Mr. Allen.

134. LIVESTOCK BREEDING. (Same as ANIMAL HUSBANDRY 134.) I; 3 cr. Scientific methods of breeding farm livestock; survey of known inheritance in farm animals; control of characters of economic importance. May not be elected for credit by those having elected Animal Husbandry 134. Prerequisite: Animal or Dairy Husbandry 1, Genetics 6, or consent of instructor. Mr. Bayley.

136. DAIRY CATTLE BREEDING. II; 3 cr. A specialized course in breeding dairy cattle. Emphasis is placed on progeny tests, pedigree evaluation, herd analysis, systems of breeding, and the development of breeding programs. One or more field trips will be included at a small cost to the student. Prerequisites: Dairy Husbandry 6 and Dairy Husbandry 134. Mr. Heizer, Mr. Bayley.

138. PROSEMINAR. Yr; 1 cr. Review and critical discussion of current articles in technical journals and their application to practical problems of dairy husbandry. One semester required for dairy husbandry major. Prerequisite: Senior standing. Staff.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Study of a specific problem in dairy husbandry. Prerequisites: Graduate standing and consent of instructor. Staff.

237. RESEARCH METHODS IN DAIRY HUSBANDRY. I; 2 cr. Adaptation of research principles and methods to dairy husbandry problems; also methods for search of literature, presenta-

tion of data, and preparation of results for publication. Prerequisite: Graduate standing or consent of instructor. Mr. Allen.

238. SEMINAR. Yr; 1 cr. Preparation and presentation of comprehensive reviews of fundamental research in the field of dairy husbandry. Aimed at broadening the understanding of the current status of knowledge in various phases of dairy husbandry, and at stimulating interest in sound, fundamental research. Prerequisite: Dairy Husbandry 138 or its equivalent. Staff.

DAIRY AND FOOD INDUSTRIES

PROFESSORS JACKSON, *chairman*, PRICE, SOMMER, THOMSEN, WALLENFELDT, WECKEL; ASSOCIATE PROFESSORS CALBERT, SWANSON; ASSISTANT PROFESSOR WINDER.

The department offers instruction in the science and art of manufacturing dairy and food products suited to the needs of (a) investigators and teachers; (b) managers, operators, and inspectors of dairy and food plants; and (c) engineers.

Positions available to graduates include such activities as products production, technical control, plant inspection, field work, the design and manufacture of equipment, the selling of supplies and machinery, and the sales promotion of dairy and food products.

1. INTRODUCTION TO DAIRYING. II; 3 cr. General survey of the different branches of the dairy industry. Emphasis on organization, quality control, grading, and elementary analysis of dairy products. Mr. Jackson.

2. A SURVEY OF FOOD INDUSTRIES. II; 1 cr. A review of the magnitude, the organization and technical problems of the various food-processing and food-handling industries. Prerequisite: Consent of instructor. Mr. Calbert.

3. FOOD PRODUCT INGREDIENTS. I; 3 cr. A study of the physical and chemical properties of various ingredients used in the manufacture of foodstuffs, and their effects upon foods. Prerequisite: Sophomore standing. Mr. Calbert.

42. DAIRY AND FOOD SANITATION AND REGULATIONS. II; 3 cr. Dairy and food plant sanitation principles and procedures; sanitary standards and regulations for milk and food products. Prerequisite: Sophomore standing. Mr. Thomsen, Mr. Calbert.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

101. COMMERCIAL PROCESSING OF FOODSTUFFS. I; 4 cr. A study of basic processing procedures for typical food products, application of unit operations, problems, instrumentation. Prerequisite: Junior standing. Mr. Weckel.

102. COMMERCIAL PROCESSING OF FOODSTUFFS. II; 4 cr. A study of processes and line flow procedures in production of special commercial food products. Mr. Weckel.

103. CREAMERY OPERATION AND MANAGEMENT. I; 3 cr. The manufacture of creamery butter and other products often made in connection with creamery operation. Emphasis is placed on quality and management. Prerequisite: Dairy Industry 1. Mr. Thomsen.

104. CHEESE. II; 4 cr. Commercial practices and principles of curd-making and cheese-ripening. Prerequisite: Dairy Industry 1. Mr. Price.

105. MARKET MILK. I; 3 cr. Procurement, processing, and distribution of market milk and related products. Quality, public health regulations, equipment operation, laboratory procedures, problems. Prerequisite: Dairy Industry 1. Mr. Winder.

106. ICE CREAM AND CONDENSED MILK PRODUCTS. II; 3 cr. The theory and practice of manufacturing ice cream, milk powder, malted milk, condensed milk, and evaporated milk. Quality factors and defects in these products. Prerequisite: Dairy Industry 1. Mr. Winder.

107. FOOD PRODUCT GRADING STANDARDS AND TECHNIQUES. II; 2 cr. A study of regulatory, advisory and commercial grading standards, and procedures for processed food products. Prerequisite: Dairy Industry 3. Mr. Weckel.

108. Dairy and Food Mechanics. II; 3 cr. Dairy plant construction, heating, ventilation, power plant operation, sewage disposal, refrigeration, installation, testing, and operation of dairy machinery. Includes an optional two-day field trip. Mr. Thomsen.

121. Dairy Chemistry. (Same as Biochemistry 121.) Lectures. II; 3 cr. Chemistry of milk secretion, composition of milk products, chemical changes in manufacture and storage, and analytical methods to determine composition, deterioration and adulteration. Prerequisites: Chemistry 12, 120a, 121a, and Biochemistry 1 (or 105 and 106). Mr. Sommer.

122. Dairy Chemistry. (Same as Biochemistry 122.) Laboratory. II; 2 cr. Prerequisite: Biochemistry 121 or concurrent registration. Mr. Sommer.

123. Seminar (Junior). Yr; 1 cr. For seniors and first-semester graduate students. Preparation and presentation of articles pertinent to the dairy industry. Staff.

124. Physical Chemistry of Dairy Products. I; 3 cr. Lectures and laboratory exercises on hydrogen-ion concentration, oxidation-reduction potentials, surface tension, absorption, viscosity, plasticity, isoelectric point of proteins, colloidal properties of milk constituents. Mr. Sommer.

127. Seminar. Yr; 1 cr. Review of research, and problems pertinent to the food industry. Prerequisite: Senior or graduate major in food industries, or consent of instructor. Staff.

180. Special Problems. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. Research. Yr; *cr. Experimental study of problems in dairy or food manufacturing. Prerequisites: Graduate standing and consent of instructor. Staff.

223. Seminar (Senior). Yr; 1 cr. Reviews of original articles of importance to the field of dairy science and reports on research work in the department. Prerequisite: Dairy Industry 123 or equivalent. Staff.

ENTOMOLOGY

Professors Allen, *chairman*, Dicke, Farrar, Fluke; Associate Professors Apple, Fisher, Medler, Shenefelt; Assistant Professors Beck, Chapman.

Students majoring in entomology have the opportunity to study in a variety of fundamental and applied fields. Graduates find employment in university teaching, research, extension work, government service, industry, insecticide sales, apiculture and research institutes.

Students interested in graduate work should consult the bulletin of the Graduate School.

1. Introduction to Entomology. II; 3 cr. A general collection of insects is required of each student. Mr. Fluke.

50. Insecticides and Their Uses. I; 2 cr. The principles of insect control and the methods and materials most commonly employed in controlling the more important insects. Designed for Pharmacy and Agricultural students. Prerequisite: Chemistry 1a. Offered 1952–53 and alternate years. Mr. Allen.

100. Thesis. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

102. Insect Morphology and Taxonomy. I; 3 cr. Prerequisite: Entomology 1 or consent of instructor. Mr. Fluke.

103. Orchard Insects. I; 2 cr. A study of the insect pests of the orchard and bush fruits. Prerequisite: Entomology 1 or 102, or a course in zoology. Offered 1953–54 and alternate years. Mr. Fluke.

105. Field Crop and Garden Insects. I; 2 cr. A study of the insect pests of field, garden, and truck crops. Prerequisite: Entomology 1 or 102, or a course in zoology. Offered 1952–53 and alternate years. Mr. Apple.

107. Toxicology of Insecticides. II; 3 cr. The preparation, uses and toxicities of insecticides and a study of their lethal effects upon insects. Prerequisite: Entomology 50. Offered 1952–53 and alternate years. Mr. Allen, Mr. Beck.

108. Beekeeping. II; 3 cr. Bee behavior, fundamentals of colony development and productive management, and utilization of bees in the pollination of agricultural crops. Prerequisite: Entomology 1 or a course in zoology. Offered 1953–54 and alternate years. Mr. Farrar.

110. Insect Physiology. (Same as Zoology 110.) II; 3 cr. Prerequisite: A course in entomology. Offered 1953–54 and alternate years. Mr. Beck.

112. Medical Entomology. (Same as Zoology 112 and Veterinary Science 112.) I; 3 cr. Prerequisite: An introductory course in zoology or Veterinary Science 1. Offered 1952–53 and alternate years. Mr. Herrick, Mr. Dicke.

122. Determinative Entomology. I; 1 cr. History of insect classification including taxonomic categories, rules of nomenclature, and procedures used in systematic studies. Prerequisite: Entomology 102 or equivalent. Mr. Medler.

123. Taxonomy of Immature Insects. I; 3 cr. The identification and morphology of immature insects. Prerequisite: Entomology 102 or consent of instructor. Offered 1953–54 and alternate years. Mr. Dicke.

125. Insects in Relation to Plant Diseases. II; 2 cr. The principal insect vectors and their habits; modes of insect transmission and dissemination of plant diseases. Prerequisites: A course in entomology and plant pathology or consent of instructor. Offered 1952–53 and alternate years. Mr. Chapman.

129. Forest Entomology. I; 3 cr. The relationship of insects to forest trees and methods of control of injurious forms. Prerequisites: A course in entomology and consent of instructor. Offered 1953–54 and alternate years. Mr. Shenefelt.

130. Seminar. I, II; 1 cr. Prerequisite: Senior standing. Staff.

140. Insect Ecology. (Same as Zoology 140.) II; 3 cr. Insects in their relation to their environment. Prerequisite: Entomology 1 or 102, or a course in zoology. Offered 1953–54 and alternate years. Mr. Medler.

180. Special Problems. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. Research. Yr; *cr. Study of a specific problem in entomology. Prerequisites: Graduate standing and consent of instructor. Staff.

210. Hymenoptera. I; 3 cr. Classification and interrelationships of Hymenoptera with discussion of their general biology. Prerequisite: Entomology 122 or consent of instructor. Offered 1952–53 and each third year following. Mr. Shenefelt.

211. Diptera. II; 3 cr. Classification and interrelationships of flies with discussion of their general biology. Prerequisite: Entomology 122 or consent of instructor. Offered 1952–53 and each third year following. Mr. Fluke.

212. Lepidoptera. I; 3 cr. Classification and interrelationships of moths and butterflies with discussion of their general biology. Prerequisite: Entomology 122 or consent of instructor. Offered 1953–54 and each third year following. Mr. Dicke.

213. Homoptera–Hemiptera. II; 3 cr. Classification and interrelationships of Homoptera and Hemiptera with discussion of their general biologies. Prerequisite: Entomology 122 or consent of instructor. Offered 1953–54 and each third year following. Mr. Medler.

214. Coleoptera. I; 3 cr. Classification and interrelationships of beetles with discussion of their general biology. Prerequisite: Entomology 122 or consent of instructor. Offered 1954–55 and each third year following. Mr. Shenefelt.

215. Mallophaga, Anoplura and Siphonaptera. II; 3 cr. Classification and interrelation-

ships of Mallophaga, Anoplura and Siphonaptera with discussion of their general biologies. Prerequisite: Entomology 122 or consent of instructor. Offered 1954–55 and each third year following. Mr. Dicke.

FOREST PRODUCTS

Students who want to obtain a degree in forestry may take the pre-forestry course explained on pages 252–253 and then complete the work at another institution where a degree in forestry is offered.

The courses described below are offered by the United States Forest Products Laboratory in co-operation with the University of Wisconsin. The courses, which are offered in logical sequence, consist of subject matter with which anyone, who intends to go on into the fields of wood utilization or its related branches, should be thoroughly familiar.

101. PROPERTIES OF WOOD. I; 5 cr. Structure and properties of wood with special reference to its use in light building construction.

103. CHEMISTRY APPLIED TO FOREST PRODUCTS. II; 2 cr. Industrial chemical processes that use wood and wood waste such as paper and pulp; wood distillation, and wood preservation; the chemistry of various forest products. Prerequisites: Chemistry 120, 121. Offered 1953–54 and in alternate years. Staff.

119. FUNGUS DETERIORATION OF FOREST PRODUCTS. (Same as PLANT PATHOLOGY 119). I; 2 cr. A survey of the cause and prevention of stains and decay in forest products, and control measures. Prerequisites: Plant Pathology 101 and 104. Offered 1952–53 and alternate years. Staff.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

FRESHMAN LECTURES

FRESHMAN LECTURES. I, II; 1 cr. Required of all freshmen in Agriculture. Mr. Kivlin.

GENETICS

PROFESSORS BRINK, CASIDA, CHAPMAN, COOPER, IRWIN, *chairman*, NEAL, RIEMAN; ASSOCIATE PROFESSORS CROW, LEDERBERG, SMITH; ASSISTANT PROFESSORS HOUGAS, SHACKELFORD; INSTRUCTORS BLACK, HITT, KIDDER, OLSON, STONE, ULBERG, WORNER.

The following courses are designed for those seeking a broad knowledge of heredity in relation to animal and plant breeding, and for students desiring to prepare themselves for instructional work and research in genetics.

6. HEREDITY. (Same as ZOOLOGY 6.) I; 3 cr. Principles of heredity and their application to plants, animals, and man. This course is designed for students who desire a general course in Genetics. (Those who desire a laboratory course and who can satisfy the prerequisites should elect Genetics 106.) Lectures and discussion. Mr. Crow, Mr. Shackelford.

100. THESIS. Yr; 2 cr. Prerequisites Senior standing and consent of instructor. Staff.

102. GENETIC IMPROVEMENT OF LIVESTOCK. (Same as ANIMAL HUSBANDRY 102.) II; 2 cr. Genetic fundamentals particularly applicable in livestock improvement. Prerequisite: Genetics 6 or 106. Mr. Chapman.

103. REPRODUCTION OF FARM ANIMALS. (Same as ANIMAL HUSBANDRY 103.) II; 3 cr. The reproductive process in farm mammals and poultry; factors affecting the process; fertility; artificial insemination. Lecture, demonstration laboratory. Prerequisite: Genetics 6 or 106 or Physiology 3 or Veterinary Science 1. Mr. Casida and co-operating members of animal, dairy and poultry husbandry departments.

104. PLANT GENETICS. I; 3 cr. Mechanism of Mendelian heredity; genic and chromosomal

variation; principles of plant improvement. Prerequisite: Genetics 6 or 106. Mr. Brink.

105. Advanced Animal Breeding. II; 3 cr. Principles underlying selection, inbreeding, pedigree evaluation, progeny testing; measuring inbreeding, relationship. Prerequisites: Genetics 6 or 106 and Agronomy 136. Mr. Chapman.

106. Genetics. (Same as Zoology 106.) I; 3 cr. Principles of genetics and their application to plants, animals, and man. Lectures, discussion, and laboratory. Prerequisites: College algebra and a year each of college biology and chemistry or consent of instructor. (For a non-laboratory course without prerequisites, see Genetics 6.) Mr. Crow, Mr. Shackleford.

107. Heredity in Microorganisms. (Same as Bacteriology 107.) I; 2 cr. Genetic problems in bacteria, fungi and protozoa. Mutation and variation; adaptation and natural selection. Prerequisites: A course in microbiology or equivalent and consent of instructor. Mr. Lederberg.

136. Human Genetics. (Same as Zoology 136.) II; 2 cr. Principles of heredity and variation in man. Prerequisite: Genetics 6 or 106. Mr. Crow.

180. Special Problems. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. Research. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Animal genetics: Mr. Chapman, Mr. Crow, Mr. Irwin, Mr. Shackleford. Plant genetics: Mr. Brink, Mr. Cooper, Mr. Hougas, Mr. Neal, Mr. Rieman, Mr. Smith. Physiology of reproduction: Mr. Casida. Genetics of microorganisms: Mr. Lederberg.

210. Recent Advances in Genetics. II; 2 cr. Offered 1953–54 and alternate years. Prerequisite: Consent of instructor. Mr. Irwin and staff.

211. Recent Advances in Genetics. II; 2 cr. Offered 1952–53 and alternate years. Prerequisite: Consent of instructor. Mr. Irwin and staff.

220. Seminar. Yr; 1 cr. Prerequisite: Consent of instructor. Staff.

(For courses in probability and statistics see Mathematics 118, 134, 137 and Agronomy 136, 190.)

HORTICULTURE

Professors Combs, *chairman*, Longenecker, Roberts; Associate Professors Ogden, Struckmeyer; Assistant Professors Dana, Elfner, Fulton, Gabelman, Gilbert, Holm, Ziegler; Instructors Beck, Langord, Schoenemann.

Students majoring in Horticulture may obtain specialized training in the improvement, production, and handling of fruits and vegetables and in landscape architecture. The choice of electives from other departments will depend upon the particular area of specialization. A maximum of 5 credits toward the major may be elected from Entomology 103 or 105 and Plant Pathology 7.

Courses 1, 3, 5, 6, 7, 12, and 16 should be of particular interest to students majoring in other departments but who wish to prepare themselves for possible work in the fields of agriculture or home economics extension, vocational agriculture or home economics instruction or farm management.

Students majoring in landscape architecture are not required to count as credit in their major Horticulture 1, 3, 5, or 16. They may also substitute Art Education 50 for Animal Husbandry 1 and with the consent of the major adviser, Agricultural Economics 117 for Agricultural Economics 4. The attention of landscape majors is called to courses in city planning offered by the College of Engineering.

1. Principles of Fruit Growing. I; 3 cr. Fruit growing and its application to our common fruit trees. Staff.

3. VEGETABLE GARDENING. II; 3 cr. The principles and practices involved in the production and handling of vegetable crops. Mr. Combs.

5. SMALL FRUIT CULTURE. I; 2 cr. Culture of cane, bush, and other small fruits. Offered 1952–53 and alternate years. Staff.

6. PRINCIPLES OF LANDSCAPE DESIGN. I, II; 3 cr. General principles of landscape design in relation to home grounds development, and an introduction to landscape plant materials. Mr. Elfner.

7. PLANT PROPAGATION. II; 2 cr. Principles and practices involved in propagating horticultural plants. Staff.

8. HOME HORTICULTURE. II; 3 cr. Plants and flowers for home beautification; production of vegetables and small fruits for home use. Designed primarily for women. Offered 1953–54 and alternate years. Staff.

12. HOME GROUNDS DESIGN. II; 3 cr. A continuation of Horticulture 6. An inspection trip is required. Prerequisite: Horticulture 6 or consent of instructor. Mr. Longenecker.

13. LAWNS. I; 3 cr. A study of ground forms, terracing, grading, seeding, estimating. Prerequisite: Consent of instructor. Offered 1952–53 and alternate years. Mr. Longenecker.

14. LANDSCAPE CONSTRUCTION PROBLEMS. Yr; 3 cr. Prerequisite: Horticulture 6. Offered 1953–54 and alternate years. Mr. Elfner.

16. CROP IDENTIFICATION AND STANDARDS. (Same as AGRONOMY 16.) I; 2 cr. A laboratory study of the classification, identification, and standards of excellence of field, orchard and garden crops. Only one credit of this course may be counted toward a major in horticulture. Prerequisite: Junior standing. Mr. Holden and staff.

26. MARKETING FRUITS AND VEGETABLES. (Same as AGR. ECON. 26.) I; 3 cr. Economic development of the produce industry, marketing channels, functions, and agencies; economic factors involved in grading, inspection, standardization, and merchandising; pricing problems; terminal and country markets; governmental programs. Prerequisite: Agr. Econ. 4. Offered 1953–54 and alternate years. Mr. Kross.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

101. ADVANCED HOME GROUNDS DESIGN. I; 3 cr. Design of estate, country home grounds, and related problems. Prerequisites: Horticulture 6 and 12. Offered 1953–54 and alternate years. Mr. Longenecker.

102. PUBLIC GROUNDS. II; 3 cr. Landscape problems in connection with public buildings, parks, and cemetery design; roadside planting. Prerequisites: Horticulture 6 and 12. Offered 1953–54 and alternate years. Mr. Longenecker.

103. STRUCTURE AND PHYSIOLOGY OF VEGETABLE CROPS. I; 3 cr. A study of vegetable crops with particular emphasis on plant structure and function. Prerequisites: Horticulture 3, Botany 108 or 117 and Botany 146, or consent of instructor. Offered 1952–53 and alternate years. Mr. Gabelman, Mr. Holm.

104. WOODY LANDSCAPE PLANTS. I; 3 cr. Advanced study of form, mass, color, and texture of woody plants and their relation to planting design. Prerequisites: Horticulture 6 and consent of instructor. Offered 1952–53 and alternate years. Mr. Longenecker.

105. HERBACEOUS LANDSCAPE PLANTS. II; 3 cr. Advanced study of plant forms, color, and texture of herbaceous plants in landscape design. Prerequisites: Horticulture 6 and consent of instructor. Offered 1952–53 and alternate years. Mr. Longenecker.

107. TECHNIQUES AND METHODS OF BREEDING HORTICULTURAL CROPS. II; 3 cr. Methods and special techniques employed in breeding horticultural crops. Prerequisite: Genetics 6 or equivalent. Offered 1952–53 and alternate years. Mr. Gabelman.

109. EFFECTS OF GROWTH REGULATIONS ON HORTICULTURAL CROPS. II; 3 cr. Principles

and techniques involved in the use of growth regulators in the production and handling of horticultural crops. Prerequisite: Botany 146 or equivalent. Offered 1953–54 and alternate years. Mr. Holm.

110. SEMINAR. Yr; 1 cr. Prerequisite: Senior standing. Staff.

123. ADVANCED POMOLOGY. I; 2 cr. Theory and practice of harvesting, distributing, storing, and selling orchard fruits. Prerequisite: Horticulture 1 or consent of instructor. Offered 1952–53 and alternate years. Mr. Roberts.

124. ADVANCED POMOLOGY. II; 2 cr. Theory and practice of commercial tree fruit production prior to harvest. Prerequisite: Horticulture 1 or consent of instructor. Offered 1952–53 and alternate years. Mr. Roberts.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

210. SEMINAR. Yr; 1 cr. Prerequisite: Graduate standing. Staff.

PLANT PATHOLOGY

PROFESSORS BACKUS, DARLING, DICKSON, JOHNSON, KEITT, *chairman*, RIEMAN, RIKER, WALKER; ASSOCIATE PROFESSORS ARNY, HANSON, MOORE, POUND; ASSISTANT PROFESSORS HAGEDORN, HILDEBRANDT, KUNTZ, LARSON, LEBEN, PATTON, WADE; LECTURER LINDGREN.

Courses 104, 177, and 220 (*) are offered in the Department of Botany, College of Letters and Science, and do not count toward the credits required in the College of Agriculture.

7. ELEMENTARY PLANT PATHOLOGY. I; 4 cr The economic importance, appearance, cause, and means for controlling representative diseases of plants. Prerequisites: Botany 1 and Bacteriology 1. Mr. Arny.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

101. DISEASES OF PLANTS. I; 3 cr. The nature and the prevention of diseases of plants including studies of a typical series of examples. Prerequisites: Plant Pathology 7 (or Bacteriology 1 and Plant Pathology 104). Mr. Walker, Mr. Pound, Mr. Hagedorn.

102. METHODS IN PLANT PATHOLOGY. I; 3 cr. Research procedures including: use of literature, isolation and inoculation practices, special technique according to individual needs, and preparation of manuscripts. Prerequisite: Plant Pathology 101. Mr. Riker, Mr. Hildebrandt.

*104. FUNGI. (Same as BOTANY 104.) I, II; 3 cr. Prerequisite: Botany 1 or 17. Mr. Backus.

116. DISEASES OF FIELD CROPS. II; 2 cr. Arranged to meet the needs of students in plant pathology and agronomy. Prerequisite: Plant Pathology 101 (or 7 and 104). Mr. Dickson.

117. DISEASES OF ORCHARD FRUITS. II; 2 cr. The more important diseases of deciduous orchard fruits. Prerequisite: Plant Pathology 101 (or 7 and 104). Offered 1953–54 and alternate years. Mr. Keitt.

119. FUNGUS DETERIORATION OF FOREST PRODUCTS. (Same as FOREST PRODUCTS 119.) I; 2 cr. A survey of the cause and prevention of stains and decay in forest products, and control measures. Prerequisites: Plant Pathology 101 and 104. Offered 1952–53 and alternate years. Mr. Lindgren.

120. DISEASES OF VEGETABLE CROPS. II; 2 cr. The more important field and storage diseases of vegetable crops. Prerequisite: Plant Pathology 101 (or 7 and 104). Offered 1952–53 and alternate years. Mr. Walker.

*177. PHYSIOLOGY OF THE FUNGI. (Same as BOTANY 177.) I; 4 cr. Lectures, reports; labora-

tory optional. Prerequisites: Plant Pathology 104, Botany 104 and 146, or equivalent, and consent of instructor. Mr. Allen.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

*220. ADVANCED MYCOLOGY. (Same as BOTANY 220.) Yr; 2 or 3 cr. Lectures, laboratory, and field work. Prerequisite: Plant Pathology 104 or equivalent. Mr. Backus.

223. SEMINAR. Yr; 1 cr. Staff.

POULTRY HUSBANDRY

PROFESSORS ANNIN, *chairman*, HALPIN, HAYES; ASSOCIATE PROFESSORS CRAVENS, MCGIBBON; ASSISTANT PROFESSORS ADAMS, SUNDE.

Students majoring in Poultry Husbandry may prepare for commercial poultry farming, for one of the various lines of commercial work with which poultry husbandry is related, or for educational work in extension, instruction or research.

Students preparing for educational work along the more scientific lines may elect 5 credits from the following as a portion of the major requirements in poultry husbandry: Veterinary Science 120, Animal Husbandry 126, Biochemistry 105, Agricultural Economics 127, Agricultural Economics 128, Genetics 105, Zoology 105, Chemistry 120.

1. POULTRY RAISING. I; 3 cr. A general survey course designed to give the student an understanding of the problems in poultry raising. Mr. Sunde.

8. MARKETING POULTRY PRODUCTS. I; 3 cr. A study of the facts that tend to produce quality in market poultry and eggs. Methods of preparing and marketing poultry and eggs. Mr. Adams.

10. POULTRY JUDGING AND CULLING. I; 2 cr. A study of breed and variety characters as described in the "American Standard of Perfection." Selecting birds for the production of eggs or meat. One lecture and one laboratory period. Prerequisite: Poultry Husbandry 1 or consent of instructor. Mr. Halpin.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

102. POULTRY FEEDS AND FEEDING. I; 3 cr. Principles of poultry nutrition; composition of poultry feedstuffs and formulation of poultry rations. Prerequisites: Poultry Husbandry 1 and Biochemistry 1, or consent of instructor. Mr. Cravens.

105. HATCHERY MANAGEMENT. II; 3 cr. Principles and practices of incubation. Practical chick embryology. Brooding requirements of chicks. Prerequisite: Poultry Husbandry 1. Mr. Adams.

107. ADVANCED POULTRY MANAGEMENT. II; 3 cr. Influence of recent investigation in poultry husbandry as they affect methods of feeding, housing, breeding, care and management of poultry. Prerequisite: Poultry Husbandry 1. Mr. Sunde.

109. POULTRY BREEDING. II; 3 cr. Survey and application of breeding principles to the improvement of poultry; development of practical breeding programs for flock improvement. Prerequisite: Poultry Husbandry 1, Genetics 6, or consent of instructor. Mr. McGibbon.

121. SEMINAR. Yr; 1 cr. Reports and discussion of current research and literature in the field. Prerequisites: Senior standing and consent of instructor. Staff.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

RURAL SOCIOLOGY

PROFESSORS CLARK, KOLB, SEWELL, *chairman,* WILEDEN; ASSOCIATE PROFESSORS BARTON, GARD, MARSHALL; ASSISTANT PROFESSORS SCHWALBACH, WILKENING.

There are two ways in which students may work in this field. First, a program leading to a full major and preparing for teaching, research or extension work may be arranged. In such a plan 10 credits should be taken in the department and 5 credits selected in any one of the following departments: Agricultural Economics, Agricultural Education, Agricultural Journalism, Home Economics, or Sociology in the College of Letters and Science. Second, courses may be taken as electives by students, majoring in other departments, who wish to gain a knowledge of the social arrangements of present-day rural society.

25. RURAL LIFE. I; 3 cr. Rural society: its people as families, neighborhoods, villages, interest groups, and town-country and rural-urban relations; its social institutions. Prerequisite: Sophomore standing. Mr. Kolb.

27. RURAL ORGANIZATIONS AND LEADERSHIP. II; 2 cr. History, scope, and function of rural organizations in social life. Characteristics and activities of social, educational, recreational, and occupational groups. History, description, and analysis of selected types in Wisconsin. Problems of organization and leadership. Prerequisite: Sophomore standing or Rural Sociology 25. Mr. Barton.

125. STRUCTURE AND FUNCTIONING OF RURAL AMERICAN SOCIETY. I; 3 cr. A functional analysis of the group, institutional, and status structure of contemporary American rural society. Prerequisite: An introductory course in rural or general sociology. Mr. Sewell.

*126. RURAL STANDARDS OF LIVING. II; 2 cr. Consumption behavior in the main commodity groups: food, housing, clothing, education, recreation, etc.; growth of consumer consciousness and governmental and co-operative agencies which give it expression. Prerequisites: Junior standing and an introductory course in rural or general sociology or consent of instructor. Mr. Barton.

127. RURAL COMMUNITY ORGANIZATION. II; 2 cr. History of the rural community and its social organization; principles including leadership and processes of conflict and co-operation; agencies serving the rural community; studies of selected cases. Prerequisites: Junior standing and an introductory course in rural or general sociology or consent of instructor. Mr. Wileden.

128. METHODS OF RESEARCH IN RURAL SOCIOLOGY. I; 2 cr. A review of the methods currently employed by rural social research agencies, with special emphasis on the more recent developments in interviewing techniques, schedule and scale construction, attitude and opinion measurement and experimental design. Prerequisites: Introductory statistics, junior standing and consent of instructor. Mr. Sewell.

129. THE FAMILY IN RURAL SOCIETY. I; 2 cr. Consideration will be given to the institutional nature of the rural family, its role in the community including its relation to educational, religious, welfare, and other community institutions, its influence on personality development, and its problems in a changing culture. Prerequisites: An introductory course in rural or general sociology, junior standing, and consent of instructor. Mr. Wilkening.

130. RURAL POPULATION TRENDS AND PUBLIC POLICIES. II; 2 cr. Demographic, nativity, social and cultural changes and their relation to national population policies. Prerequisite: Junior standing, an introductory course in rural or general sociology or economics, or consent of instructor. Mr. Marshall.

131. RURAL COMMUNITY AND WELFARE AGENCIES. I; 3 cr. The organization of rural communities in the United States, rural problem areas, and the institutions and agencies

through which a rural welfare program must function. Prerequisites: Junior standing and either Rural Sociology 25 or Social Work 145. Mr. Barton.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

185. MODERN AMERICAN COMMUNITIES. II; 3 cr. Rural backgrounds of American culture. Development of American social institutions, social structure and values as seen in selected rural and urban communities. European images of America and evaluation of America's social strengths. Prerequisite: Junior standing or major in American Institutions. Mr. Barton.

194. INTRODUCTION TO PUBLIC OPINION RESEARCH. I; 3 cr. (See AGR. ECON. 194.)

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

225. SEMINAR IN RURAL SOCIAL RESEARCH. Yr; 2 cr. An examination of current research problems, theories, and methods. Prerequisites: Graduate standing and consent of instructor. Staff.

SOILS

PROFESSORS BERGER, CHAPMAN, GRAUL, JACKSON, MUCKENHIRN, TRUOG, *chairman*, WILDE, ZEASMAN; ASSOCIATE PROFESSORS ALBERT, ATTOE, HOLE; ASSISTANT PROFESSORS EKERN, ENGELBERT, HULL, PETERSON, TANNER; INSTRUCTORS LEE, VOIGT.

The various courses in soils are designed to give training for either the more practical field such as farming and farm advisory and managerial work, or the professional field such as teaching, research, extension, soil survey, and soil conservation. Students preparing for the practical field should elect the less technical courses in soils and related agricultural departments; those preparing for professional work should elect considerable course work in the basic natural sciences along with the advanced courses in soils.

Students in Soils may specialize in the Fertilizer Industry by electing courses in Agronomy, Bacteriology, Biochemistry, and Plant Pathology.

Not to exceed 5 credits from the following courses may be counted as a portion of the undergraduate major requirement in soils: Bacteriology 123, Geology 1, Agronomy 102, Agronomy 106, and Meteorology 145.

1. SOILS AND SOIL FERTILITY. I; 4 cr. An introductory, general survey of the field. Prerequisite: Chemistry 1a. Mr. Graul.

26. FERTILIZERS AND SOIL MANAGEMENT. II; 2 cr. Nature, composition, and manufacture of fertilizers, and use under various soil management programs. Prerequisite: Soils 1. Mr. Graul.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

106. SOIL EROSION, CAUSES AND CONTROL. (Same as AGRICULTURAL ENGINEERING 106.) I; 4 cr. Causes and effects of soil erosion; soil management, engineering, and land use practices required for control. Field trips. Only two credits of this course may be applied toward a major in soils. Prerequisite: Soils 1 or consent of instructor. Mr. Ekern, Mr. Zeasman.

121. SOIL ANALYSIS. II; 4 cr. Methods and use of special equipment for determining soil reaction and available and total nutrients and other constituents. Prerequisite: Soils 1, Chemistry 12, or consent of instructor. Mr. Truog, Mr. Attoe, Mr. Engelbert.

122. SOIL PHYSICS. I; 3 cr. Physical properties, moisture, relations, and methods of physical analysis of soils. Prerequisites: Soils 1 and a course in physics or consent of instructor. Mr. Tanner.

123. SOIL BACTERIOLOGY. (Same as BACTERIOLOGY 123.) I; 4 cr. Study of soil microorgan-

isms. Prerequisites: Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. Allen.

124. Forest Soils. II; 3 cr. Properties and management in relation to silviculture, land use and nursery practice. Prerequisites: Soils 1 and Botany 1, or consent of instructor. Mr. Wilde.

125. Soil Genesis, Classification and Mapping. II; 3 cr. The formation, classification, and mapping of soils; the major soil types and their uses. Field trips. Prerequisite: Soils 1 or consent of instructor. Mr. Muckenhirn.

127. Soil Science and Plant Nutrition. I; 2 cr. The constitution and dynamic nature of the soil and how it functions as a medium for plant growth. Prerequisite: Soils 1 or consent of instructor. Mr. Truog.

128. Seminar. I, II; 1 cr. Prerequisite: Senior standing or consent of instructor. Staff.

135. Soil Survey Methods. II; 2 cr. Lectures on purposes and methods of soil survey. Field practice in recognizing and describing soil properties and mapping soil areas. Prerequisite: Soils 125 or equivalent, or consent of instructor. Mr. Hole.

180. Special Problem. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. Research. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

221. Physical Chemistry of Soils. II; 2 to 4 cr. Application of physiochemical principles to soil studies, including surface forces, ionic equilibria, electrode potentials, and crystal structure. Two lectures, 2 cr.; laboratory, 1 or 2 cr. Prerequisites: Soils 121 and 127, and physical chemistry, or consent of instructor. Mr. Jackson.

VETERINARY SCIENCE

Professors Beach, Brandly, *chairman*, Herrick, McNutt, Nichols; Associate Professors Hanson, Todd; Assistant Professors Berman, Burch, Morse, Simon; Instructors Cohen, Kowalczyk, Sorensen, Wipf.

Courses are offered by the department to meet the needs and interests of undergraduate students in the field of animal production and of advanced students in veterinary science and closely related fields.

The several courses numbered below 100 are designed to provide a knowledge of the fundamental and practical aspects of animal hygiene and disease prevention. The subjects of the 100 series are offered for both advanced undergraduate students desiring to qualify for majors in the animal science field and for the graduate students in veterinary science and immediately related sciences who are working toward advanced degrees. The courses of the 200 series are offered for credit only to qualified graduate students.

1. The Animal Body. I; 3 cr. The structure, functions, and activities of the cells, tissues, organs, and systems constituting the animal body. Prerequisite: Sophomore standing. Mr. Nichols.

27. Fur Farming. I; 2 cr. Disease prevention and control, feeding, breeding, management, building and construction, economics and utilization. Prerequisite: Sophomore standing. Mr. Brandly and staff.

29. Animal Disease Prevention. I; 3 cr. Prevention and control of infectious diseases of livestock and poultry. Prerequisite: Sophomore standing. Mr. Beach.

30. Parasitic Disease Prevention. II; 3 cr. Prevention and control of parasitic diseases of livestock and poultry. Prerequisite: Sophomore standing or consent of instructor. Mr. Todd.

100. Thesis. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

112. MEDICAL ENTOMOLOGY. (Same as ZOOLOGY 112 and ENTOMOLOGY 112.) I; 3 cr. A study of arthropods and the diseases they cause or transmit. Arthropods of importance in animal diseases are stressed. Prerequisite: An introductory course in zoology. Offered 1952–53 and alternate years. Mr. Herrick, Mr. Dicke.

120. HELMINTHOLOGY. (Same as ZOOLOGY 120.) I; 3 cr. A study of the helminths of various animals, including man. Prerequisite: Zoology 1 or Veterinary Science 1. Offered 1953–54 and alternate years. Mr. Herrick.

125. VETERINARY PROTOZOOLOGY. I; 4 cr. Prerequisites: Veterinary Science 1, Zoology 1 or equivalent, a course in parasitology and consent of instructor. Mr. Todd.

128. INFECTION IMMUNITY IN ANIMAL DISEASES. (Same as BACTERIOLOGY 128.) II; 4 cr. An experimental study of the principles and applications of infection and immunity. Prerequisites: An advanced course in bacteriology and Veterinary Science 1, Zoology 1 or equivalent. Mr. Brandly, Mr. Hanson, Mr. Berman, Mr. Morse.

130. VETERINARY PATHOLOGY. I; 3 cr. Prerequisites: Courses in vertebrate anatomy, histology, animal physiology, and consent of instructor. Mr. McNutt, Mr. Simon.

131. VETERINARY PHYSIOLOGY. II; 3 cr. Prerequisites: Courses in vertebrate anatomy, histology, physiological chemistry, and consent of instructor. Mr. Nichols.

180. SPECIAL PROBLEMS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

201. PROSEMINAR. Yr; 1 cr. Staff.

220. SEMINAR. Yr; 1 cr. Graduate standing. Staff.

228. EPIZOOTIOLOGY. (Same as BACTERIOLOGY 228.) I; 3 cr. The concept of infectious diseases of animals as a host-parasite relationship, with major consideration of host resistance, parasitic adaptation, dissemination and the problem of interference, carriers, reservoirs, and control. Emphasis on the enlarging problems of veterinary public health. Prerequisite: Bacteriology-Veterinary Science 128, or Medical Microbiology 102, or equivalent. Mr. Brandly, Mr. J. B. Wilson and staff.

230. SEMINAR. ADVANCED. Yr; 1 cr. Surveys of the literature and reports on current research problems. Prerequisite: Graduate standing. Staff.

231. VETERINARY PATHOLOGIC PHYSIOLOGY. I, II; 5 cr. The pathologic aspects of veterinary physiology. Prerequisites: Veterinary anatomy, physiology and pathology, and Biochemistry 105, or their equivalents. Mr. Nichols.

WILDLIFE MANAGEMENT

PROFESSOR SCHORGER; ASSOCIATE PROFESSOR HICKEY; ASSISTANT PROFESSOR MCCABE, *chairman;* INSTRUCTOR ELLARSON.

The courses in wildlife management are of two kinds: those intended to give the general student an understanding of wildlife and those intended to train specialized students for professional practice.

Course 118 is for the general student. Familiarity with common wild plants and animals and with farming practice is desirable as a basis for this course.

Courses 161, 179, and 200 are intended for professional students only, but Course 161 is open to others who show special qualifications and need. A bi-weekly, non-credit seminar is held for students enrolled in Courses 161, 179, and 200.

Professional training in wildlife management covers bird and mammal conservation, and requires from two to five years of graduate work. Part of this period is spent on the campus

taking courses; part on research work in the field, often in the employ of the State Conservation Department, the University Arboretum, or other field organizations. The number of professional students that can be handled at one time is limited by the capacity of the faculty, and by the availability of suitable field positions. Prospective students should inquire before counting on enrollment, and should present their status in respect to the following requirements: (1) A bachelor's degree with a major in some biological field such as botany, zoology, agronomy or soils; (2) personal familiarity with birds, mammals and plants; (3) ability to write simply and clearly; (4) familiarity with some land industry; and (5) any research work already done.

Information on field positions, assistantships, and fellowships may be obtained by writing the Chairman of the Department of Wildlife Management.

118. WILDLIFE ECOLOGY. I; 3 cr. Structure and properties of the animal community; its relation to plants, soils and land use. Review of regional problems; history and economics of wildlife. Prerequisite: Junior standing or consent of instructor. Mr. Hickey, Mr. Ellarson.

161. WILDLIFE MANAGEMENT TECHNIQUES. I; *cr. Preparation of collections; analysis of stomachs and pellets; sex and age determinations; censuses; trapping and banding; planting food and cover; analysis of data; carding literature. Prerequisites: Wildlife Management 118 and consent of instructor. Mr. McCabe.

179. PRINCIPLES OF GAME MANAGEMENT. I; 3 cr. Animal population mechanisms and their control. Reviews by species of management problems in big game, upland game, waterfowl, and predators. Prerequisites: Graduate standing, Wildlife Management 118, Wildlife Management 161, and consent of instructor. Mr. Hickey.

180. SPECIAL PROBLEMS. Yr; *cr. For non-professional students or undergraduates. Prerequisites: Senior standing and consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

APPENDIX

MAJORS IN AGRICULTURAL SCIENCE

In past years many of the students in the College of Agriculture have entered some phase of agricultural science and it seems probable that this field will continue to provide many opportunities. In this field high scholarship is a necessity; only those students whose work in the first two years is of high quality should plan to enter the field. The Graduate School at Wisconsin requires for entrance an average undergraduate record of 1.75 grade-points per credit.

Students wishing to prepare themselves in Agricultural Science find it necessary to follow their undergraduate work with further training along some particular line leading to the master's or doctor of philosophy degree. For such students it is usually desirable to carry a broad general course as an undergraduate. The three general fields of particular importance are Animal Science, Plant Science, and Social Science.

All of the general college requirements, including the required courses of the freshman and sophomore years, must be met by students majoring in any of these fields. The majors outlined below follow the regulations with respect to a split major.

These majors have been approved by the Executive Committee and no special action is necessary by the student or adviser other than a statement by the student of his intention to follow one of these majors.

1—ANIMAL SCIENCE MAJOR

Students carrying this undergraduate major may later wish to carry graduate work in some of the following departments: Bacteriology, Animal Husbandry, Biochemistry, Dairy Husbandry, Dairy Industry, Entomology, Genetics, Poultry Husbandry, and Veterinary Science. The major requirements will be absolved by carrying not less than 25 credits selected from the following list of courses:

	Credits
Bacteriology 121—Dairy bacteriology	4
Bacteriology 125—Food bacteriology	4
Bacteriology 120—Advanced general microbiology	3
Animal or Dairy Husb. 126—Live stock feeding	4
Biochem.-Dairy Industry 121—Dairy chemistry (Lecture)	3
Biochem.-Dairy Industry 122—Dairy chemistry (Laboratory)	2
Biochem. 124—Animal metabolism and vitamins (Lecture)	2
Biochem. 25—Animal metabolism and vitamins (Laboratory)	1 or 2
Dairy Industry 124—Physical chemistry of dairy products	3
Entomology 102—Insect morphology and taxonomy	3
Entomology 140—Insect ecology	3
Genetics 6—Heredity	3
Genetics 105—Animal genetics	3
Poultry Husbandry 107—Advanced poultry management	3
Vet. Science 120—Parasites of domestic animals	3
Vet. Science 128—Infection and immunity in animal diseases	4
Thesis	4
	52–53

Students in this major must also carry at least 20 (24)* elective credits outside of the College of Agriculture. Botany 1 and Zoology 1 should be included in freshman or sophomore electives. It will also be desirable for students in this major to carry two years of at least one foreign language.

* Figures in parentheses ( ) apply to students who entered college *before* September 1, 1939.

2—PLANT SCIENCE MAJOR

Students carrying this undergraduate major may later wish to carry graduate work in some of the following departments: Bacteriology, Agronomy, Biochemistry, Entomology, Genetics, Horticulture, Plant Pathology, or Soils. The major requirements will be absolved by carrying not less than 25 credits selected from the following list:

	Credits
Bacteriology 123—Soil bacteriology	4
Agronomy 102—Pastures and pasture problems	2
Agronomy 130—Improvement of agronomic plants	2–3
Biochem. 119—Plant biochemistry (Lecture)	3
Biochem. 120—Plant biochemistry (Laboratory)	2
Entomology 102—Insect morphology and taxonomy	3
Entomology 140—Insect ecology	3
Genetics 6—Heredity	3
Genetics 104—Plant genetics	3
Horticulture 7—Plant propagation	2
Horticulture 122—Advanced pomology	2
Horticulture 123—Advanced pomology	2
Plant Pathology 7—Elementary plant pathology	3
Plant Pathology 101—Diseases of plants	3
Soils 26—Fertilizers and soil management	2
Soils 125—Soil genesis, classification and mapping	3
Soils 127—Soil science and plant nutrition	2
Thesis	4
	48–49

Students in this major must also carry at least 20 (24)* elective credits outside the College of Agriculture. Botany 1 and Zoology 1 should be included in the freshman or sophomore electives. It will also be desirable for students in this major to carry two years of at least one foreign language.

3—SOCIAL SCIENCE MAJOR

Students carrying this undergraduate major may later wish to carry graduate work in some one of the following departments: Agricultural Economics, Agricultural Education, Agricultural Journalism, or Rural Sociology. The major requirements will be absolved by carrying not less than 25 credits selected from the following list:

	Credits
Agr. Econ. 10—Farm organization and management	3
Agr. Econ. 14—Farm business and legal practice	3
Agr. Econ. 117—Outlines of land economics	3
Agr. Econ. 125—Marketing of agricultural products	3
Agr. Econ. 126—International trade in agricultural products	3
Agr. Econ. 127—Cooperation	3
Agr. Econ. 152—Farmer movements	3
Agr. Econ. 155—Prices of agricultural products	3
Agr. Educ. 101—Ext. work in agriculture and home economics	3
Agr. Educ. 103—Seminar	1–3
Agr. Journ. 1—Agricultural news writing	3
Agr. Journ. 3—Agricultural advertising	3
Agr. Journ. 103—Publicity media and methods	2
Rural Soc. 25—Rural life	3
Rural Soc. 125—Principles of rural sociology	3
Rural Soc. 126—Rural standards of living	2
Rural Soc. 127—Rural community organization	2
Thesis	4
	50–52

Students in this major must also choose at least 20 (24)* elective credits outside of the College of Agriculture. It is suggested that these credits be selected from the courses in the following group. Two full years of at least one foreign language are also desirable.

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* Figures in parentheses ( ) apply to students who entered college *before* September 1, 1939.

MAJORS IN AGRICULTURAL SCIENCE

	Credits
Economics 134—Economic history of the U. S.	3–4
Economics 105—Money and banking	3
Economics 124a—Taxation	3–4
Economics 130—Statistical methods[1]	3
Economics 142—Public utilities	3
Economics 173—Economics of consumption	3
Geography 106—Agricultural geography	3
Journalism 2a—Newspaper reporting	3
Journalism 3a—Newspaper desk work	3
Journalism 107a—The community newspaper	2–3
Pol. Science 7—American government (national)	3
Sociology 1—Introductory sociology	3
Sociology 3—Introduction to anthropology	3
Sociology 132—Introductory social statistics[1]	3
Sociology 139—Social psychology	3
Sociology 151—General aspects of human relations	3
Sociology 197—Personality and social structure	3
Speech 8a—Extempore speaking	2
	52–55

[1] The two statistical courses are to be considered as parallel; only one is to be chosen.

PRE-THEOLOGICAL MAJOR

The University of Wisconsin, in co-operation with various theological seminaries, offers an opportunity for young men and women who are preparing for the rural ministry, to carry their pre-theological work in the College of Agriculture. Any person choosing this major should acquaint himself with the specific requirements of the theological seminary of his choice. Special note should be taken of any language requirements.

It is recommended that the student choosing this major shall follow the general plan of the Social Science major suggested above, but shall make his choices in such a way as to secure at least one basic course in each of the following fields: Agricultural Economics, Economics (general), English Literature, History and Government, Philosophy, Psychology, Public Speaking, Sociology (general), and Rural Sociology.

CURRICULUM FOR THE MAJOR IN FOOD INDUSTRY*

FOUR-YEAR CURRICULUM

Non-Technical Course

First Year

English 1a	3 cr.	English 1b	3 cr.
Chemistry 1a	5 cr.	Chemistry 1b	5 cr.
Agronomy 1 (Crops)	3 cr.	Animal Husbandry 1 (Livestock)	3 cr.
Mathematics 1a, 3a, or 51 (whichever is required)	4 cr.	Mathematics 1b, 3b, or 52 (whichever is required)	4 cr.
Freshman Lecture	1 cr.	Food Industry 2 (Survey)	1 cr.
Physical Education and Military Science	0 cr.	Physical Education and Military Science	0 cr.
	16		16

Second Year

Economics 1a	4 cr.	Physics 61	5 cr.
Botany 1 or Zoology 1	5 cr.	Agricultural Economics 4	3 cr.
Quantitative Chemistry 11a or 12	3 cr.	Entomology 1 (Insects)	3 cr.
Soils 1	4 cr.	Horticulture 3 (Vegetables)	3 cr.
		Commerce 8 (Accounting)	3 cr
	16		17

Third Year

Food Industry 3 (Food Product Ingredients)	3 cr.	Bacteriology 103	4 cr.
Biochemistry 1	4 cr.	Organic Chemistry 120	2 cr.
Organic Chemistry 120	2 cr.	Chemical Engineering 42 (Thermodynamics)	3 cr.
Chemical Engineering 41 (Unit Processes)	3 cr.	Animal Husbandry 105 (Meats and Meat Processing)	2 cr.
Plant Pathology 7	3 cr.	Civil Engineering 197 (Industrial Waste Treatment)	2 cr.
Animal Husbandry 5 (Meat Production, Carcass Value)	2 cr.	Elective Courses	4 cr.
	17		17

* 15 credits from the group of italicized courses will satisfy the minimum course requirements for a Food Industry Major.

Fourth Year

Food Industry 101 (Food Processes)	4 cr.	Food Industry 102 (Food Processes)	4 cr.
Bacteriology 125 (Food)	4 cr.	Food Equipment Mechanics 108	3 cr.
Entomology 50 (Insect control)	2 cr.	Dairy and Food Sanitation & Regulations 42.	3 cr.
Elective Courses	6–7 cr.	Elective Courses	6–7 cr.
	16–17		16–17

Suggested Electives: Drawing 10; Geography 106; Botany 24; Chemical Engineering 18; Agricultural Economics 125; Commerce 109; Meteorology 145; Agricultural Engineering 9.

CURRICULUM FOR THE MAJOR IN FOOD INDUSTRY

FIVE-YEAR CURRICULUM

Technical Course

First Year

English 1a	3 cr.	English 1b	3 cr
Agronomy 1	3 cr.	Chemistry 1b	5 cr.
Chemistry 1a	5 cr.	Animal Husbandry 1	3 cr.
Mathematics 51	5 cr.	Mathematics 52	5 cr.
Freshman Lectures	1 cr.	Food Industry 2 (Survey)	1 cr.
Military Science and Physical Education	0 cr.	Military Science and Physical Education	0 cr.
	17		17

Second Year

Mathematics 102a	4 cr.	Mathematics 102b	4 cr.
Quantitative Chemistry 11a	4 cr.	Physics 61	5 cr.
Economics 1a	4 cr.	Bacteriology 1	4 cr.
Botany 1	5 cr.	Agricultural Economics 4	3 cr.
	17		16

Third Year

Food Industry 3 (Food Product Ingredients)	3 cr.	Organic Chemistry 120, 121	4 cr.
Organic Chemistry 120, 121	4 cr.	Chemical Engineering 111 (Unit Operations)	3 cr.
Chemical Engineering 111 (Unit Operations)	3 cr.	Chemical Engineering 116 (Thermal Processes)	3 cr.
Chemical Engineering 117 (Measurements)	3 cr.	Elective Courses	4–5 cr.
Elective Courses	2–3 cr.	Food Industry 107	2 cr.
Food Industry 127	1 cr.		
	16–17		16–17

*Fourth Year**

Food Industry 101 (Food Processes)	4 cr.	Food Industry 102 (Food Processes)	4 cr.
Food Bacteriology 125	4 cr.	Dairy and Food Sanitation & Regulations 42.	3 cr.
Physical Chemistry 130, 131	4 cr.	Physical Chemistry 130, 131	4 cr.
Biochemistry 105	5 cr.	Food Chemistry 146	2 cr.
		Food Chemistry 147	2 cr.
		Civil Engineering 197 (Industrial Waste Treatment)	2 cr.
	17		17

*Fifth Year***

Microbiology 127 (Industrial)	3 cr.	Dairy Chemistry 121	2–5 cr.
Thesis	4 cr.	Fermentation Chemistry 227	2–4 cr.
Elective Courses	8 cr.	Food Equipment Mechanics 108	3 cr.
		Thesis	4 cr.
		Elective Courses	0–6 cr.
	15		17

* Upon completion of the fourth year the student will be awarded the Degree of Bachelor of Science in Agriculture with a major in Food Industry.

CONSERVATION MAJORS IN AGRONOMY OR SOILS

Students preparing for professional positions in soil conservation work involving erosion control, farm management, or reclamation activities have two general options:

(a) Farm planning or farm management. A major in either Agronomy or Soils is advisable. Advanced courses in both these departments and at least one course in each of the following fields should be selected: livestock feeding, farm management, land economics, agricultural engineering, and wildlife management. The

Soils major should include Geology 1, a college course in physics, Soils 122, and an ecology course in agronomy, botany, or zoology.

(b) Soil survey or land classification. For this option a major in Soils including Soils 122, 125, and 135 and advanced courses in agronomy, agricultural economics, geology, botany, and geography are recommended.

Students who prefer a less specialized, general training in conservation and who may find employment in semi-technical capacities such as scientific aides, wardens, or farm-planning aides should major in Agronomy or Soils and should follow the curriculum outlined below:

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a	3	English 1b	3
Chemistry 1a	5	Chemistry 1b	5
Agronomy 1	3	Animal Husbandry 1	3
Freshman Lectures	1	Botany 1	5
Agricultural Engineering 1 or 40	4 or 3	Physical Education and Military Science	0
Physical Education and Military Science	0		
	16 or 15		16

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Bacteriology 1	4	Agricultural Economics 4	3
Economics 1a	4	Entomology 1	3
Soils 1	4	Geology 1	5
Zoology 1	5	Soils 26	2
Military Science	0	Electives	3
		Military Science	0
	17		16

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Soils 166	4	Agronomy 101	3
Agricultural Economics 117	3	Geography 128	3
Agronomy 102	2	Wildlife Management 118	3
Electives	6	Agricultural Economics 10	3
		Electives	4
	15		16

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
Zoology 124 or 126	2–3	Soils 125	3
Electives or credits in major	12–13	Botany 160	3
		Electives or credits in major	10
	14–16		16

Sample curriculum outlined above plus completion of a major in Soils or Agronomy meets minimum requirements, with the exception of 7 elective credits outside the College, for B.S. degree in Agriculture.

RECREATION MAJOR

This major is designed for students who are interested in professional leadership in (a) recreation and/or (b) volunteer leadership in the development of a satisfying and healthy community life. Students who choose this major must take their agricultural college

** Upon completion of the fifth year, the student will be awarded the degree of Master of Science in Dairy Industry, Specialization in Food Industries, providing he has completed one summer of employment in the food and fermentation industries (certified) and presents an acceptable thesis on an assigned subject.

major in Agricultural Economics or Rural Sociology. It is desirable that the student's adviser be chosen from the Recreation Curriculum advisory committee.

Suggested Sequence of Courses
for Students in College of Agriculture taking major in
Community Leadership in Recreation and an Agricultural College major
(in Rural Sociology)

First Year

First Semester	Credits	Second Semester	Credits
English 1a	3	English 1b	3
Chemistry 1a	5	Chemistry 1b	5
Agronomy, Animal or Dairy Husbandry	3	Agronomy, Animal or Dairy Husbandry	3
Freshman Lectures	1	Freshman Elective (b)	4–5
Freshman Elective (a)	3–5	Physical Education and Military Science	0
Physical Education and Military Science	0		
	15–17		15–16

Second Year

First Semester	Credits	Second Semester	Credits
Bacteriology	4	Agricultural Economics 4	3
Economics 1a	4	Rural Sociology 27	2
Soils 1	4	or Biochemistry 1	4
Sophomore Elective (b)	3–5	Physical Education 16	1
Military Science	0	Sophomore Elective (d)	4–5
		Agricultural Elective	2
		Military Science	0
	15–17		16–17

Third Year

First Semester	Credits	Second Semester	Credits
Psychology 1	4	Health Education	3
Education 14	2	Agricultural Electives	4
Education 73	3	Psychology 105	3
Rural Sociology 25	3	Recreational Resource	6
Recreational Resource	4		
	16		16

Fourth Year

First Semester	Credits	Second Semester	Credits
Agricultural Electives	2	Agricultural Electives	3
Rural Education 155	3	Rural Sociology 127	2
Rural Sociology 125	3	Education 113	3
Education 113	3	Education 114	3
Recreational Resource	5	Recreational Resource	5
	16		16

Grand Total: 125–131 credits—124 required for graduation.

Freshman and sophomore electives (a) (b) (c) and (d) must include Mathematics, Physics, Botany, Zoology, or a maximum of two agricultural courses from two different departments. This includes:

45 credits in College of Agriculture plus Freshman Lectures and possible freshman or sophomore electives from Agricultural Departments.

25 elective credits outside of College of Agriculture plus possible recreation resource areas.

A major in Rural Sociology with 10 credits in Rural Sociology, 3 credits in Rural Education, and 3 credits in Agricultural Economics.

22 credits in social sciences including 3 courses in Rural Sociology, 2 courses in Economics and Agricultural Economics, and 2 courses in Psychology.

20 credits in recreation resource areas with a possibility of more if resource areas (Landscape Architecture or Nature Study) in the College of Agriculture are chosen.

23 credits in the recreation professional field substituting Agricultural Education 155 and Rural Sociology 127 for Education 74 and Education 75.

CURRICULUM LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (AGRICULTURE AND NAVAL SCIENCE)

Those students who wish to qualify for the Bachelor of Science degree in Agriculture and at the same time complete the 24 credits required in the Naval Science program may do so by following the suggested curriculum listed.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a	3	English 1b	3
Chemistry 1a	5	Chemistry 1b	5
Agronomy or Animal-Dairy Husbandry 1	3	Agronomy or Animal-Dairy Husbandry 1	3
Naval Science 11	3	Naval Science 12	3
Freshman Lectures	1	Freshman Elective	3
Physical Education	0	Physical Education	0
	15		17

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Economics 1a	4	Agricultural Economics 4	3
Bacteriology 1	4	Freshman Elective	3
Soils or Biochemistry 1	4	Agricultural Courses (Major 3 cr.) (Elective 3 cr.)	6
Naval Science 21	3	Naval Science 22	3
	15		15

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Sophomore Elective	5	Sophomore Elective	5
Naval Science 31	3	Naval Science 32	3
Agricultural Courses (Major 3 cr.) (Elective 3 cr.)	6	Agricultural Courses (Major 3 cr.) (Elective 3 cr.)	6
Elective	3	Elective	2
	17		16

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
Agricultural Courses (Major 3 cr.) (Elective 3 cr.)	6	Agricultural Courses (Major 3 cr.) (Elective 4 cr.)	7
Naval Science 41	3	Naval Science 42	3
Electives	8	Electives	6
	17		16

Students enrolled in this curriculum shall present 128 credits for the Bachelor of Science degree (Agriculture and Naval Science), four credits beyond the present requirement of 124 credits.

A student transferring from the curriculum leading to the Bachelor of Science degree (Agriculture and Naval Science) to the curriculum for the Bachelor Science degree (Agriculture) shall receive credit for the work in Naval Science on the same basis as credit is allowed for work in courses in Military Science. (No credit for the first four semesters of the basic course and no more than a total of eight credits for the completion of advanced courses; and no credit shall be granted unless a total of eight semesters has been completed.)

SCHOOL OF COMMERCE

FAYETTE H. ELWELL, DEAN
ERWIN A. GAUMNITZ, ASSISTANT DEAN
ETHEL O. BRUMM, ASSISTANT TO DEAN
MILDRED A. RATHBUN, ADMINISTRATIVE ASSISTANT

FACULTY

(Department of Commerce only)

ANDREWS, RICHARD BRUCE, *Ph.D.*, Assistant Professor of Commerce
BELCHER, DAVID W., *Ph.D.*, Associate Professor of Commerce
BOWER, JAMES BEARDSLEY, *M.S., C.P.A.*, Assistant Professor of Commerce
CENTER, CHARLES CONVERSE, *Ph.D., C.L.U.*, Professor of Commerce
COWEE, JOHN WIDMER, *Ph.D.*, Assistant Professor of Commerce
DUNN, S. WATSON, *Ph.D.*, Assistant Professor of Journalism and Commerce
ELWELL, FAYETTE HERBERT, *P.A., C.P.A.*, Dean of the School of Commerce; Professor of Accounting
FINE, ISADORE VICTOR, *Ph.D.*, Assistant Professor of Commerce
FOX, PHILIP GORDER, *M.A.*, Professor of Business Administration
FRAINE, HAROLD GEORGE, *Ph.D.*, Professor of Commerce
GAUMNITZ, ERWIN ALFRED, *Ph.D.*, Assistant Dean of the School of Commerce; Professor of Commerce
GIBSON, JOHN CURRIE, *B.A., C.P.A.*, Professor of Accounting
GLAESER, MARTIN GUSTAV, *Ph.D.*, Professor of Economics and Commerce
GRANER, FRANK MAXWELL, *Ph.D.*, Associate Professor of Commerce
HOSLER, RUSSEL JOHN, *Ed.D.*, Associate Professor of Commerce and Education
JENNINGS, EUGENE EMERSON, *Ph.D.*, Assistant Professor of Commerce; Bureau of Business Research and Service
KESSEL, ROBERT MANLEY, *M.S.*, Instructor in Commerce
KIMBALL, ARCHIE WILLIAM, *B.A., C.P.A.*, Lecturer in Commerce
KNIGHT, WILLIAM DONALD, *Ph.D.*, Associate Professor of Commerce; Director, Bureau of Business Research and Service
KUBLY, HAROLD EDWARD, *Ph.D.*, Associate Professor of Business Administration
LARSON, ROBERT EARL, *Ph.D., F.S.A.*, Assistant Professor of Commerce
LINS, ANGELINE GENEVIEVE, *B.A.*, Associate Professor of Accounting
MOBERLY, RUSSELL LOUIS, *Ph.D.*, Professor of Commerce
PETERSON, EDWIN BENDIX, *M.A.*, Assistant Professor of Commerce
RATCLIFF, RICHARD UPDEGRAFF, *Ph.D.*, Professor of Land Economics
SCHUCK, HARRY MICHAEL, *M.A., LL.B.*, Associate Professor of Commerce
THATCHER, LIONEL W., *Ph.D.*, Professor of Commerce and Economics
TRUMBOWER, HENRY ROSCOE, *Ph.D.*, Emeritus Professor of Commerce and Economics
WERNER, EDWARD EMIL, *M.B.A.*, Instructor in Commerce
WESTING, J. HOWARD, *Ph.D.*, Professor of Marketing

SCHOOL OF COMMERCE

In 1900, during the administration of Charles K. Adams, a new department, the School of Commerce, was founded in the College of Letters and Science. This School was one of the first five such schools in the United States. Dr. W. A. Scott, a graduate of Johns Hopkins and a professor of economic history and theory, was the first director, serving in this capacity until 1930.

Professor Chester Lloyd Jones was named as the second director and served until 1935, when he was succeeded by Professor Fayette H. Elwell. The latter was appointed Dean when the School of Commerce was established as a separate administrative unit in July, 1944. Since then the School has grown not only in the number of students but also in breadth and depth of its program. All of its offerings are based on a foundation of broad fundamental education with specialization coming in the latter part of the undergraduate career. Post-graduate instruction, institutes and conferences for business groups, and research have been greatly expanded.

Perhaps one of the best tests of the quality of contributions the School has made to the University, the state, and the nation is the record of its graduates. In every field of business endeavor—banking and finance, industrial management, marketing, advertising, merchandising, public utility management, real estate, insurance, statistics and accounting—the success of hundreds of Wisconsin commerce men and women attests the soundness of a school of business administration organized as it is at Wisconsin.

The University of Wisconsin has also paid attention to other educational opportunities in addition to those relating to undergraduate teaching. The public service program of the University, including institutes and conferences, has been greatly expanded during the past few years.

For example, in 1944, the School of Commerce worked jointly with the Extension Division of the University and the Wisconsin Manufacturers' Association to organize the Industrial Management Institutes. This program, offering specialized training for supervisors and junior executives in industry, was originally composed of two one-week sessions; the training provided was intended to increase productivity for the war effort. However, the results of these first institutes were so encouraging that the program continued to be in demand. In 1944–45, 23 institutes were held, with 28 companies sending 386 men. During the period 1950–51, there were 100 institutes and conferences, to which 392 companies sent a total of 3,082 men.

Another adult educational program of the School of Commerce is the School of Banking which was organized in 1945 to provide bankers an opportunity for advanced study and research in banking, economic, and monetary problems. The curriculum consists of a three-year program, two weeks each summer, with the provision that problems assigned are to be solved and submitted between sessions. Enrollment for the first year was 47 students from 3 states. In 1951 there were 649 students from 34 states and the District of Columbia.

For special bulletins of the various industrial management institutes, address Professor R. E. Sullivan, Industrial Management Institutes, P. O. Box 2098, Madison, Wisconsin. For bulletins of the School of Banking, address the office of the School of Commerce, Sterling Hall, Madison 6, Wisconsin.

A great many other short courses, conferences, and seminars have been held on and off the campus for various business groups. These meetings range from one-day to four-week schools. Each is sponsored by the School of Commerce in co-operation with the trade or professional organization within the field, and a great majority of the speakers are men of demonstrated ability in their particular line of endeavor.

These meetings are generally open to students of the School of Commerce, providing them the opportunity of hearing many well-known authorities discuss the current problems of their trade or profession.

This public service program of adult education is carried on jointly with the Bureau of Community Development of which Professor Roy J. Colbert is the Director. Among the institutes, seminars and clinics held during the past few years have been those for Trade Association Executives; Church Leaders; Life, Fire, and Casualty Insurance Agents; Automotive Dealers; Certified Public Accountants; Retail Lumber Dealers; Hardware Dealers; Resort Owners; Salesmen; and several planning and research workshops for regional development. Retail dealers in various communities are given assistance with trade area surveys and trade promotion programs.

Details concerning any of the institutes scheduled for the immediate future may be obtained by writing directly to Professor Roy J. Colbert, Bureau of Community Development, 3002 Stadium, University of Wisconsin, Madison 6, Wisconsin.

The remaining pages of this bulletin are devoted to the resident instruction and research phases of the work of the School of Commerce. Those wishing further information should write to Dean F. H. Elwell, School of Commerce, Sterling Hall, Madison 6, Wisconsin.

STUDENT EXPENSE

For a full statement regarding living costs, fees and tuition, housing, student employment, and loans and scholarships, consult the General Information bulletin.

In brief, a semester fee of $75 for residents and $225 for nonresidents is required of all students in the School of Commerce. Self-supporting students may secure assistance in obtaining employment by applying to the Student Employment Bureau, Memorial Union Building. Initial requests for student housing information should be directed to the University Housing Bureau, 434 Sterling Ct., Madison 6, Wisconsin, where all types of student housing accommodations are listed.

PLACEMENT BUREAU

Another outstanding work of this School is the placement bureau, now under the direction of Professor Henry R. Trumbower. The placement-bureau activities of the School of Commerce date back to the time when the first class of commerce students graduated. From the very beginning the faculty recognized its responsibility to the graduates in aiding them to obtain employment with business and industrial concerns. At the same time it also recognized the responsibility of aiding and assisting business and industry to obtain a trained body of men.

At the present time the competence and the training of the graduates of the School are so well recognized by the business world that representatives of business firms make a practice of coming to Wisconsin to interview first- and second-semester graduates. A large proportion of the commerce graduates, as well as the economics majors, obtain their positions in this manner.

The placement office of the School also offers its services to the alumni who are seeking job transfers after they have been out a number of years, and frequent requests come from industrial and business concerns for men who are available for employment and who have had experience.

In all of the activities, efforts are continually made to render service to Wisconsin employers by providing them with a trained business personnel, and they, in turn, have come to depend upon the placement office to furnish them with properly trained persons. The additions to the various departments of the state and Federal Government bring their needs and requirements for persons with a commerce background to the placement office.

Commerce School graduates and economics majors who finished with the class of 1951 were placed with 308 different concerns and firms in the business field and government agencies.

PUBLIC SERVICE

The courses offered by the School of Commerce and other university departments serve as excellent preparation for those desiring to take entrance examinations for certain fields

of municipal, state and federal service. Inquiries regarding academic training helpful in preparing for a particular departmental service or field of public administration related to the subjects taught in the School of Commerce may be addressed to the dean.

BUREAU OF BUSINESS RESEARCH AND SERVICE

The Bureau of Business Research and Service, organized in 1945, has as its purpose the facilitation of faculty research and the provision of useful information to business and industry. The Bureau is concerned with the study of problems relating to the economic development of Wisconsin and the nation and to the management and operation of business enterprises. The research program is carried out chiefly by members of the School of Commerce faculty or under their direction.

The results of the Bureau's research are published in several series of monographs known as Wisconsin Commerce Studies, Wisconsin Commerce Papers and Wisconsin Commerce Reports. Individual monographs are available to the public at nominal cost.

Each year the Bureau has available a limited number of research assistantships awarded to students, usually at the graduate level, who are qualified by experience and ability to carry on research work under the supervision and guidance of the faculty. The assistantships correspond approximately to half-time employment and carry the same stipend as similar assistantships throughout the University. At present this stipend amounts to $1,100 for an academic year, or $1,320 on the twelve-months' basis. Research associate appointments, with correspondingly higher stipends, are also available to people with exceptional backgrounds.

STUDENT ACTIVITIES

Students enrolled in the School of Commerce will find several active student organizations open for possible membership. These organizations are as follows: *Alpha Delta Sigma*—professional advertising fraternity; *Alpha Kappa Psi*—national commerce fraternity; *Beta Alpha Psi*—professional accounting fraternity; *Beta Gamma Sigma*—national honorary commerce fraternity; *Delta Sigma Pi*—commerce social fraternity; *Finance Society*—an organization for finance majors; *Insurance Society*—an organization for insurance majors; *Marketing Club*—an organization for students interested in the field of marketing; *Phi Chi Theta*—professional commerce sorority; *Real Estate and Homebuilding Association* and *Sigma Lambda Chi*—for students interested in real estate and light building; *Society for Advancement of Management*—an organization for students interested in management.

The presidents of the above organizations make up the Commerce Student Council which holds meetings with the dean at various times throughout the academic year formulating plans for the events fostered by the School, particularly the Commerce Turnout in the fall and the Senior Send-off Banquet in the spring.

FELLOWSHIPS, SCHOLARSHIPS AND ASSISTANTSHIPS

For a list of available scholarship and loan funds, students should consult the bulletin Student Financial Aids, which may be obtained from the Student Personnel Office. Many of these are open to all students in the University while others are limited.

The School of Commerce is fortunate in having a large number of undergraduate scholarships. The recipients of such scholarships are chosen by appropriate committees and the awards are announced at the Senior Banquet in the spring.

With the exception of one of the *Automotive Industry of Wisconsin* scholarships which is awarded to a senior for graduate study, the *A. C. Nielsen* scholarships which may be awarded either to juniors or seniors for graduate study, and one of the *Paul E. Stark* fellowships which is awarded to a graduate student, the following scholarships are awarded to second-semester juniors, subject to their returning as seniors:

Anonymous Scholarships—Three scholarships of $150 each. Awards available only to students not receiving scholarship grants from other sources.

Automotive Industry of Wisconsin Scholarships—Two of $250 each. Conditions of award same as above.

J. J. Fitzpatrick Scholarship—One of $200. Awarded to student in Light-Building Industry curriculum.

William S. Kies Scholarship—One of $250. Awarded to major in Banking and Finance.

Milwaukee Association of Purchasing Agents Scholarship—One annual scholarship of $250. Awarded to a student majoring in Marketing and interested in Purchasing.

Don S. Montgomery Scholarships—Two of $250. Awarded to students in the Light-Building Industry curriculum.

A. C. Nielsen Scholarships—Two of $300. Primary consideration is given to students not receiving scholarship grants from other sources. Awarded to students for purposes of continuing their work in the field of marketing, merchandising and marketing research.

Milton I. Shakow Scholarship Fund—Established by Mr. and Mrs. Joseph D. Shakow in memory of their son Milton (Com. '38) killed in World War II. Two of $250 each. Awarded to students majoring in Marketing.

Paul E. Stark Fellowships—One for $250. Awarded to a senior majoring in Real Estate. One of $500 awarded to a graduate student in real estate or urban land economics.

Albert Trathen Scholarship Fund—One annual scholarship of $150. Awarded to student majoring in Banking and Finance.

Annual scholarships of $250 each to students majoring in Insurance, second-semester juniors or seniors for graduate study, have been established by the following:

CUNA Mutual Insurance Society
Farmers Mutual Automobile Insurance Company
General Casualty Company of Wisconsin
National Guardian Life Insurance Company
Northwestern Mutual, Wisconsin General Agents (Three scholarships)
Old Line Life Insurance Company of America
Wisconsin Association of Insurance Agents
Wisconsin Life Insurance Company

SYSTEM OF ADVISERS

Upon admission to the University, each student is assigned to a member of the faculty who acts as his adviser. The duties of the adviser are to assist the student in selecting his subjects so as to secure a broad education as well as to aid him in interpreting the requirements for degrees to meet them in their proper sequence. The responsibility for the selection of courses rests in the final analysis upon the student and it is not the province of the adviser to refuse approval of a course which the student is entitled to elect. Similarly, it is the primary duty of the student to meet the requirements of his course in their proper order, so that he may not, in his senior year, find himself ineligible for graduation.

At the opening of each semester the student is required to consult his adviser concerning his choice of studies, and the adviser must sign the student's study list. The student should study the time table, carefully watching prerequisites so he may avoid electing a course for which he will be unable to receive credit.

During the freshman and sophomore years the student is classified as pre-Commerce and has the same adviser. When the student enters the School of Commerce he is assigned a School of Commerce faculty members as an adviser. (See page 308 for information concerning Light-Building Curriculum students.)

CREDITS, GRADES, AND POINTS

The unit used in computing the amount of work required for graduation is the *credit,* which represents one hour of class work per week for one semester together with the necessary preparation. Two or sometimes three hours of laboratory work are considered as the equivalent of one hour of class work. Students are expected to earn an average of 16 credits per semester in class and laboratory work, making 32 credits per year, or 128 for the four-year course.

GRADE-POINT SYSTEM. Semester grades are reported by letter only. For the sake of convenience in computing weighted averages each letter grade carries a specified number of points per credit, thus a *B* in a three-credit subject would yield 6 points. The scale of grades and points follows:

Grade	Percentage Equivalent	Points Per Credit
A—(Excellent)	93-100	3
B—(Good)	85-92	2
C—(Fair)	77-84	1
D—(Poor)	70-76	0
E—(Condition)	60-69	0 (—½)*
F—(Failure)	Below 60	0 (—1)*

POINT-CREDIT RATIO. The general quality of a student's work over a number of semesters is expressed in terms of a point-credit ratio, which is the result obtained by dividing the total number of points he has earned by the total number of credits earned. The highest possible quotient is 3.0, which represents a grade of *A* in every subject; the lowest possible quotient is zero.

The point-credit ratio must not be confused with a somewhat similar figure known as the grade-point average, which is computed at the close of each semester chiefly for purposes of determining eligibility and making statistical comparisons. The grade-point average is based on the number of points earned and credits elected during the semester, with deductions for deficiencies (see * above). The maximum possible average is 3.0, the minimum —1.0.

Each student is required to take class and laboratory work in the amount of 12 to 17 credits per semester. A student who desires to elect fewer than 12 credits must obtain permission in advance from the dean. A student in his first semester at Wisconsin is not permitted to elect more than 17 credits. A student who has received a grade-point average of 2.0 or better in the preceding semester (on a basis of at least 14 credits) may carry a semester program rising to 19 credits, provided such program does not entail taking more than six courses at a given time. No student will be permitted to count toward graduation more than 19 credits in one semester.

Candidates for the bachelor's degree who desire to graduate in three years may usually do so by obtaining 17 to 19 credits per semester after the first semester of the freshman year, and by attending two or three summer sessions or by taking correspondence courses from the Extension Division or a combination of these two.

Such students will need to select carefully their work for the summer with reference to the required and elective subjects of the course in which they expect to graduate. Correspondence credits together with other extension credits may not exceed one half the number of credits required for graduation. Students taking correspondence courses, however, are reminded of the regulation (see bulletin of the Extension Division) requiring them to return to and deposit with the Recorder of the Extension Division all unfinished assignments or lessons as soon as they enter upon or resume residence work at the University. The penalty for retaining such assignments during residence is forfeiture of the credit for the correspondence course.

EXAMINATIONS. Each study terminates in a two-hour written final examination at the close of the semester. During the semester two or three one-hour written tests are ordinarily held in all but the most advanced courses.

HONORS IN SCHOLARSHIP

Sophomore Honors and High Honors are awarded at the completion of the sophomore year, as follows: A student who has earned a grade-point average of 2.25 on the first 58 residence credits shall be awarded Sophomore Honors; similarly, a student who has earned a grade-point average of 2.75 shall be awarded Sophomore High Honors. (In the computation, not to exceed 32 credits earned in the Milwaukee Extension Center may be substituted for residence credits; but the computation will not include credits in physical education, basic military science, band, or correspondence courses. Credits transferred from other institutions will not be included in the honors computation, but the presence of not more than 15 transfer and other ineligible credits will not exclude a student record from consideration for honors. Grades of Failure will not debar a candidate, but credits in failed courses will be included in the computation, with zero grade-points.)

Senior Honors, School of Commerce, are based upon the second half of the course at the University of Wisconsin. For those students who enter the School of Commerce with more than 64 credits, a cut-back is permitted into courses taken in the College of Letters and Science. For all courses other than that leading to the University Teachers' Certificate, a student must maintain a 2.25 grade-point average for the first 60 credits and a 1.5 grade-point average for the next four credits to be recommended for Senior Honors. For Senior High Honors, a student must maintain a 2.75 grade-point average for the first 60 credits and a 2.00 grade-point average for the next four credits. All credits above 64 will be treated as is true of the first 60. Persons taking the course leading to the University Teachers' Certificate are allowed six credits beyond the first 60 at a grade-point average of 1.5 for Senior Honors and 2.00 for Senior High Honors

REQUIREMENTS FOR ADMISSION

Students who wish to become candidates for the degree of Bachelor of Business Administration will enter the School of Commerce at the beginning of the junior year after completing two years of work in the College of Letters and Science, the College of Agriculture, or the College of Engineering. Juniors must make application to the Dean of the School of Commerce for official transfer as soon as the requirements of the freshman and sophomore years have been fulfilled.

Any combination of studies taken in the freshman and sophomore years which includes the specific requirements listed below is acceptable for entrance to the School of Commerce. Suggested programs for the first two years in the Colleges of Letters and Science, Agriculture, and Engineering may be found in the bulletins of those colleges.

The specific requirements for admission to the School of Commerce which should be met by the end of the sophomore year are:

1. A minimum of twelve (12) credits in English composition, English literature, American literature, or comparative literature, of which at least six (6) credits must be in English composition.
2. Mathematics 7 (or a semester course in calculus for Engineering transfers).
3. A minimum of eight (8) credits in laboratory science.
4. Economics 1a.
5. Commerce 8 and 9.
6. A minimum grade-point average of 1.3 (based on all work carried in first two years).
7. A sufficient number of credits to warrant classification as a junior (58 credits).

Foreign language is optional. Juniors who do not present Economics 1a, and Commerce 8 and 9 may be admitted *conditionally* to the School of Commerce, *at the discretion of the dean,* pending completion of these requirements.

Laboratory courses in the following fields carry credits as laboratory science: astronomy, botany, chemistry; geography (Geography 1, 2 and 17), geology, physics, and zoology. Courses recommended for general electives in the sophomore year are Commerce 43, Business ethics, at least one course in Speech, and Geography 6 and 7, World survey of cultural geography.

STUDENTS TRANSFERRING TO THE UNIVERSITY OF WISCONSIN

Students whose freshman and sophomore years are spent in some college outside the University of Wisconsin should follow a sequence similar to that outlined above if graduation from the School of Commerce is contemplated. Students with advanced standing from other institutions and transfers from other courses in the University must meet all the requirements of this School. Substantial equivalents will be accepted for required courses, but no requirements will be waived. Courses in business subjects such as accounting, business administration, advertising, business law, marketing, and the like pursued in other institutions in the *freshman* year will not be accepted as equivalents of the courses offered here in these subjects. Only in exceptional cases will courses in these subjects pursued elsewhere in the sophomore year be accepted in satisfaction of the requirements, since courses in Commerce at the University of Wisconsin are taught primarily in the junior and senior years and presuppose considerable college background. Placement examinations will be given in cases in which doubt exists as to the level of proficiency the student has attained in a given field.

Applicants for admission to the School of Commerce from other colleges or universities should send a transcript of their credits, for evaluation, to the Office of Admissions, 166 Bascom Hall, University of Wisconsin, Madison 6, Wisconsin.

IRREGULAR PROGRAMS

Programs which do not comply with the regulations herein described will be allowed only in the cases of students who are not candidates for a degree, who have had here or elsewhere a course equivalent to two years in this University, and who have had the prerequisites of the particular subjects they wish to pursue. Until such students have demonstrated their ability to maintain a grade of at least *C* in the courses to which they are admitted, their status will be that of students on probation.

RESIDENCE REQUIREMENTS

The minimum residence requirement is 30 credits and 30 grade-points to be earned in at least two semesters at Madison. All candidates for degrees should plan to take their senior year in residence since the advanced work of the major study normally culminates in the last year of the undergraduate course. Furthermore, the last 21 credits earned toward the degree must normally be secured in residence; but in special cases the Executive Committee of the School, on application to the dean, may permit a senior, who has finished all the specific requirements and the work of his major, to take not to exceed 6 credits by correspondence to complete the requirements for his degree.

Since 128 credits are required for graduation it is advisable that the student maintain an average of 16 credits per semester to make normal progress.

REQUIREMENT IN UNITED STATES HISTORY AND INSTITUTIONS

A new requirement in United States History and Institutions has been established for all students who receive degrees in June 1954 and thereafter. Students in the School of Commerce may satisfy this requirement in one of three ways:

1. By passing, by the beginning of the junior year, an attainment examination in United States History based on college-level work or its equivalent.

2. By completing satisfactorily, in college, a continuous year course in United States History. A year course is here understood to be one so listed in the Announcement of Courses (i.e., History 4, 12–112, 113, 117, 120, 121, 122); or two semester courses which, as to content, are in chronological sequence (i.e., any two *consecutively numbered* semester courses chosen from the following: History 101, 102, 103, 104, 105, 106, 107, 108, 109).

3. By combining a semester of United States History with any one of the following courses: Economics 1a; English 140; Philosophy 139; or Political Science 7, 110, 112a, 112b,

165, 166, or 171. The student may choose the semester of History from one of the following semester courses: History 101, 102, 103, 104, 105, 106, 107, 108, 109, or 111; or he may complete either semester of one of the following year courses: History 112, 113, 117, 120, 121, or 122.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION

GENERAL REQUIREMENTS

1. A total of not less than 128 credits and 128 grade-points is required for the degree of Bachelor of Business Administration and a total of not less than 130 credits and 130 grade-points for the University Teachers' Certificate (see page 301 and School of Education section). These credits must include the specific requirements for admission listed on page 296 as well as the basic courses and the major requirements listed below. See page 296 for information regarding the number of credits permitted in a semester.

2. The requirements for admission to the School of Commerce should be met as far as possible during the freshman and sophomore years.

3. A. Basic Courses Required. The following courses in commerce, economics, and mathematics are required. These courses should be completed by the close of the junior year.

	Credits
Economics 1a—General economics (sophomore year)	4
Mathematics 7—Theory of investment (freshman or sophomore year) (or a semester course in calculus for Engineering transfers)	4
Commerce 6—Business communication	3
Commerce 8–9—Accounting (sophomore year)	8
Commerce 31—Business statistics	3
Commerce 109a—Commercial law	3

B. Basic Courses to Be Selected. In addition to the above required basic courses, a selection of *five* from the following eight courses must be made. *None of the five courses selected may count as part of the major, but the basic course prerequisite to each major may be one of the five.*

	Credits
Com. 105—Money and banking	3
Com. 111—Industrial management	3
Com. 112—Marketing methods	3
Com. 137—Corporation finance	3
Com. 139—Principles of insurance	3
Com. 142—Public utilities	3
Com. 171—Personnel management	3
Com. 179—Urban land economics (real estate)	3

4. In total the student must present not less than 52 nor more than 64 credits in the fields of Commerce and Economics, and at least as many grade-points as credits must be earned in this group. Ultimate responsibility for course selections must rest with the student. Faculty members act only in advisory capacities.

Students whose grade-points in Commerce and Economics do not exceed their credits by at least 50 per cent by the beginning of their senior year are required to diversify the work of the major and may not offer more than three courses, excluding the above required basic courses, from any one of the fields described below for upper-group students.

Students whose grade-points in Commerce and Economics exceed their credits by at least 50 per cent by the beginning of the senior year are required to concentrate in a selected field. Their selection must include the specific requirements of the major chosen from one of the following fields:

I. Accounting

Advanced training in accounting is designed primarily for students who expect to become commercial or industrial accountants, controllers and financial officers, or who expect to join the staffs of certified public accountants or of governmental departments. However, the courses will, to a great extent, benefit students majoring in other fields by furnishing them with a comprehensive background of business procedures and relationships.

Wisconsin C.P.A. Examination. Graduates of the School of Commerce who have majored in accounting are permitted by the Wisconsin State Board of Accountancy to take the examination, and are given one and one-half years' credit toward the three-year experience requirement imposed before a successful candidate is issued his certificate.

In addition to the basic courses an Accounting major must take Commerce 109b, 181, 182a, 183, 184, 186 and 187. These courses should be elected in the following sequence: 181 and 182a in the junior year; 109b, 183, 184, 186, and 187 in the senior year.

	Credits
Com. 181—Advanced accounting problems	3
Com. 182a—Cost accounting	2
Com. 182b—Cost accounting	2
Com. 183—Accounts of consolidations and income taxes	2
Com. 184—Auditing	3
Com. 185—Analysis of financial reports and budgeting	2
Com. 186—Accounting systems	2
Com. 187—Governmental accounting	2
Com. 188—Accounting for teachers	3
Com. 199—Public utility and institutional accounting	2
Com. 282—Advanced cost accounting	3
Com. 283—Seminar in accounting	2
Com. 284—Advanced auditing	3

Industrial cost accounting

In addition to the courses required above for an Accounting major, the following group of courses is recommended to students preparing for industrial cost accounting:

	Credits
Com. 111—Industrial management	3
Com. 117—Production planning and control	3
Com. 185—Analysis of financial reports and budgeting	2
Drawing 1—Elements of drawing	3
Mech. Engr. 116—Time and motion study	3

II. Banking and Finance

Students who wish to prepare themselves for life work in commercial banking, investment banking, brokerage, investment counseling, or institutional investing can include in the broad training required for the B.B.A. degree a concentration in suitable courses selected from those given in the field of Banking and Finance.

To major in the field of Banking and Finance, a student must have taken Commerce 105, 3 cr., and Commerce 137, 3 cr. In addition, he must select 12 credits from among the following courses:

	Credits
Com. 105—Money and banking	3
Com. 107—Bank management	3
Com. 110—Investment principles	3
Com. 124a—Public finance—taxation	3
Com. 124b—Public finance—taxes, debts and expenditures	3
Com. 133—Financial history of the United States	3

COM. 137—Corporation finance	3
COM. 143—The securities market	3
COM. 147—Investment management	3
COM. 153—International finance	3
COM. 159—Evolution of the modern corporation	3
COM. 176—Real-estate finance	3
COM. 191—The credit system	3
COM. 192—Money, income and prices	3
COM. 193—Full employment policies	3
COM. 205—Banking and monetary theory	2
COM. 224—Seminar in public finance	2
COM. 237—Seminar in finance	2

In electing work beyond the requirements for the major, the student may well consider the following closely allied courses: Commerce 139, Principles of insurance; Commerce 158, Large-scale enterprise; Commerce 161, Problems in insurance and real-estate law; Commerce 185, Analysis of financial reports and budgeting; Economics 108, Financial institutions; and Economics 181, Industrial fluctuations.

III. BUSINESS TEACHER EDUCATION

The program as given in business-teacher education at the University will qualify the student to teach business education and economics in high schools and vocational schools. The opportunities for worth-while teaching positions in business education are good as compared to many of the other high-school teaching fields. This situation is caused by the increased demand for qualified business teachers and the relatively small numbers who are prepared to teach in this area.

To major in the field of Business-Teacher Education, a student must register concurrently in the School of Education and complete the requirements of that school for the University Teachers' Certificate. In addition to the basic courses in Commerce, the student must take 18 credits in secretarial training. Students who have had previous training in shorthand and/or typewriting may be exempted from certain courses (see below for complete statement regarding exemption) if found proficient upon examination.

Students in this major who choose to complete a teaching minor in Economics are required to take Economics 1b and may use Economics 1b as one of the five courses required in the basic Commerce courses. However, if a minor other than Economics is chosen, Economics 1b may not be used as one of the five basic Commerce courses.

The curriculum in Teacher Preparation is a four-semester sequence. It is therefore necessary for students to start this program the *first semester of the junior year.* Students interested in business-teacher education should consult Professor Hosler *prior* to their junior year.

The courses in Education are:

	Credits
EDUC. 73—The child, his nature and his needs	3
EDUC. 74—The school and society	3
EDUC. 75—The nature and direction of learning (includes Practice Teaching)	5
EDUC. 20—The teaching of secretarial subjects	2 *or* 5
EDUC. 77—The teaching of bookkeeping and the social business subjects (includes Practice Teaching)	2 *or* 5

NOTE: The student may elect *only one* of the Methods courses, Education 20 and 77, for 5 credits.

The courses in Commerce are:

a. The pre-Commerce and basic Commerce courses required of all students in the School of Commerce.

b. The following courses in secretarial training (enrollment in these courses for credit is limited to those students enrolled in the business education curriculum):

	Credits
COM. 63—Beginning typewriting	2
COM. 64—Advanced typewriting	2
COM. 65—Fundamentals of shorthand	4
COM. 66—Advanced shorthand	4
COM. 163—Secretarial techniques	3
COM. 164—Office procedures	3

Students who have had previous training in typewriting or in shorthand will be given attainment examinations prior to enrollment in typewriting or in shorthand. Based upon the attainment examinations, exemption may be granted from Commerce 63, 64, 65 or 66. If the student is exempted from any course (or courses) in typewriting and/or shorthand, he shall select an equivalent number of elective credits.

Commerce 63 and/or Commerce 65 shall be taken without credit by those students who have had more than one year in high school in typewriting and/or shorthand and who do not meet proficiency standards as determined by the attainment examinations.

A total of not less than 130 credits and 130 grade-points is required to graduate from the curriculum in Business Education.

The program as outlined in Business Education will qualify the student for the University Teachers' Certificate with a major in Commerce and a minor in Economics. It is recommended also that the student secure teaching minors in other subject fields.

IV. INDUSTRIAL MANAGEMENT

The courses in Industrial Management are designed to familiarize the student with a variety of problems faced by the managers of industrial enterprises. Emphasis is placed on the use of the scientific method in the solution of problems relating to questions of organization, to the physical background of work, and to the operation of the various departments of a company.

The necessity of close control over the operations of an industrial plant in order to enable it to compete on a price and quality basis with others in its field is stressed throughout the courses. The notable accomplishments which have been achieved by many firms in this respect are analyzed.

Students who have majored in Industrial Management are ready for a wide variety of jobs in industry and are particularly well prepared to enter company training programs. Those who have taken the related courses offered in Mechanical Engineering are equipped for work in Industrial Engineering. Mechanical Engineering 23, Manufacturaling equipment and material, is strongly recommended as a preparation for the other courses in Mechanical Engineering.

To major in the field of Industrial Management, a student must have taken Commerce 111, 3 cr. In addition, he must take Commerce 117, 3 cr. and a further selection of 9 credits from the following courses:

	Credits
COM. 111—Industrial management	3
COM. 117—Production planning and control	3
COM. 119—Industrial marketing	2
COM. 134—Industrial statistics	3
COM. 171—Personnel management	3
COM. 182a and b—Cost accounting	4
COM. 211—Seminar in industrial management	2
*MECH. ENGR. 12—Principles of industrial organization	3
MECH. ENGR. 115—Industrial plant design	3
MECH. ENGR. 116—Motion and time study	3
MECH. ENGR. 120—Materials handling and control	3

* May not be counted for credit by those Commerce students who have had Commerce 111. Engineers, transferring to School of Commerce, who have had Mech. Engr. 12 may not take Commerce 111 for credit.

MECH. ENGR. 122—Industrial inspection and quality control	3
CIVIL ENGR. 103—Economic selection	2
PSYCH. 115—Industrial psychology	3
PSYCH. 129—Personnel psychology	3

V. LABOR MANAGEMENT

Labor management graduates are in demand as management, personnel, production, or sales trainees in business and industry. Graduates with advanced degrees find opportunities both in industry and in teaching at the college and university level.

Background for majors in this field, besides general work in Business Administration, might well include courses in economics, sociology, psychology, education and engineering.

To major in the field of Labor Management, a student must have taken Commerce 171, 3 cr. In addition, he is required to take Commerce 173, 3 cr., Commerce 122, 3 cr., and a further selection of 6 credits from the following:

	Credits
COM. 111—Industrial management	3
COM. 122—Labor problems	3
COM. 123—Labor legislation	3
COM. 134—Industrial statistics	3
COM. 141—Group, pension and profit-sharing plans	3
COM. 145—American Labor history	3
COM. 149—Government and labor	3
COM. 171—Personnel management	3
COM. 172—Management and labor relations	3
COM. 173—Job evaluation and merit rating	3
COM. 174—Personnel policies, training and service programs	3
COM. 271—Seminar in labor management	2

See also College of Letters and Science—Departments of Economics, Psychology and Sociology, School of Education and College of Engineering.

VI. MARKETING

The transfer of goods from producer to consumer has always been an important business activity. Its importance has been growing over the past two decades as the competition for consumers' dollars has increased. Measured in terms of its cost, marketing today is more important than manufacturing, and many firms believe that their greatest unsolved problems lie in the field of marketing.

The marketing curriculum is designed to deal with marketing practices and problems from the point of view of business management. In the first course the student is given a broad perspective of the entire scope of marketing. This course is intended to provide a survey of the field for students planning to specialize in other fields of commerce as well as to provide a foundation course for students who plan to major in marketing. The objective of the beginning course is to familiarize students with the nature of marketing institutions, functions, terminology, and problems.

Advanced marketing courses develop more thoroughly the specialized fields of Marketing such as Retailing, Advertising, Sales Administration, Purchasing, and Market Research. Through these courses the student who is majoring in marketing is enabled to make a close study of the specialized marketing institutions and functions, to appreciate their interdependence in the accomplishment of the total marketing task, and to form a rather clear idea as to his interest in employment in these several fields.

Marketing majors must have taken Commerce 112, and in addition are required to take Commerce 114, 115, and 170, as well as two additional courses from the following list:

	Credits
Com. 112—Marketing methods	3
Com. 113—Problems in market analysis	3
Com. 114—Marketing management	3
Com. 115—Principles of advertising (or Journalism 115)	3
Com. 116—Problems in national advertising	3
Com. 118—Radio and television advertising	3
Com. 119—Industrial marketing	2
Com. 120—Price policies	3
Com. 126—Retail advertising campaigns	3
Com. 170—Retail merchandising	3
Com. 197—Sales forecasting and measurement	3
Com. 198—Public relations and problems in distribution	3
Com. 213—Seminar in marketing	2
Agr. Econ. 125—Marketing agricultural products	3

Marketing majors who wish to specialize within the field of Marketing in Advertising or Retailing may, in addition to the courses in the School of Commerce, take appropriate courses in other schools and departments for non-commerce credit toward their degrees. In the field of Advertising there are a number of pertinent courses in Journalism and Psychology which may be elected with the consent of the student's adviser. Students interested in retailing may take related courses in Home Economics and Psychology with the consent of their adviser.

PURCHASING

Marketing majors who wish to specialize in the field of Purchasing for industry or government should select a substantial number of the following courses in the various schools and colleges of the University as electives *with credit only under this curriculum:*

	Credits
*Com. 109b—Commercial law	3
*Com. 117—Production planning and control	3
*Com. 134—Industrial statistics (Quality control)	3
*Com. 164—Office procedures	3
*Com. 174—Industrial policies, training and service programs	3
*Com. 182a—Cost accounting	2
*Civil Engr. 101—Contracts and specifications	2
Civil Engr. 102—Estimates	2
Civil Engr. 103—Economic selection	2
*Mech. Engr. 23—Manufacturing equipment and material	2
Mech. Engr. 82—Industrial inspection methods	3
Mech. Engr. 115—Industrial plant design	3
Mech. Engr. 116—Motion and time study	3
Agr. Econ. 155—Prices of agricultural products	3

VII. Public Utilities and Transportation

This field covers courses dealing with local public utilities—electric, gas, water, telephone and urban transportation. Courses dealing with the various types of transportation—railway, air and highway—are also included under this heading. Government regulation and control as well as the problems of management and operation are stressed in all of the courses listed.

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* These courses are particularly recommended.

To major in the field of Public Utilities and Transportation, a student must have taken Commerce 142, 3 cr. In addition, he must take 12 credits from the following:

	Credits
COM. 135—Railway transportation	3
COM. 136—Transportation problems	3
COM. 142—Public utilities	3
COM. 168—Highway transportation	3
COM. 169—Air transportation	3
COM. 189—Transportation rates and traffic	3
COM. 195—Public utility management	3
COM. 266—Seminar in public utilities	2

VIII. Real Estate

The real estate industry embraces the development, financing and marketing of the land resources of the nation. It is manned by business men who bring these resources into use as developers, who administer real estate enterprises as owners or managers, who engage in real estate financing, and who serve the market as brokers and traders in real estate. These men will serve their own and society's best interests if their activities are conducted in a sound and efficient manner. Recognition of this truth is reflected in expanding employment opportunities in these fields in recent years. College-trained men are in demand for professional-type service in appraising, property management and mortgage lending. Governmental activities in housing, planning and home financing present other opportunities for careers. Finally, an understanding of real estate matters is essential to an executive in any type of business, since he is likely to be faced, at some time, with problems of land development, site selection, financing, leasing, and land purchase.

To major in the field of Real Estate, a student must have taken Commerce 179, 3 cr. In addition, he must take Commerce 176, 3 cr., and 9 credits from the following:

	Credits
COM. 161—Problems in insurance and real estate law	2
COM. 166—Property, wills, trusts, estates and taxation	3
COM. 175—Valuation of real estate	3
COM. 176—Real estate finance	3
COM. 177—Property development and management	3
COM. 178—Housing and planning problems	3
COM. 179—Urban land economics	3
COM. 279—Seminar in urban land economics	2
AGR. ECON. 117—Outlines of land economics	3
AGR. ECON. 221—Land income	3
POL. SCI. 270—Seminar in public planning	2
SOC. 71—The modern city	3

IX. Risk and Insurance

Students who wish to prepare themselves for careers in the insurance industry will find a group of courses which will give adequate training in each of the basic fields of insurance—as life, fire and casualty, and home office. Students interested in preparing for the examination for Chartered Life Underwriter, for Chartered Property Casualty Underwriter, or for the Society of Actuaries, should write the School of Commerce for detailed arrangement of courses so that the major requirements may be met by the time of graduation.

To major in the field of Risk and Insurance a student must have taken Commerce 139, 3 cr. In addition, he must take Commerce 121, 3 cr., Commerce 138, 3 cr., and a minimum of 6 credits from the following courses:

	Credits
COM. 121—Property and casualty insurance	3
COM. 138—Life insurance	3
COM. 139—Principles of insurance	3

COM. 140—Advanced life insurance	3
COM. 141—Group, pension and profit-sharing plans	3
COM. 144—Accident, health, hospitalization, workmen's compensation and employers' liability insurance	3
COM. 160—Advanced property and casualty insurance	3
COM. 161—Problems in insurance and real estate	2
COM. 162a—Actuarial theory and practice	3
COM. 162b—Actuarial theory and practice	3
COM. 166—Property, wills, trusts, estates, and taxation	3
COM. 239—Seminar in risk and insurance	2
MATH. 24—Theory of life insurance	3
MATH. 138—Actuarial mathematics	3
ECON. 120—Social security	3
ECON. 154—Risk and profit	3

PROGRAM IN ACTUARIAL SCIENCE

The program in Actuarial Science covers the syllabus for the first four parts of the examinations of the Society of Actuaries. Although the program can be completed in four years, a number of students perefer a 5-year program leading to a master's degree.

Students interested in the program of Actuarial Science should consult with the instructor in Commerce 162 a and b.

X. STATISTICS

In university courses the major educational efforts are directed towards the interpretation of data, which consist largely of making estimates. Because conclusions are reached through the application of the laws of probability students who intend to work seriously in the field of Statistics, particularly in fields involving theoretical research, should push their mathematical training as far as possible and should arrange to work through courses in calculus as early as possible. Much of the work in collection and presentation of data is not essentially mathematical and many successful practicing statisticians have no such mathematical training.

Employment is frequently offered at various levels in the Federal and state governments, and in public utility companies, finance companies, large-scale retail enterprises, manufacturing companies, and other private enterprises of various sorts. Market research, industrial and technical research, and quality-control activities regularly absorb many students who have had sufficient statistical training. A broad knowledge of accounting will be advantageous to statisticians who operate largely in the internal statistics of business, and some engineering knowledge will be advantageous to those interested in industrial research and quality control.

To major in the field of Statistics, a student must take, in addition to the basic course (Commerce 31), Commerce 196, 3 cr.; Commerce 132, 3 cr.; and 6 additional credits from the following courses:

	Credits
COM. 31—Business statistics	3
COM. 132—Statistical economics	3
COM. 134—Industrial statistics	3
COM. 196—Advanced statistical technique	3
COM. 197—Sales forecasting and measurement	3
COM. 230—Seminar, statistical research and methods (open to seniors by consent of instructor)	2
MATH. 22—Calculus and analytical geometry III	4
MATH. 118—Introduction to the theory of probability	3
MATH. 133—Finite differences and interpolation	3
MATH. 134—Mathematics of elementary statistics	3
MATH. 135—Introduction to statistical methods in the natural sciences	3
MATH. 137—Mathematical statistics	3
MATH. 138—Actuarial mathematics	3

Those interested in other courses in statistics should see the listings of the Division of Statistics in the Graduate School bulletin.

COMBINED MAJORS

A student may combine two of the fields listed above such as real estate and finance, accounting and statistics, statistics and insurance, or other combinations that are reasonable considering the student's objective. The usual requirement is that at least 9 credits above the basic course in one field may be combined with at least 6 credits above the basic course in another to satisfy the requirements of a combined major. The combination must be approved by the student's adviser and the dean.

COMBINED COURSE IN COMMERCE AND LAW

Students in the School of Commerce, who qualify for admission to the Law School in their senior year, may elect law subjects and apply them to the extent of 30 credits toward both the business administration and the law degrees. Any student who takes 8 credits or more in Law School in a semester must pay the Law School fee.

Students registered in the Law School are permitted to elect as a part of their law studies, and to apply toward the degree of Bachelor of Laws in lieu of accounting courses offered in the Law School (not to exceed a total of 5 credits) from among the following courses offered in the School of Commerce:

	Credits
COM. 183—Accounts of consolidation and income	2
COM. 184—Auditing	3
COM. 186—Accounting systems	2
COM. 187—Governmental accounting	2

This privilege applies only to students who are registered as law students, which means that they must be taking 6 or more credits of work in the Law School.

COMBINED WORK IN COMMERCE AND ENGINEERING

A. Bachelor's Degrees in Commerce and Engineering

A student who desires degrees in both Commerce and Engineering should plan as early as possible in his collegiate career for such a combination. Inasmuch as the engineering curriculum contains a large proportion of required courses, outside electives must be carefully chosen. Any engineering student of junior or higher standing may take any commerce course for which he has the prerequisites. Economics 1a and Commerce 8 and 9 are prerequisites to many advanced courses in commerce, and they should, therefore, be taken as early as the student's program permits. This practice will permit the completion of requirements for the B.B.A. degree in the minimum time after the engineering degree has been conferred.

B. Pre-Commerce Work in Engineering

Since the School of Commerce now accepts conditionally students lacking one or more of Economics 1a, Commerce 8 and Commerce 9, it will admit as juniors students certified by the engineering faculty as having successfully completed the sophomore year of any one of the engineering sequences. However, such students' progress would be greatly facilitated by having taken Economics 1a, Commerce 8, and Commerce 9.

NAVAL SCIENCE CURRICULUM

There is a requirement of 24 credits in Naval Science for the bachelor's degree in Naval Science. Students in the School of Commerce who wish to receive a bachelor's degree with a major in Naval Science may fulfill the requirements of this minimum in Naval Science by

electing 3 credits per semester for each of eight semesters in the University. This election may be taken concurrently with pre-Commerce and Commerce work so that all basic courses, and a major in Commerce as well, may be completed in four years. However, in Naval Science only 18 credits will count toward the B.B.A. degree, and, therefore, students taking this double major must present a total of 134 credits for graduation.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE (LIGHT BUILDING INDUSTRY)

The objective of the curriculum in the Light Building Industry is to train students for careers in the home- and farm-building field, either in the actual construction operations or in the distribution of building materials and equipment.

The building industry is complex both in its technical aspects and in its business organization. For this reason, the training of young men who wish to share in its opportunities must embrace both engineering and business subjects. The curriculum has been developed through the co-operation of the College of Engineering, the College of Agriculture, and the School of Commerce.

The curriculum covers four years. The first two years are devoted to basic work in engineering with some courses in English and economics. The last two years contain the advanced work in materials, methods, and design, and a coverage of those business subjects, including accounting, which are essential training for positions of responsibility in production and distribution.

Students enrolled in the Light Building curriculum keep the same adviser throughout their four-year college course. Advisers in this curriculum are those faculty members directly concerned with the course. As a freshman or sophomore in this curriculum a student is classified as LB 1 or LB 2 respectively. The student in the Light Building curriculum is admitted to the School of Commerce in his junior year as a candidate for the degree of Bachelor of Science, Light Building Industry, provided he has satisfactorily completed the following courses:

1. Six (6) credits in English composition
2. Agricultural Engr. 18
3. Mathematics through Math. 102a or Math. 21
4. Physics 1b
5. Economics 1a
6. A minimum grade-point average of 1.3 (based on *all* work carried in first two years)
7. A sufficient number of credits to warrant classification as a junior (58 credits)

As a junior, the classification becomes SCLB 3.

To meet the requirements, candidates must have completed all the required courses involving a total of 96 credits plus 32 credits of electives, or a total of 128 credits.

	Credits
Mathematics (or such courses as may be prerequisite for the courses in Mechanics and Accounting which are included in these requirements)	12
English	6
Physics	10
Drawing	6
Economics	4
Accounting	8
Mechanics	11
Real Estate (Land economics)	6
Agricultural Engineering	4
Marketing	6

Architecture	9
Forest Products (Properties of wood)	5
Commercial Law	6
Labor (Personnel management)	3
Total	96
Electives	32
Grand Total	128

SUGGESTED COURSE OF STUDIES

FRESHMAN YEAR

FIRST SEMESTER	Credits	SECOND SEMESTER	Credits
Math. 1, 2, 20, or 51	4	Math. 2, 20, 21, or 52	4
English 1a	3	English 1b	3
Drawing 10 (for non-engineering students)	3	Agric. Engr. 18—Architectural drawing	3
Military Training	0	Agricultural Engr. 1	4
Physical Education	0	Military Training	0
Electives	5	Physical Education	0
		Electives	1
	15		15

SOPHOMORE YEAR

Math. 20, 21, or 102a	4	Math 21 or elective	4
Econ. 1a—General economics	4	Mech. 1	3
Physics 1a	5	Physics 1b	5
Military Training	0	Military Training	0
Physical Education (Women only)	0	Physical Education (Women only)	0
Electives	3	Electives	5
	16		17

JUNIOR YEAR

Mech. 3—Mechanics of materials	4	Mech. 52—Materials of construction	2
Mech. 51—Materials of construction	2	Com. 29—Home architecture II	3
Com. 8—Elements of accounting	4	Com. 112—Marketing methods	3
Com. 28—Home architecture I	3	Com. 9—Intermediate accounting	4
Com. 179—Urban land economics	3	Electives	4
	16		16

SENIOR YEAR

Com. 30—Home architecture III	3	Com. 115—Advertising principles	3
Com. 109a—Commercial law	3	or	
Com. 122—Labor problems		Com. 6—Business communications	3
or		Com. 109b—Commercial law	3
Com. 171—Personnel management	3	Com. 176—Real estate finance	3
Forest Products 101—Properties of wood	5	Electives	7
Electives	3		
	17		16

MASTERS' DEGREES

(For general regulations and regulations of the Division of Social Sciences see the Graduate School bulletin.)

The Master of Business Administration Degree

Work for the degree Master of Business Administration is centered in research seminars in the following fields: accounting, finance, industrial management, labor management, marketing, public utilities and transportation, real estate and urban land economics, risk and insurance, and statistics. A candidate for this degree must choose one of the foregoing as his field of specialization.

His work for the year will be directed by the professor in charge of the field selected, who will arrange with him a program which shall include (1) at least one of the research seminars conducted in the field selected; (2) other courses of graduate grade or seminars offered in the field, or assigned readings and papers to be done under the guidance of the

major professor outside of formal courses, or a combination of courses, readings, and papers which, together with his work in the seminar, will occupy not less than one third nor more than one half of his time; (3) the two-semester general seminar required of all candidates; (4) a minimum of three advanced problem courses in the 200-group selected from the other fields mentioned above; and (5) other courses of graduate grade in the School of Commerce or the Department of Economics sufficient together with the credits granted for the work done under the heads (1), (2), (3), and (4) to aggregate not less than 20 credits for the year.

Candidates must pass comprehensive written examinations, to which they are admitted on the recommendation of their major professor and vote of the department. These examinations are conducted near the close of each semester and of the Summer Session. The examinations for the master's degree cover the following:

1. Detailed knowledge in major field.
2. General knowledge in Commerce, Economics or related fields.
3. Elementary statistics. If the candidate has satisfactorily completed both an elementary and advanced course in statistics, this examination is omitted.

ONE-YEAR PROGRAM FOR DEGREE OF MASTER OF BUSINESS ADMINISTRATION. Graduates from schools of business which are members of the American Association of Collegiate Schools of Business and who have a grade-point average of 1.75 will be admitted to candidacy for the degree of Master of Business Administration.

Graduates from other recognized undergraduate schools of business will be admitted to candidacy for the M.B.A. degree provided they have a 1.75 grade-point average and have fulfilled substantially the undergraduate requirements for the B.B.A. degree at the University of Wisconsin.

Candidates who in their undergraduate courses have not substantially completed the major requirements referred to above should complete them either before entering upon the course of study outlined above or in connection with it. Such students will need more than the two semesters of residence regularly required for the completion of the course. The amount of additional time depends upon the number of credits earned toward the undergraduate major during the undergraduate years.

TWO-YEAR PROGRAM FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION. The School of Commerce offers a special program leading to an M.B.A. degree for graduates of a regular four-year college course in liberal arts, engineering or agriculture. For the first year, students under this program are admitted as special students in the School of Commerce. During this time they must remove undergraduate deficiencies in order to qualify for admission to the Graduate School. Students in this special classification may take up to 17 credits per semester without administrative approval. This will enable them to remove deficiencies more rapidly than if registered in the Graduate School, where the maximum load allowed is 12 credits per semester. The programs of special students must be approved by the Dean of the School of Commerce. At the time of admission to the Graduate School a grade-point average of 1.75 is required.

MASTER OF BUSINESS ADMINISTRATION WITH SPECIALIZATION IN RETAILING

The School of Commerce, in co-operation with a number of department and specialty stores in the state, provides a Co-operative Retail Training Program leading to the degree of Master of Business Administration. Under this program students are required to attend a summer session in residence on the campus at Madison. This academic work will be followed by approximately five months' full-time work in one of the co-operating retail stores. The retail store work will be designed to give the students a balanced training in all of the major phases of retailing. During the training period, students are required to attend evening classes in specialized phases of retailing. After the training period, students return to the campus at Madison for the Spring semester, during which time they will complete the requirements for the Master of Business Administration degree.

The program is open to any student who can satisfy the requirements for admission to

candidacy for the degree of Master of Business Administration as outlined in the preceding sections. While it is not necessary for an applicant to have majored in marketing to be eligible for this program, every student enrolled in it must have completed an acceptable course in Principles of Marketing, Retailing, and Advertising before beginning the store-training period. Any student interested in applying for this program must make application to the Marketing Department of the School of Commerce by February 15 preceding the Summer Session.

Students in the program will be compensated by the co-operating stores during their store-training period at the rate of pay prevailing for store help of their caliber and experience.

Master's Degree in Business Education

The work for the Master of Science degree in Business Education is given jointly by the School of Education and the School of Commerce.

Those people who have graduated with a major in Business Education from the University of Wisconsin, or from a college recognized by the University of Wisconsin, may become candidates for this degree, provided they meet the grade-point requirement of the Graduate School.

A minimum of 22 credits of graduate work is required, to be distributed as follows:

(a) *Eleven* credits in the Department of Education, 6 of which will be in Business Education. The following courses in Business Education are available:

	Credits
Educ. 121—The improvement of instruction in shorthand and typewriting...	3
Educ. 159—Teaching distributive education subjects.....	3
Educ. 162—The improvement of instruction in the basic business education subjects	3
Educ. 173—Basic principles in business education.....	3

(b) *Eleven* credits in the School of Commerce. The student may select courses from one or two of the major fields in Commerce but should concentrate at least 8 credits in one of them. Commerce 188, Accounting for teachers (3 credits), is designed especially for graduate students in business education. Commerce 163, Secretarial techniques, and Commerce 164, Office procedures, are available for those graduate students who have not had these courses (or their equivalent) in their undergraduate program.

In addition to the 22 credits, each student must submit a term paper, written without credit, under the guidance of his major professor.

DOCTOR OF PHILOSOPHY DEGREE

The major fields for the doctorate in Commerce are as follows: 1. accounting. 2. finance, 3. industrial management, 4. labor (including labor management), 5. marketing, 6. public utilities and transportation, 7. real estate, 8. risk and insurance, 9. statistics.

As a part of the preliminary examination, the candidate must pass an intensive examination in economic theory and its development, given by the Department of Economics. He must also pass an intensive examination in his major field of concentration (which may be any one of the foregoing), and an examination in a secondary field within the department. Fields 2, 4, 6, and 9 are administered by the Department of Economics in conjunction with the members of the Commerce faculty who teach in them.

The candidate must have had a year's work in statistics, including one semester in an advanced statistics course. Candidates presenting advanced statistics credits from other institutions will be examined.

A candidate for the Ph.D. degree in Commerce shall *not* minor in Economics, nor shall a candidate for the Ph.D. degree in Economics minor in Commerce. Either the School of Commerce or the Department of Economics may on its own motion permit a secondary field in the other department.

A reading knowledge of two foreign languages in which there is substantial scholarly literature in the student's major is required of all candidates. One of these languages must be French or German.

An applicant will be admitted to candidacy for the degree when he has (a) passed the comprehensive preliminary examination in the major field, (b) obtained approval of the scope of the proposed minor, and (c) obtained approval of the title of his proposed doctoral thesis. A doctoral thesis must be submitted as a result of the candidate's own effort in research enterprise. The candidate is subject to a final oral examination on the thesis and the general field of the major and the minor studies. The candidate may not take the final examination until all requirements for the degree have been satisfied and there has been a lapse of one academic year from the time of the preliminary examination.

For additional information regarding the Master of Business Administration degree, the Master of Science degree in Business Education and the Doctor of Philosophy degree in Commerce, see the bulletin of the Graduate School.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:
Yr—a continuous course extending through two semesters
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
cr—number of credit hours per semester
*cr—credit to be arranged

Courses numbered under 100 may be credited only by undergraduates; those in the 100-group may be credited by both undergraduates and graduates; those in the 200-group are ordinarily open only to graduates.

★—In the College of Letters and Science starred (★) courses may not be counted as part of the credits required for graduation. However, Commerce 112 is open to students in the School of Journalism.

ACCOUNTING

★8. Elements of Accounting. I, II; 4 cr. Principles of double-entry bookkeeping. Use of the fundamental books of account; the treatment and presentation of sole proprietorship, partnership, and corporation accounts. Prerequisite: Sophomore standing. Mr. Gibson and staff.

9. Intermediate Accounting. I, II; 4 cr. Theories of general financial accounting with problems illustrating their application. Prerequisites: Commerce 8 and Mathematics 7. Mr. Elwell and staff.

108a. Accounting Principles. I; 3 cr. An introductory course in accounting. Prerequisite: Graduate standing, enrollment in the Law School, or consent of instructor. Mr. Schuck.

108b. Federal and State Income-Tax Laws II; 2 cr. Prerequisite: Commerce 108a or consent of instructor. Mr. Gibson.

181. Advanced Accounting Problems. I; 3 cr. Advanced financial accounting for specialized fields. Should be taken in the junior year by accounting majors. Prerequisite: Grade of *B* in Commerce 9. Mr. Gibson, Miss Lins.

182a. Cost Accounting. II; 2 cr. Accounting for costs in manufacturing enterprises. Emphasis on fundamental principles of cost accounting, basic records and procedures, cost reports and their interpretation. Should be taken in the junior year by accounting majors. Prerequisite: Grade of *C* in Commerce 9. Mr. Gibson.

182b. Cost Accounting. I; 2 cr. Special problems of overhead costs, use of variable budgets, graphic presentation, by-product costs, standard cost procedures, and distribution cost principles and procedures. Prerequisite: Commerce 182a.

183. Accounts of Consolidations and Income Taxes. I; 2 cr. Accounts and statements of amalgamations, mergers, and holding companies. Problems based on Federal and Wisconsin income-tax laws. Prerequisites: Grade of *C* in Commerce 9 and senior standing. Mr. Gibson, Mr. Bower.

184. Auditing. II; 3 cr. General principles of auditing, including a study of different kinds of audits. Prerequisites: Upper-group status and a grade of *B* in Commerce 9. Mr. Elwell, Miss Lins.

185. Analysis of Financial Reports and Budgeting. I; 2 cr. Analysis of corporation reports with particular reference to statement structure, meaning of accounts, and ratios. General principles of budgeting. Preparation of budgets; standards of measurement; procedure for budget comparison, revision, co-ordination, and reports. Prerequisite: Commerce 9. Mr. Elwell, Miss Lins.

186. Accounting Systems. II; 2 cr. General principles of constructive accounting and the designing of systems for various industries. Prerequisites: Upper-group status and grade of *B* in Commerce 9. Mr. Elwell, Mr. Bower.

187. Governmental Accounting. I; 2 cr. Requirements of accounting systems of various governmental units. Special study of budgets and reports. Prerequisites: Upper-group status and grade of *B* in Commerce 9. Mr. Elwell, Mr. Bower.

188. Accounting for Teachers. I or II; 3 cr. Includes a discussion of the advanced principles and concepts of current accounting problems confronting the teacher of business subjects. Bookkeeping forms, accounting systems, procedures used in different lines of business, problems of taxation affecting businesses and individuals. Prerequisite: At least a one-year course in accounting or its equivalent. Mr. Elwell, Mr. Gibson.

190. Intermediate Accounting. Offered only in Summer Session; 3 cr. Theories of general financial accounting with problems illustrating their application. Prerequisite: A course in elementary accounting. Course restricted to graduate students. Grade obtained in this course determines eligibility for advanced accounting courses.

199. Public Utility and Institutional Accounting. II; 2 cr. Application of the general principles of accounting to public utilities and to public and private institutions, such as clubs, colleges, foundations, and hospitals. Prerequisite: Commerce 9.

282. Advanced Cost Accounting. II; 3 cr. Recent development in cost procedures with special emphasis on cost analysis, standard and distribution costs, uniform cost systems and trade association accounting. Prerequisites: Commerce 182a and graduate standing. Mr. Gibson.

283. Seminar in Accounting. Yr; 2 or 4 cr. Prerequisites: Graduate standing and consent of instructor. Staff.

284. Advanced Auditing. II; 3 cr. Audits of certain specialized businesses, special investigations, reorganization and refinancing problems. Securities and Exchange Commission and State Securities Commission requirements. Prerequisites: Commerce 184 and graduate standing. Mr. Kimball.

BANKING AND FINANCE

105. Money and Banking. I, II; 3 cr. Monetary and banking principles and practice; price theories; banking systems and their operation. Prerequisite: Economics 1a. Mr. Morton and staff.

107. Bank Management. I; 3 cr. The proportion and relations of bank assets, liabilities, and reserves; policies with regard to commercial and customer loans; management of the investment portfolio; operations of trust and fiduciary functions; relations with depositors, public and supervisory agencies. Prerequisite: Commerce 105. Mr. Fraine.

110. Investment Principles. I, II; 3 cr. Problems of investors and methods of meeting them; analysis and limitation of risks. Investment in stocks and bonds, through savings accounts, life insurance, etc. Emphasis on problems of the small investor. Prerequisite: Commerce 137. Mr. Fraine and staff.

124a. Public Finance—Taxation. I, II; 3 cr. Specific taxes which make up the national, state, and local systems. Special emphasis on the practical social problems involved. Prerequisites: Economics 1a and junior standing. Mr. Groves.

124b. Public Finance—Taxes, Debts, Expenditures. I, II; 3 cr. Social security taxes; revenue other than taxes; Federal-state-local fiscal relationships; public expenditures; public debts; postwar fiscal policy. Prerequisite: Commerce 124a or consent of instructor. Mr. Groves.

133. Financial History of the United States. I or II; 3 cr. Monetary and financial institutions and practices from colonial times to the present. Federal, state and municipal finance. Tariff legislation and its financial implications. Prerequisite: Economics 1a. Mr. Morton.

137. Corporation Finance. I, II; 3 cr. Corporate organization and control; corporation securities; the management of fixed capital, working capital and income; reserve, surplus, and dividend policies; investment banking and the securities market; failure and reorganization. Prerequisite: Commerce 9. Mr. Graner and staff.

143. The Securities Market. I; 3 cr. Problems of investment bankers, dealers, brokers. Functions of organized markets and over-the-counter markets. Mechanics of trading. Margin trading and short selling. Regulation of stock issues and manipulation. Prerequisite: Commerce 137. Mr. Graner.

147. Investment Management. I; 3 cr. Problems of large-scale investors and methods of meeting them. Advanced security analysis. Portfolio policy in light of internal requirements, price level, business activity, etc. Prerequisites: Commerce 137 and consent of instructor. Mr. Fraine.

153. International Finance. I; 3 cr. Theory and recent experience in currency standards, international banking, exchange fluctuations, and exchange controls. International monetary co-operation, and special topics. Prerequisite: Commerce 105. Commerce 156 recommended. Mr. Morgan.

158. Large-Scale Enterprise. II; 3 cr. The modern industrial structure; competition and concentration; combinations and cartels; economic and legal restrictions on size. Prerequisites: Commerce 137, or Economics 1b and consent of instructor. Mr. Wilmot.

159. Evolution of the Modern Corporation. II; 3 cr. Dispersion of stock ownership; separation of ownership and control; changing managerial motivation; legal vs. actual position of stockholders, directors, management; changing theory of profits and property; changing methods of financing expansion; the new entrepreneur-corporate reorganization—emphasis on particular firms and industries. Prerequisite: Commerce 137. Mr. Graner.

191. The Credit System. II; 3 cr. Operations and policies of commercial and central banks. Domestic and international credit relationships. Prerequisite: Commerce 105. Mr. Morton or Mr. Earley.

192. Money, Income and Prices. I; 3 cr. Monetary standards, the value of money, monetary equilibrium, employment, output and prices, international equilibrium, rates of exchange, monetary policy and public finance. Prerequisite: Commerce 105. Mr. Morton or Mr. Earley.

193. Full Employment Policies. II; 3 cr. Monetary, banking, credit and fiscal policies. Monopoly, competition and the national debt. Price rigidities, flexibilities, and policies affecting output and employment. Prerequisite: Economics 1b or Commerce 105. Mr. Morton.

205. Banking and Monetary Theory. Yr; 2 cr. Monetary policy, prices, capital formation, and economic activity. Liquidity, solvency, the gold standard, managed currency, stability, inflation and deflation. Prerequisites: A course in economic theory and the equivalent of Commerce 191 or 192. Mr. Morton.

224. Seminar in Public Finance. Yr; 2 cr. First semester devoted to taxation and public finance literature, past or current; second semester to research projects in the field. Prerequisite: Commerce 124 or consent of instructor. Mr. Groves.

237. Seminar in Finance. Yr; 2 cr. Comprehensive and intensive consideration of selected problems of current and permanent import in financial administration. Individual research, class reports, and group discussion. Prerequisite: Graduate standing or consent of instructor. Mr. Fraine, Mr. Graner.

BUSINESS ETHICS

43. Business Ethics. I, II; 2 cr. The rules of fair competition; standards of fair service; fair price, fair wage and the justice of the present system of distributing wealth. Prerequisite: Sophomore standing. Mr. Fox.

BUSINESS LAW

109a. Commercial Law. I, II; 3 cr. History of legal development, contracts, agency, negotiable instruments and insurance. Prerequisite: Second-semester junior standing (at least 72 cr.). Mr. Schuck.

109b. Commercial Law. I, II; 3 cr. Sales, real estate and personal property, partnerships, corporations, bankruptcy. Prerequisite: Commerce 109a. Mr. Schuck.

161. Problems in Insurance and Real Estate. II; 2 cr. An advanced course concerned with internal and external problems of organization and management of estates and trusts, the conveyance of property, and related topics. Prerequisite: Commerce 109a. Mr. Schuck.

166. Property, Wills, Trusts, Estates and Taxation. II; 3 cr. A course dealing with the law of property as related to bailments, carriers, negligence, surety, guaranty and insurance; wills and trusts and estates and the taxation thereof by state and Federal governments; estate planning and business insurance. Prerequisite: Commerce 109a. Mr. Schuck.

BUSINESS POLICY

148. Business Policy. II; 3 cr. Integration of background acquired by the student from such varied fields of instruction as accounting, finance, industrial management, insurance, labor management, law, and marketing. Top management problems emphasized. Discussion of actual business cases. Prerequisites: Senior or graduate standing and consent of instructor. Mr. Fraine and staff.

BUSINESS TEACHER EDUCATION

*63. Beginning Typewriting. I; 2 cr. Development of basic typewriting skills; simple business-letter forms, introduction to centering and tabulation. Prerequisite: Junior standing. Mr. Hosler, Mr. Kessel.

*64. Advanced Typewriting. II; 2 cr. Development of vocational competency in typewriting; business-letter forms, manuscript writing; rough drafts; financial reports; legal documents; composition on the typewriter. Prerequisite: Commerce 63 or its equivalent. Mr. Hosler, Mr. Kessel.

*65. Fundamentals of Shorthand. I; 4 cr. Fundamental principles of Gregg shorthand; speed-building program based on simple business letters. Prerequisite: Junior standing. Mr. Hosler, Mr. Kessel.

*66. Advanced Shorthand. II; 4 cr. An intensive course to develop vocational competency in taking dictation at high speeds; introduction to transcription. Prerequisite: Commerce 65 or its equivalent. Mr. Hosler.

*163. Secretarial Techniques. I; 3 cr. Integration of skills and knowledge in shorthand, typewriting, and English in the transcription of letters; a study of the duties and responsibilities, and personal qualities of the secretary; human relation in the business office. Prerequisites: Commerce 64 and 66 or equivalent. Mr. Hosler, Mr. Kessel.

*164. Office Procedures. II; 3 cr. Various filing systems; a survey of business machines; acquisition of a reasonable degree of skill in the operation of computing, duplicating, and transcribing machines. Aspects of office management. Prerequisites: Commerce 64 and 66. Mr. Hosler, Mr. Kessel.

FOREIGN TRADE

151. Economic Problems of Latin America. I or II; 2 cr. Economic characteristics of the principal Latin-American countries, and economic problems which confront them. Prerequisite: Economics 1a. Mr. Morgan.

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* Enrollment for credit in these courses is limited to those students enrolled in Business Teacher Education major.

155. FOREIGN TRADE PRACTICES. II; 3 cr. Practical problems and procedures encountered in foreign trade. The subject matter falls into three main divisions: (1) company trading policies and practices, (2) commercial facilities available to foreign traders, and (3) general policy and administrative framework within which foreign traders do business. Prerequisites: Economics 1a and junior standing. Mr. Westing, Mr. Werner.

156. INTERNATIONAL TRADE. I, II; 3 cr. Development of international trade and finance, and theory applied to them, since mercantilist times; major current problems in international economic relations. Prerequisite: Economics 1a. Mr. Ellsworth, Mr. Morgan.

157. INTERNATIONAL ECONOMIC POLICY. II; 3 cr. Problems relating to tariffs, quotas, cartels, and international investment. International collaboration, and the relation between domestic and international policy. Prerequisite: Commerce 156. Mr. Ellsworth, Mr. Morgan.

253. SEMINAR IN INTERNATIONAL ECONOMICS. Yr; 2 cr. Intensive study of the basic theoretical literature of international trade and finance, and of current international economic problems. Offered 1952–53 and in alternate years. Prerequisites: Commerce 156 and 157, or consent of instructor. Mr. Ellsworth.

INDEPENDENT READING AND RESEARCH IN BUSINESS SUBJECTS

180. READING AND RESEARCH IN BUSINESS SUBJECTS. Yr; *cr. The prerequisites for the independent work of this course are senior standing and candidacy for degree with honors in the major. Students electing this work will be expected to pass comprehensive examinations in the field of their major.

280. READING AND RESEARCH IN BUSINESS SUBJECTS. Yr; *cr. Both during regular session and in the inter-session periods individual work suited to the needs of graduate students may be arranged. Prerequisite: Graduate standing. Staff.

INDUSTRIAL MANAGEMENT

111. INDUSTRIAL MANAGEMENT. I, II; 3 cr. The scientific-management movement, principles of organization, plant location, plant design, the physical background as to work, plant layout, materials handling, procurement, plant maintenance, stores-keeping, inventory control, classification and identification, industrial safety and hygiene. Prerequisites: Economics 1a and junior standing. Mr. Kubly.

117. PRODUCTION PLANNING AND CONTROL. I, II; 3 cr. Product design; research; standardization, simplification and diversification of the line; inspection problems; operation analysis; wage-payment plans; economic lot sizes; budgetary control; sales forecasting; routing, scheduling, and dispatching. Prerequisite: Commerce 111. Mr. Kubly.

119. INDUSTRIAL MARKETING. I; 2 cr. (See Group VI, MARKETING.)

134. INDUSTRIAL STATISTICS. II; 3 cr. (See Group XI, STATISTICS.)

171. PERSONNEL MANAGEMENT. I, II; 3 cr. (See Group V, LABOR MANAGEMENT.)

182a and b. COST ACCOUNTING. I, II; 4 cr. (See Group I, ACCOUNTING.)

211. SEMINAR IN INDUSTRIAL MANAGEMENT. Yr; 2 cr. This course is designed for graduates in Commerce. Students will be assigned special problems in the field of advanced management. Prerequisite: Consent of instructor. Mr. Kubly.

See also related courses in bulletins of the College of Engineering and College of Letters and Science.

LABOR MANAGEMENT

122. LABOR PROBLEMS. I, II; 3 cr. The problems of labor in the American "market economy" with special regard to the group organizations of labor and management, their inter-relations and relations to the government. Prerequisites: Economics 1a and junior standing. Mr. Young.

123. LABOR LEGISLATION. II; 3 or 4 cr. Government regulation of labor conditions: child labor, wage and hour laws; accident and unemployment compensation; old age insurance;

the law of collective bargaining. Prerequisite: Economics 1b or consent of instructor. Miss Brandeis.

145. American Labor History. II; 3 cr. The American labor movement's historical experiment with the temper of the American community, the political and legal institutions, and with the psychology of labor. Labor's contributions to collective democracy. Prerequisites: Economics 1a and junior standing. Mr. Perlman.

149. Government and Labor. I; 3 cr. Practical and theoretical problems involved in governmental actions in the fields of labor relations and labor legislation. Prerequisite: Economics 120 or Commerce 123, or consent of instructor. Mr. Witte.

171. Personnel Management. I, II; 3 cr. A survey of personnel techniques necessary to handle human-relations problems. Some of the techniques discussed are: organizational relationships; selection and placement, including testing; job analysis and evaluation; training, safety and health; research; services; etc. Prerequisites: Economics 1a and junior standing. Mr. Belcher.

172. Management and Labor Relations. II; 3 cr. Collective bargaining and contract negotiations; management development; union development; governmental regulations and influence; areas of disagreement; techniques of bargaining; maintaining a contract; conciliation, mediation, arbitration; contract clauses; etc. Prerequisite: Commerce 171 or consent of instructor. Mr. Belcher.

173. Job Evaluation and Merit Rating. I; 3 cr. Job description, specification, analysis and evaluation. Techniques in the use of ranking method, classification method, point method, factor-comparison method and Mobell combination method. Wage and salary determination including salary schedules, employee-performance rating, the use of area and industry wage surveys, and controls for business and industrial executives. Prerequisite: Commerce 171. Mr. Belcher, Mr. Moberly.

174. Personnel Policies, Training and Service Programs. II; 3 cr. Business and industrial personnel principles, policies, procedures, rules and regulations. Training for executives, supervisors, and production employees. Training materials, aids, methods, programs and their evaluation. Analysis of personnel services. Problems encountered in the growth of a typical business. Prerequisite: Commerce 171. Mr. Belcher, Mr. Moberly.

271. Seminar in Management-Labor Relations. Yr; 2 cr. Research seminar in personnel management, labor relations, personnel problems and techniques. Selected case studies. Current literature reviewed. Prerequisite: Graduate standing or senior standing with consent of instructor. Mr. Belcher, Mr. Moberly.

MARKETING

★6. Business Communication. I, II; 3 cr. Practical application of good letter-form and effective communication principles to current business situations; special attention to organization and presentation of business reports; trends and techniques in modern business communication. Prerequisite: Junior standing. Mr. Petersen.

★112. Marketing Methods. I, II; 3 cr. Introduction to the fundamentals of marketing. Functions, institutions, and problems examined from the point of view of their impact on the distribution of goods. Prerequisites: Junior standing or second-semester pre-Journalism sophomores. Mr. Westing and staff.

113. Problems in Market Analysis. I; 3 cr. Methods of marketing research and analysis which may be used by manufacturers, wholesalers, retailers, and advertising media. Prerequisites: Commerce 114 and upper-group status. Mr. Westing, Mr. Werner.

114. Marketing Management. II; 3 cr. Marketing organizations, planning and execution of sales programs and campaigns, control and supervision of the sales force, product research and development. Prerequisite: Commerce 112. Mr. Westing, Mr. Fine.

★115. Principles of Advertising. II; 3 cr. An introductory course presenting advertising from the businessman's point of view; some consideration of the social and economic

aspects of advertising; advertising media; practical advertising problems; co-ordination of advertising and other marketing activities. Prerequisite: Commerce 112. Mr. Petersen.

116. Problems in National Advertising. I; 3 cr. Advanced course in the techniques of advertising; advertising agencies; copy and layout; budgeting and scheduling; development and presentation of campaigns; measuring the effectiveness of advertising. Prerequisites: Commerce 112 and 115, or Commerce 112 and Journalism 115. Mr. Petersen.

118. Radio and Television Advertising. II; 3 cr. Radio and television as advertising media; selection of time and talent, preparation of copy, building an audience, selling of time, merchandising, audience measurement, and government regulation. Prerequisite: Commerce 115 or Journalism 115. Mr. Dunn.

119. Industrial Marketing. I; 2 cr. Principles and practices employed in distributing goods to the industrial market. Industrial procurement techniques, agencies and middlemen involved in the sale of industrial goods, techniques employed in analyzing the industrial market, service policies employed by industrial marketers and promotional, credit and inventory policies. Prerequisites: Commerce 112 and 114 (or consent of instructor in lieu of 114). Mr. Fine.

120. Price Policies. II; 3 cr. An analysis of the practices and principles employed by business men in establishing prices; a detailed consideration of pricing practices including quantity discounts, geographical price discrimination, joint cost problems, administered pricing, competitive pricing, and promotion as affected by pricing. Practical application of economic theories of pricing. Prerequisites: Upper-group status and consent of instructor. Mr. Werner.

126. Retail Advertising Campaigns. I; 3 cr. Planning and executing retail advertising campaigns. Objectives, research, and media selection. Preparation of copy. Relations with other departments and with manufacturers. Prerequisite: Commerce 115 or Journalism 115. Mr. Dunn.

170. Retail Merchandising. I; 3 cr. Principles and problems emphasizing the management position; organization; and general policies. Buying, planning, stock control, sales promotion; personnel administration; store operation; budgeting and expense control. Prerequisite: Commerce 112. Mr. Fine.

197. Sales Forecasting and Measurement. I, II; 3 cr. Making and using the sales forecast and the sales budget. Organization and analysis of external and internal data for sales measurement and forecasting. The techniques of sampling applied to various marketing problems. Analytical tools used in sales control. Emphasis is on application of techniques to actual situations. Prerequisite: A course in statistics. Mr. Goodman.

198. Public Relations and Problems in Distribution. II; 3 cr. The use of public relations as a tool in marketing. A study of current problems in the field of distribution. Prerequisites: Commerce 170 or 114 and upper-group status. Mr. Fine.

212. Retail Controllership. I; 2 cr. Special accounting problems encountered in maintaining records for and presenting results of the operations of department and specialty stores. Prerequisite: Graduate standing. Instructor to be arranged. (This course to be offered only in Milwaukee for students in the Retail Training Program.)

213. Seminar in Marketing. Yr; 2 cr. A critical analysis of existing marketing institutions and practices. Special attention is given to the increasing role played by legislation and administrative agencies in marketing affairs. Wherever possible the issues are studied in the setting of current business problems described in business and trade periodicals. Prerequisite: Graduate standing or consent of instructor. Mr. Westing.

214. Seminar in Retail Management. Yr; 2 cr. A course designed for graduate students enrolled in the Co-operative Retail Training Program. Consideration is given to specialized problems of administration, leadership, and job relations in the field of retailing. An individual research project will be assigned to each student. Prerequisite: Graduate standing. Mr. Westing, Mr. Fine.

PUBLIC UTILITIES AND TRANSPORTATION

135. Railway Transportation. I; 3 cr. History and development of railway transportation and regulation in the United States. Prerequisite: Economics 1a. Mr. Thatcher.

136. Transportation Problems. II; 3 cr. Emphasis on the economic aspects of all forms of commercial transportation: railway, highway, water and air carriers—survey of recent and present-day regulatory and operating problems. Prerequisite: Economics 1a. Mr. Thatcher.

142. Public Utilities. I, II; 3 cr. The development of public utilities in the United States. Legal basis of public utility regulation. Development of regulatory agencies. Valuation, depreciation. Public ownership. Prerequisite: Economics 1a. Mr. Glaeser.

168. Highway Transportation. I; 3 cr. Economic aspects of highway development, financing of highway construction, supervision of motor-vehicle traffic, and regulation of highway common carriers. Prerequisite: Economics 1a. Mr. Thatcher.

169. Air Transportation. II; 3 cr. The commercial or business side of the industry, domestic and foreign; Federal regulation; control and management of airports; problems relating to passenger, mail, express and freight service; the place of the industry in the national transportation program. Prerequisite: Economics 1a. Mr. Thatcher.

189. Transportation Rates and Traffic. I; 3 cr. Freight rate structure, adjustment of rates by the Interstate Commerce Commission, traffic control and management. Prerequisite: Economics 1a. Mr. Thatcher.

195. Public Utility Management. I; 3 cr. Survey of management problems, accounting and statistical controls; economics of regulated monopoly price, cost analyses and differential rates; labor problems; standards of operating efficiency. Prerequisite: Commerce 142. Mr. Glaeser.

266. Seminar in Public Utilities. Yr; 2 cr. Research investigations in the field of local public utilities and transportation. Prerequisite: Graduate standing or senior standing with consent of instructor. Mr. Glaeser, Mr. Thatcher.

REAL ESTATE AND URBAN LAND ECONOMICS

28. Home Architecture I. I; 3 cr. Principles of space arrangement in the home from the standpoint of family needs and functions. The use of color, lighting, fenestration, and furniture as design features. Prerequisite: Sophomore standing.

29. Home Architecture II. II; 3 cr. Structural systems, use of materials, mechanical equipment; the relating of structure and plan, and the problems of cost estimating. Prerequisite: Home Architecture I or consent of instructor.

30. Home Architecture III. I; 3 cr. A problems course in which each student is required to design a house, draw the plans, write the specifications, and prepare a detailed cost estimate. Open only to students who have had some work in mechanical or architectural drawing. Prerequisite: Home Architecture II or consent of instructor.

175. Valuation of Real Estate. I; 3 cr. The economic theories of value applied to real estate; valuation as a guide to business decisions; factors and forces in the real estate market which affect value; principles and variations of the valuation method; the selection, collection and analysis of evidences of value; special problems in appraising residential and income properties. Prerequisite: Commerce 179. Mr. Ratcliff, Mr. Andrews.

176. Real Estate Finance. II; 3 cr. The mechanisms of real estate finance, sources of funds, loan contracts, principles of mortgage risk analysis, and the role of governmental agencies in the mortgage lending field. Prerequisite: Commerce 179. Mr. Ratcliff, Mr. Andrews.

177. Property Development and Management. I; 3 cr. Real estate development—the selection of sites, financing, provision of utilities and services, design and construction in connection with subdividing, residential community developments, apartment projects, retail centers, and industrial districts. Property management policies and practices, including

such topics as rent schedules, maintenance, tenant relationships, modernization and prob lems of unprofitable properties. Prerequisite: Commerce 179. Mr. Ratcliff, Mr. Andrews.

178. HOUSING AND PLANNING PROBLEMS. II; 3 cr. The major problems of urban land utilization; special emphasis on public policy and governmental activity in housing and planning—zoning, housing codes, city planning, slum clearance, urban redevelopment, problems of decentralization, housing for families of low income, veterans' housing, and governmental intervention in house financing. The economics of home ownership will be discussed. Prerequisites: Economics 1a and junior standing. Mr. Ratcliff.

179. URBAN LAND ECONOMICS. I, II; 3 cr. The institutional background of real property, economics of urbanization, forces of demand for urban land, factors of supply, the building industry, real estate credit, the real estate market, cyclical fluctuation, rents and prices, real estate market analysis, city growth and structure, value and valuation, urban land problems of housing, city planning, land-use control and urban redevelopment. Prerequisites: Economics 1a and junior standing. Mr. Andrews.

279. SEMINAR IN URBAN LAND PROBLEMS. Yr; 2 cr. For seniors and graduate students in both Commerce and Economics. Students select for intensive study special management problems and public policy issues relating to land development and land utilization in urban areas. Provides an opportunity for application of land theory to specific business, social, and economic problems. Prerequisite: Commerce 179. Mr. Ratcliff.

RISK AND INSURANCE

121. PROPERTY AND CASUALTY INSURANCE. I, II; 3 cr. Economic services, contracts, benefits, and premiums in the field of fire, marine and casualty insurance. Prerequisite: Commerce 139. Mr. Cowee.

138. LIFE INSURANCE. I, II; 3 cr. Public services, mortality tables, premium rates, reserves, policy forms, investments, legal principles, and state supervision in the field of life underwriting. Prerequisite: Commerce 139. Mr. Center.

139. PRINCIPLES OF INSURANCE. I, II; 3 cr. An introductory course designed (1) to precede advanced work in insurance and prerequisite thereto, and (2) to acquaint the nonspecialist with the economic and social services of the institution of insurance. Prerequisite: Economics 1a. Mr. Center and staff.

140. ADVANCED LIFE INSURANCE. II; 3 cr. An advanced course for the student who has had fundamental training in the economic, mathematical, and legal principles of life insurance. Prerequisite: Commerce 138 or consent of instructor. Mr. Center.

141. GROUP, PENSION AND PROFIT-SHARING PLANS. II; 3 cr. Economic nature, plans, policy terms, rates and benefits of group insurance. Development, plans, costs, administration, taxation and legal provisions and tables underlying pensions. Examination of deferred and contingent compensation plans with evaluation of organization, costs and benefits. Prerequisite: Commerce 139. Mr. Center.

144. ACCIDENT, HEALTH, HOSPITALIZATION, WORKMENS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE. I; 3 cr. Considers individual and group plans for accident, health, and hospitalization insurance. Analysis of benefits, contract terms and premiums. Social, economic and legal roles of Workmens Compensation and Employers Liability insurance systems. Prerequisite: Commerce 139. Mr. Cowee.

154. RISK AND PROFIT. I; 3 cr. Nature of economic risk; relation to profit. Causation, prediction, probability. Functions and operations of the price system. Capital theory. A functional explanation of variations in business profits. Prerequisite: Economics 1b or Commerce 105. Mr. Morton.

160. ADVANCED PROPERTY AND CASUALTY INSURANCE. II; 3 cr. Advanced problems in fire, casualty and marine insurance and bonding; a study of rates and rating theory, concepts and procedures; rate regulation and supervision of insurance, both state and Federal. Prerequisite: Commerce 121. Mr. Gaumnitz, Mr. Cowee.

162a. ACTUARIAL THEORY AND PRACTICE. I; 3 cr. Problems in interest and life contingencies. Sinking funds, bond tables, annuity and insurance premiums, valuation of assets and liabilities. Prerequisites: Commerce 138 and Mathematics 138 recommended. Consent of instructor. Mr. Larson.

162b. ACTUARIAL THEORY AND PRACTICE. II; 3 cr. Continuation of Commerce 162a. Prerequisite: 162a. Mr. Larson.

239. SEMINAR IN RISK AND INSURANCE. Yr; 2 cr. Research investigations in risk and insurance. Prerequisite: Graduate standing or senior standing with consent of instructor. Mr. Center.

See Business Law for description

COM. 166—Property, wills, trusts, estates and taxation

See Economics Department for

ECON. 121—Social security.

See Department of Mathematics for

MATH. 24—Theory of life insurance

MATH. 138—Actuarial mathematics

STATISTICS

31. BUSINESS STATISTICS. I, II; 3 cr. Elementary theory and technique of statistical methods in application to typical production, distribution, accounting and general administrative problems of business organization. Prerequisites: Economics 1a and registration in the School of Commerce, or consent of instructor. Mr. Fox.

132. STATISTICAL ECONOMICS. I; 3 cr. Applications of methods to problems of the students' interest. Study of reports and forecasts of business firms, bureaus, and agencies. Prerequisite: A course in statistics. Mr. Gaumnitz.

134. INDUSTRIAL STATISTICS. II; 3 cr. Elementary probability, statistical quality control, sampling methods. Emphasis on applications in manufacturing. Prerequisite: A course in statistics or junior standing in the College of Engineering. Mr. Larson.

196. ADVANCED STATISTICAL TECHNIQUE. I; 3 cr. Intermediate and advanced methods of analyzing data. Prerequisite: A course in statistics. Mr. Fox.

197. SALES FORECASTING AND MEASUREMENT. I, II; 3 cr. Making and using the sales forecast and the sales budget. Organization and analysis of external and internal data for sales measurement and forecasting. The techniques of sampling applied to various marketing problems. Analytical tools used in sales control. Emphasis is on application of techniques to actual situations. Prerequisite: A course in statistics. Mr. Goodman.

230. SEMINAR IN STATISTICAL RESEARCH. Yr; 2 cr. Co-operative research in one or more economic problems; each member of the class concentrates on a selected phase of the common subject. Mr. Fox, Mr. Gaumnitz.

See also the following courses in the Mathematics department:

MATH. 20, 21, 22—Calculus and analytic geometry

MATH. 118—Introduction to the theory of probability

MATH. 133—Finite differences and interpolation

MATH. 134—Mathematics of elementary statistics

MATH. 135—Introduction to statistical methods in the natural sciences

MATH. 137a—Mathematical statistics

MATH. 138—Actuarial mathematics.

SCHOOL OF EDUCATION

JOHN GUY FOWLKES, *Dean*

FACULTY

ACKERMANN, MRS. MARY ANN, *M.S.*, Teacher of Fine Arts (part time), Wisconsin High School
AINSWORTH, SIDNEY ELBERT, *M.A.*, Teacher of Mathematics, Wisconsin High School
ALBRIZIO, HUMBERT, Professor of Art Education
ALLCOTT, RUTH EVELYN, *M.S.*, Associate Professor of Education; also Wisconsin High School
ALLEN, WILLIAM HOMER, *M.A.*, *Ed.D.*, Assistant Professor of Education; also Extension Division
ANDERSON, CHARLES JOSEPH, *Ph.M.*, *LL.D.*, Emeritus Dean of the School of Education; Emeritus Professor of Education
ANDERSON, DONALD MEYERS, *M.A.*, Assistant Professor of Art Education
ANDERSON, JOHN EUGENE, *M.S.*, Assistant Professor of Physical Education
ANDREWS, MICHAEL FRANK, *Ph.D.*, Assistant Professor of Art Education
ANNEN, MRS. HELEN WANN, *B.F.A.*, *M.S.*, Professor of Art Education
ARNOLD, MRS. GWEN FREUND, *Ph.D.*, Assistant Professor of Education
BACHMAN, LUCY ELINOR, *Ed.D.*, Assistant Professor of Education
BARR, ARVIL SYLVESTER, *Ph.D.*, Professor of Education
BASSETT, GLADYS BARTON, *M.A.*, Associate Professor of Physical Education
BAUER, GEORGE VICTOR, *M.S.*, Assistant Professor of Physical Education
BEERY, GEORGE SHAFER, *Ph.D.*, Assistant Professor of Education (Extension Division)
BEST, JAY RILEY, *M.S.*, Assistant Professor of Physical Education; also Intercollegiate Athletics (Track and Cross-Country Coach)
BJORAKER, WALTER THOMAS, *M.S.*, Assistant Professor of Agricultural Education and of Education
BORCHERS, GLADYS LOUISE, *Ph.D.*, Professor of Speech; also Wisconsin High School
BOUMAN, HARRY DAN, *M.D.*, Professor of Physical Medicine; Director, Course in Occupational Therapy
BROWN, JOHN ARTHUR, *M.S.*, Teacher of Mathematics, Wisconsin High School
BURNS, SAMUEL THOMPSON, *Ph.D.*, Professor of Education and of Music
BYNG, DENNIS EUGENE, *M.S.*, Instructor in Art Education (1952–53, I)
CARNS, MARIE LOUISE, *M.D.*, Professor of Physical Education; Director, Course in Physical Education for Women
CAVANAGH, GLADYS LOUISE, *M.S.*, Assistant Professor of Library Science
COLESCOTT, WARRINGTON WICKHAM, *M.A.*, Assistant Professor of Art Education
COLLINS, PAUL EVERETT, *Ed.M.*, Specialist (Counselor) in School of Education
CRONIN, KATHERINE LUCILE, *M.A.*, Associate Professor of Physical Education
CUMBEE, FRANCES Z., *Ph.D.*, Specialist (Counselor) in School of Education
DALRYMPLE, JULIA, *Ph.D.*, Associate Professor of Education and of Home Economics
DAVIS, IRA CLEVELAND, *M.A.*, Professor of Education; also Wisconsin High School
DAWE, HELEN CLEVELAND, *Ph.D.*, Professor of Home Economics (Nursery School)
DIEKROEGER, EMMA M., *M.A.*, Teacher-Librarian, Wisconsin High School
DVORAK, RAYMOND FRANCIS, *B.M.*, Professor of Music
EASTHAM, LORA JANE, *M.S.*, Instructor in Physical Education
EBERMAN, PAUL WILMOT, *Ph.D.*, Associate Professor of Education
EDGERTON, ALANSON HARRISON, *Ph.D.*, Professor of Education
ESTVAN, FRANK JOHN, *Ph.D.*, Associate Professor of Education
EYE, GLEN GORDON, *Ph.D.*, Professor of Education; Director of Student Teaching and Laboratory Schools
FEE, MARY, *B.S.*, Instructor in Physical Education (1952–53, II)

FOWLKES, JOHN GUY, *Ph.D.*, Dean of the School of Education; Professor of Education; Director, Summer Session
FOX, MARGARET ANNE, *M.S.*, Instructor in Physical Education
FRANCIS, ROBERT JAY, *Ph.D.*, Associate Professor of Physical Education
FRITZ, CATHERINE LEE, *M.S.*, Instructor in Physical Education
GAUGER, PAUL WILLIAM, *Ph.D.*, Lecturer in Education; also Wisconsin High School
GENTHER, MRS. SHIRLEY BABCOCK, *B.F.A.*, Instructor in Physical Education (part time)
GLASSOW, RUTH BERTHA, *M.A.*, Professor of Physical Education
GOLDGRUBER, JOHN JACOB, *M.S.*, Principal, Wisconsin High School; Instructor in Education
GORDON, EDGAR BERNARD, Emeritus Professor of Music
GREGG, RUSSELL TAAFFE, *Ph.D.*, Professor of Education
GRIFF, ERNEST RAYMOND, *B.S.*, Teacher of Mathematics (part time), Wisconsin High School
GRILLEY, ROBERT LEROY, *B.S.*, Associate Professor of Art Education
GROSS, KATHERINE FRANCES, *M.A.*, Instructor in Physical Education
HALVERSON, LOLAS ELIZABETH, *M.S.*, Instructor in Physical Education
HARRIS, CHESTER WILLIAM, *Ph.D.*, Associate Professor of Education
HARRIS, THEODORE LESTER, *Ph.D.*, Associate Professor of Education
HAWES, JOSEPH BYRON, Instructor in Physical Education (Women) (part time)
H'DOUBLER, MARGARET NEWELL (MRS. WAYNE CLAXTON), *M.A.*, Professor of Physical Education
HENDERSON, RUTH ADELE, *M.A.*, Professor of Education; also Wisconsin High School
HERRICK, VIRGIL EVERETT, *Ph.D.*, Professor of Education
HICKMAN, JOHN COMAR, *M.S.*, Instructor in Physical Education; also Intercollegiate Athletics
HILL, HENRY BERTRAM, *Ph.D.*, Professor of History; also Extension Division (on leave, 1952–53)
HOARD, MARJORIE JEAN, *M.A.*, Teacher of English, Wisconsin High School
HOLMES, ALICE ARVILLA, *M.S.*, Instructor in Physical Education
HOSLER, RUSSELL JOHN, *Ed.D.*, Associate Professor of Education and of Commerce; also Wisconsin High School
HUEBNER, JANET MARIE, *B.Ed.*, Teacher of Commerce (part time), Wisconsin High School
HUTCHINS, HERIOT CLIFTON, *Ph.D.*, Assistant Professor of Education and Coordinator of Recreation Curriculum
IVERSON, MAURICE THEOBALD, *M.A.*, Lecturer in Education; also Extension Division
JACQUES, BETTY JANE, *M.A.*, Teacher of History (part time), Wisconsin High School
JAMES, JOHN AMBROSE, *B.S.*, Professor of Agricultural Education
JENSEN, KAI, *Ph.D.*, Professor of Education
JOACHIM, FREDERICK GEORGE, *M.D.*, Instructor in Anatomy
JOHNSON, MRS. KAREN FALK, *M.A.*, Teacher of History, Wisconsin High School
JOHNSON, LAURA BUTLER, *M.A.*, Professor of Education; also Wisconsin High School
JOHNSON, RUTH MARGARET, *Ph.M.*, Teacher of History, Wisconsin High School
JUSTICE, ERNEST, *M.S.*, Teacher of Music, Wisconsin High School
KESSEL, ROBERT MANLEY, *M.S.*, Instructor in Commerce; also Wisconsin High School
KLAUSMEIER, HERBERT JOHN, *Ph.D.*, Assistant Professor of Education
KLOEPPER, LOUISE OLGA, *B.S.*, Associate Professor of Physical Education
KOERBLE, CHARLES E., *M.A.*, Specialist (Counselor) (part time)
KREITLOW, BURTON WILLIAM, *Ph.D.*, Associate Professor of Education and of Agricultural Education
KRUG, EDWARD AUGUST, *Ed.D.*, Professor of Education
LACY, EDGAR WILSON, *Ph.D.*, Associate Professor of English
LENGFELD, FRED EDWARD, *M.S.*, Instructor in Education (Recreation)
LIDDLE, CLIFFORD STANLEY, *Ph.D.*, Associate Professor of Education; Associate Dean of the School of Education
LITTLE, JAMES KENNETH, *Ph.D.*, Professor of Education; Vice-President of Student Affairs
LITTLETON, HARVEY KLINE, *M.F.A.*, Instructor in Art Education
LOGAN, FREDERICK MANNING, *M.A.*, Associate Professor of Art Education; Chairman, Department of Art Education

LOW, CAMILLA MARCIA, *Ed.D.*, Professor of Education
MANSFIELD, ARTHUR WILLIAM, *M.S.*, Professor of Physical Education; also Intercollegiate Athletics (Baseball Coach)
MARTIN, GEORGE ALFRED, *B.S.*, Associate Professor of Physical Education; also Intercollegiate Athletics
MARTIN, JOAN LOUISE, *M.S.*, Instructor in Physical Education
MAXFIELD, SUSAN ERNISSE, *M.S.*, Assistant Professor of Education and of Home Economics (Nursery School)
MAYOR, JOHN ROBERTS, *Ph.D.*, Professor of Education and of Mathematics; also Wisconsin High School; Chairman, Department of Education
MEEKER, DEAN JACKSON, *M.F.A.*, Assistant Professor of Art Education
METZEN, HAROLD ARTHUR, *M.S.*, Instructor in Physical Education; also Wisconsin High School
MORTIMER, ELIZABETH MILDRED, *M.S.*, Instructor in Physical Education
NEMEC, MRS. LOIS GADD, *Ph.D.*, Associate Professor of Education, Extension Division
NOHR, ROBERT, *B.P.E.*, *B.S.*, Professor of Physical Education; Director, Course in Physical Education for Men
OLSON, CHESTER PALMER, *M.S.*, Teacher of Science, Wisconsin High School
PELLA, MILTON ORVILLE, *Ph.D.*, Assistant Professor of Education; also Teacher of Science, Wisconsin High School
PETERSON, LEROY JAMES, *Ph.D.*, Associate Professor of Education
PETZOLD, ROBERT GEORGE, *Ph.D.*, Assistant Professor of Music
PHILLIPS, BURR WENDELL, *M.A.*, Professor of Education and of History; also Wisconsin High School
PURVES, JAY, *M.S.*, Teacher of Physical Education (Girls), Wisconsin High School
RAGSDALE, CLARENCE EDWIN, *Ph.D.*, Professor of Education
RARICK, G. LAWRENCE, *Ph.D.*, Professor of Physical Education
RHUE, SARA ANN, *Ph.D.*, Assistant Professor of Education
RIPPE, RUSSELL, *M.S.*, Associate Professor of Physical Education; also Intercollegiate Athletics and Wisconsin High School
ROTHNEY, JOHN WATSON MURRAY, *Ed.D.*, Professor of Education
RUEHMER, LOLA JOY, *B.Ed.*, Teacher of Commercial Subjects (part time) Wisconsin High School
SANGER, CARL EDGAR, *M.S.*, Associate Professor of Physical Education; also Extension Division and Intercollegiate Athletics
SCHADE, MAJA LORE, *M.S.*, Associate Professor of Physical Education
SCHENK, RACHEL KATHERINE, *M.A.*, Associate Professor of Library Science; Director, Library School
SCHLEGELMILCH, WILLIAM LEON, *M.A.*, Teacher of English, Wisconsin High School
SCHWEHR, FREDERICK ERNEST, *M.S.*, Teacher of Industrial Arts, Wisconsin High School
SEARLES, JOHN REXFORD, *Ph.D.*, Lecturer in Education and in English
SESSLER, ALFRED, *M.S.*, Associate Professor of Art Education
SEVERINO, D. ALEXANDER, *Ed.D.*, Assistant Professor of Art Education
SHAFER, LYDIA ZIEMANN (MRS. A. J.), *M.A.*, Instructor in Physical Education and Assistant to the Director
SHANNON, THEODORE JOSEPH, *M.A.*, Lecturer in Education; also Director of Special Classes, Extension Division
SHOEMAKER, FRANCIS, *Ph.D.*, Associate Professor of Education; also Wisconsin High School (on leave, 1952–53)
SIGGELKOW, LOIS MILDRED, *M.S.*, Teacher of Home Economics, Wisconsin High School
SKOUGE, ROBERT KENNETH, *B.S.*, Teacher of Speech, Wisconsin High School
SLOAN, MURIEL ROSE, *M.S.*, Instructor in Physical Education
SOUTHWORTH, WARREN HILBOURNE, *Dr.P.H.*, Professor of Education
SPRINGHORN, RITA KATHERINE, *Ph.B.*, Teacher of English, Wisconsin High School

STANLEY, JULIAN CECIL, *Ed.D.*, Associate Professor of Education
STEBBINS, ROLAND STEWART, *R.M., A.A.*, Emeritus Professor of Art Education
THOMAS, URSULA MAY, *M.A.*, Teacher of German (part time), Wisconsin High School
THOMPSON, CAROLINE GOSS, *B.A.*, Assistant Professor of Physical Medicine; Adviser to Students in the Course in Occupational Therapy
TORGERSON, THEODORE L., *Ph.D.*, Emeritus Professor of Education
TRILLING, BLANCHE MATHILDE, *B.A.*, Emeritus Professor of Physical Education
TRUMP, PAUL LEROY, *Ph.D.*, Associate Professor of Education; Director of Admissions
UPCHURCH, ANN, *M.S.*, Instructor in Physical Education
VIERTHALER, ARTHUR A., *M.S.*, Assistant Professor of Art Education
VOGT, SHIRLEY ANNE, *B.A.*, Teacher of Spanish (part time), Wisconsin High School
WALKER, MARY HILDEGARDE, *M.Ed.*, Instructor in Education
WEBER, LYNDA MARGUERITE, *M.A.*, Emeritus Assistant Professor of Education
WEIGHTMAN, ESTHER, *M.A.*, Instructor in Education; also Wisconsin High School
WESSELS, DEAN HERMAN, *B.S.*, Teacher of Science, Wisconsin High School
WHITE, FREDERICK ALLISON, *M.A.*, Lecturer in Education; also Extension Division
WHITE, WILLIAM EDWARD, *M.S.*, Teacher of Speech (part time), Wisconsin High School
WILDE, JOHN HENRY, *M.S.*, Assistant Professor of Art Education
WILLING, MATTHEW H., *Ph.D.*, Professor of Education
WILSON, DELLA FORD, *M.A.*, Professor of Art Education (on leave, 1952–53)
WINSOR, GEORGE BYRON, *M.Ph.*, Instructor in Geography and in Education; also Wisconsin High School
WITTICH, WALTER ARNO, *Ph.D.*, Director, Bureau of Visual Instruction; Professor of Education, School of Education and Extension Division
WOLF, JACOB GROVE, *Ph.D.*, Assistant Professor of Physical Education
ZAGORSKI, EDWARD JAMES, *B.S.*, Instructor in Art Education
ZAWACKI, EDMUND IGNACE, *Ph.D.*, Associate Professor of Slavic Languages
ZINGALE, SANTOS, *M.S.*, Assistant Professor of Art Education
ZUILL, FRANCES LOUISE, *M.A.*, Professor of Home Economics and Associate Dean of Agriculture for Home Economics

PRINCIPALS AND TEACHERS IN OFF-CAMPUS SCHOOLS SUPERVISING STUDENT TEACHERS, 1950–1952

PUBLIC SCHOOLS, MADISON, WISCONSIN

ALLEN, H. RALPH, Principal, Randall School
ARGRAVES, WALTER H., Principal, Longfellow School
BACH, PARNELL, Art, West Junior-Senior High School
BAINBRIDGE, EMERY C., Principal, Emerson School
BARNES, LEO, Art, Longfellow School
BASKERVILLE, MRS. FLORENCE, Speech, Madison Vocational and Adult Education School
BAUER, LUNA, Art, Marquette School
BAUMANN, EVELYN, Art, West Junior-Senior High School
BOHN, DOROTHY, Speech, West Junior-Senior High School
BREDESON, MAURINE, Principal, Lapham School
BROWN, EARL D., Principal, Central High School
BURGESS, GORDON, Science, West Junior-Senior High School
BUTLER, RICHARD, Science, West Junior-Senior High School
CARSWELL, MRS. ESTHER, Art, Central Junior-Senior High School
CHRISTOFFERSEN, R. O., Principal, West Junior-Senior High School
CLOCK, LUCILE, Principal, Dudgeon School
COUNSELL, KATHRYN, Home Economics, Franklin School
DAUL, ELVERA T., Speech, East Junior-Senior High School
DAVEY, ETHEL, Social Studies, East Junior-Senior High School
DEVINE, MARTHA, English, West Junior-Senior High School
DIETRICH, NORMA, Music, Lincoln School and East Junior-Senior High School

DOPP, EDITH R., Commercial, Madison Vocational and Adult Education School
DUNN, BERNARD, Principal, Sun Prairie Elementary School
ENGEL, MARTHA, Science, East Junior-Senior High School
ENGELKE, WALTER W., Principal, Nakoma School
FANDRICH, WALTER, Music, Central High School
FARINA, ANTHONY A., Principal, Sherman School
FITZGIBBON, GERALD, Physical Education, Emerson School
FOSSE, MARGARET, Guidance, East High School
FOSTER, MARVIN, Social Studies, Central Junior-Senior High School
FOX, THURMAN, English, West Junior-Senior High School
FRANZ, MRS. MARGARET, Music, Lowell School
FRATER, A. KERMIT, Principal, Lowell School
GEBHARDT, ANNA, English, East Junior-Senior High School
GEORGE, MABLE, Commercial, East Junior-Senior High School
GILBERT, ANONA, Art, Lapham School
GORSKI, MRS. MARILYN, Sixth Grade, Marquette School
GOTTSCHALK, MORGAN, Physical Education, East Junior-Senior High School
GRAVEN, PAULINE, English, East Junior-Senior High School
HANKEY, MRS. ANNE M., Commercial, Central Junior-Senior High School
HANSEN, CECILIA, Physical Education, East Junior-Senior High School
HARRIS, ROBERT, Physical Education, West Junior-Senior High School
HAYDEN, MRS. MARY, Home Economics, West High School
HERRIED, ROBERT G., English, Central High School
HINTZ, MRS. CAROLINE, Art, Longfellow School
HUNGERFORD, CLAUDE, Physical Education, East High School
HUXTABLE, MARION G., Music, West Junior-Senior High School
JAMES, RALPH, Music, Nakoma School
JOHNSON, LAWRENCE, Commercial, East Junior-Senior High School
JOHNSON, VIRGINIA, Art, Lowell School
JOHNSON, MRS. VIRGINIA, Music, Franklin School
JONES, KATHERINE, Music, Washington School
JONES, WILLIS L., Physical Education, West Junior-Senior High School
JORGENSON, LLOYD, Social Studies, East Junior-Senior High School
JUNGINGER, ANN, Commercial, Central Junior-Senior High School
KAROW, CORNELIA, German, West Junior-Senior High School
KASTNER, MRS. AGATHA, English, West Junior-Senior High School
KELLMAN, MRS. GERTRUDE, Music, Emerson School
KENDALL, MRS. ALICE, Art, Nakoma School
KETTERER, ARMAND F., Principal, Franklin School
KIEFFER, ELIZABETH M., Commercial, West Junior-Senior High School
KING, MRS. JOAN, Art, Lapham School
KLEIN, MRS. LAURA, Music, Lowell School
KOEHLER, HENRY, Science, West Junior-Senior High School
KRCHMA, LUCY, Social Studies, Central Junior-Senior High School
KRIDER, DONALD T., Social Studies, West Junior-Senior High School
LADUKE, MRS. DUELLA, Art, Emerson School
LAGLER, THERESA, Physical Education, East Junior-Senior High School
LANGSTON, MRS. DOROTHY, Music, Franklin School
LEROUX, PEARL, Principal, Washington School
LIDDLE, MRS. MILLICENT, Social Studies, West Junior-Senior High School
LINCOLN, GARRISON, Social Studies, East Junior-Senior High School
LUGG, J. HENRY, Science, East Junior-Senior High School
LYON, JESS C., Physical Education, Central Junior-Senior High School
MACKIN, BEDA, Social Studies, Central Junior-Senior High School
MACDONALD, DOLORES, Art, East Junior-Senior High School
MARKS, MRS. MARY, English, East Junior-Senior High School

MARSH, WILLIAM, Social Studies, Central Junior-Senior High School
MCBRIDE, MARY JO, Home Economics, Central High School
MCCARTY, MRS. RUTH, Speech, West Junior-Senior High School
MCCORMICK, DARLEEN, Music, Central Junior-Senior High School
MCDOWELL, JOHN, Social Studies, Central Junior-Senior High School
MCKINLAY, FERRIS, Social Studies, East Junior-Senior High School
MCLEISH, MRS. DOROTHY, Commercial, West Junior-Senior High School
NEUMAN, MARIE, Music, Sherman School and Nakoma School
NORTH, ELSIE, English, East Junior-Senior High School
NORTON, VIOLA A., Commercial, West Junior-Senior High School
OLESON, EMILY, Art, Lowell School
OTTERSON, JOSEPH, Social Studies, East Junior-Senior High School
PAGE, MRS. MARY, Music, Frank Allis School
PATTERSON, MRS. IDA, Home Economics, West Junior-Senior High School
PAUGH, RUSSEL, Social Studies, West Junior-Senior High School
PERSZYK, ELEANORA, Art, Randall School
PETERSON, HARVEY, Science, East Junior-Senior High School
PIKE, MRS. MARGARET, Speech, Central High School
POPE, ROSA, Spanish, Central Junior-Senior High School
PUESTOW, DOROTHY, English, East Junior-Senior High School
RALL, GLENN W., Physical Education, Marquette School
RANDLE, FOSTER S., Principal, East Junior-Senior High School
REPPEN, DON, Art, Emerson School
RYAN, MRS. EILEEN, Social Studies, East Junior-Senior High School
SCHMIDT, EUGENE, English, West Junior-Senior High School
SCHULER, FREDERICK W., Science, West Junior-Senior High School
SCHWEIZER, FLORENCE, Spanish, West Junior-Senior High School
SCHWENGEL, CLARENCE O., Physical Education, Longfellow School
SEVERSON, EILEEN, English, East High School
SHARPE, JULIA, Social Studies, East Junior-Senior High School
SHELTON, AGATHA, English, West Junior-Senior High School
SIMON, HELEN, Principal, Lincoln School
SIMONSON, LILLIAN, Principal, Marquette School
SPRECHER, ROLAND O., Science, Central Junior-Senior High School
STANKE, ERNEST J., Music, West Junior-Senior High School
STEVENS, MRS. JANE, Physical Education, Randall School
STILLMAN, RUTH, Science, East Junior-Senior High School
STREETER, MRS. HARRIET, English, East High School
STURM, MRS. CAROL, English, Central High School
SULIVER, M. ELIZABETH, Speech Correction, Emerson School and Marquette School
SYLVESTER, BEATRICE G., Home Economics, East Junior-Senior High School
TARRELL, ANN, Commercial, Madison Vocational and Adult Education School
THOMPSON, HARRY C., Physical Education, Randall School
TIFFANY, MRS. ESTHER, Music, Lapham School
WILLIAMS, LEWIS, Social Studies, East Junior-Senior High School
WINGER, HOMER, Social Studies, Central Junior-Senior High School
WINTER, MRS. RUTH, Art, East Junior-Senior High School
WITHERBEE, HELEN, Social Studies, West Junior-Senior High School
WOOLLEN, ROBERT L., Music, East Junior-Senior High School
YOUNGCLAUSE, MARGARET, Second Grade, Marquette School

PAROCHIAL AND PRIVATE SCHOOLS, MADISON, WISCONSIN

SR. ALICIO, Principal, St. Patrick's School
SR. CORDIS, Art, Holy Redeemer School
SR. DOLORETTA, Principal, St. Raphael's School

SR. LEONIE, Principal, Edgewood Grade School
SR. LUCIENNE, Principal, St. James School
SR. MARY HOPE, Principal, Edgewood High School
SR. MELORA, Principal, Holy Redeemer School
SR. PHILIPPE, Principal, Blessed Sacrament School
WILKE, EARL, Physical Education, Edgewood High School

STATE GRADED SCHOOLS, VICINITY OF MADISON

BLACKMAN, GEORGE, Principal, Highlands-Mendota Beach School
GARDNER, WILLIAM, Principal, Lakewood School
HILE, WANDA, Principal, Sunnyside School
LEE, RICHARD, Principal, Mendota School
MCDONALD, GENEVA, Principal, Shorewood Hills School
NERDRUM, MRS. ELEANOR, Music, Lakewood School
PURCELL, MRS. LEITA, Art, Fish Hatchery School
REPPEN, MRS. MARY, Art, Lakewood School
SARGENT, LOYAL, Principal, Nichols School
SCHWARTZ, MELVIN, Principal, Nichols School

SCHOOL OF EDUCATION

JOHN GUY FOWLKES, DEAN
CLIFFORD S. LIDDLE, ASSOCIATE DEAN

In April, 1930, the Regents of the University approved the action of the University Faculty, establishing a School of Education of college rank, and gave to it jurisdiction over the undergraduate preparation of teachers.

The faculty of the School of Education is made up of the faculties of the Departments of Education, Art Education, Physical Education for Men and Women, the Course in Occupational Therapy, and those members of the faculties of the departments in the College of Letters and Science, Agriculture, and the Medical School who offer courses of junior and senior grade in the teaching majors and minors.

The School of Education provides professional preparation for teachers of elementary schools and for teachers of academic subjects in junior and senior high schools. It provides preparation for directors of recreation, and for teachers of such special subjects as art, agriculture, business education, home economics, music, physical education, child development, and conservation; also, school librarians, supervisors, principals and superintendents.

The professional preparation rests upon a basis of a sound general education and includes: (1) a teaching major and minor in the academic or special fields; (2) professional training, including courses dealing with the principles, psychology, and the practice of teaching, closely correlated with actual participation in the Wisconsin High School and in off-campus schools. Graduate courses in the various fields of education, including opportunity for research, are offered for those who recognize the desirability of study beyond the four years of college work, and who are preparing to become teachers in public schools, teachers colleges, and universities, as well as supervisors and administrators.

1. WISCONSIN HIGH SCHOOL

The Wisconsin High School, a six-year secondary school, is maintained by the University as an integral part of the School of Education. The primary purposes of this school are (a) the exemplification of sound educational theory and organization, with special reference to secondary education, and (b) the provision of appropriate facilities for observation and directed teaching. The details of organization, program of studies, etc., will be found in the bulletin of the Wisconsin High School.

2. FIELD SERVICES

The School of Education provides for field services of the following types:

1. Visits, on call, to university-trained teachers, in order to assist them with their teaching problems.

2. Participation in conferences, institutes, and professional meetings held within the state.

3. The organization and operation of field clinics, forums, demonstrations, and field conferences.

4. Consultation with school officials and school boards on problems dealing with school buildings, curricula, guidance, organization, administration, special education, etc.

3. EDUCATIONAL LABORATORIES

Laboratories are maintained for research, service, and training in the fields of child development, curriculum, educational diagnosis, learning, and statistics. These laboratories are available for use by graduate students majoring in education and in allied departments, and by superintendents, principals, and teachers in the state.

THE PSYCHO-EDUCATIONAL CLINIC

The Psycho-Educational Clinic is a service and instructional clinic in the field of child study. Children are referred to this clinic on a state-wide basis because of psychological, educational, and behavior problems. For teachers in training it provides an opportunity to study pupils with learning and behavior problems at the elementary and secondary school levels. By participating in the activities of the clinic, teachers enrolled in Education 149, Practice in psycho-educational clinic, will receive training and experience in the use of clinical procedures involving observation, interviewing, testing and case studies.

THE READING CLINIC

The Reading Clinic provides training in diagnostic and remedial procedures in reading for teachers enrolled in Education 127, Remedial reading, and Education 148, Practice in reading clinic. Cases of reading disability in grades 3 to 12 are enrolled. The clinic is in session two hours per day for a period of six weeks during the summer session.

LEARNING LABORATORY

Provisions are made in the Learning Laboratory for research on both individual and group learning processes by advanced graduate students. The laboratory is used for demonstration purposes in several courses in the area of Human Development, Behavior, and Learning, especially Education 118 and Education 210. Education 206, Laboratory study of school learning problems, is designed to offer systematic study of laboratory problems and techniques.

THE STATISTICAL LABORATORY

The Statistical Laboratory is designed to provide space and machines for experience in the application of statistical techniques to educational problems. It is open for the use of students and faculty alike.

4. BUREAU OF AUDIO-VISUAL INSTRUCTION

The widely varied and growing facilities of the *Bureau of Audio-Visual Instruction* are available to and are being used in co-operation with undergraduate and graduate training in the fields of education. Bureau facilities include: (1) a film library of 17,000 reels of 16 mm. educational sound and silent motion-picture films; (2) a library of transcriptions, recordings, filmstrips, slides, and related audio-visual instructional materials; (3) portable projection equipment; (4) seven preview rooms for students and faculty; (5) an auditorium completely equipped with projection material; (6) curriculum advisory service for courses in School of Education; (7) demonstration of teaching technique involving audio-visual methods.

5. THE EDUCATION LIBRARY

Students have access to excellent library facilities. In the general University Library, there is a separate *Education Library* of 36,000 volumes. One section of the library is reserved for curriculum guides produced by state departments and local communities throughout the United States. Textbooks and other current curriculum materials are also available. (See Instructional Material Center.) *An Educational and Occupational Information Center* is directed by a staff member of the Student Personnel Services for the use of all students in the University. Students interested in guidance will find here a well-stocked, up-to-date library of references covering educational and occupational opportunities and training programs.

6. INSTRUCTIONAL MATERIALS CENTER

The Instructional Materials Center, located in the Education Building, contains a wealth of curricular materials for the student of education. The Center contains textbooks and courses of study in the areas of instruction which apply to the prospective teacher and the

practicing teacher. In the Center there are also free and inexpensive materials and the various audio-visual aids which can enrich the curriculum. This Center is designed as a service agency for all courses in the School of Education.

7. HONORARY PROFESSIONAL ORGANIZATIONS

Alpha Beta Chapter of *Pi Lambda Theta* is a national honorary and professional association of women in education, working to foster professional spirit and to seek and maintain the highest standards of scholarship and professional preparation, especially among women. A candidate for membership shall possess those qualities of integrity, enthusiasm, and energy that will make it possible for her to become a leader in her chosen field, superior scholarship, and be recommended by members of the faculty of the School of Education.

Pi Lambda Theta offers two awards yearly, of four hundred dollars each, for significant research studies in education, on any aspect of the professional problems and contributions of women, either in education or in some other field. A study may be submitted by any individual, whether or not engaged at present in educational work, or by any chapter or group of members of Pi Lambda Theta.

Loans for women in education are provided by Pi Lambda Theta, preferably to women in teaching and in the graduate schools. The loan should be not less than $200 nor more than $1,000 except in unusual cases.

A yearly award of $25 is offered by Alpha Beta Chapter to the best all-around senior woman in the School of Education at the University of Wisconsin.

Phi Delta Kappa is a professional fraternity for men in education represented at the University of Wisconsin by Phi Campus Chapter. It was organized to further education at all levels through the concepts of research, service, and leadership, and is based upon two complementary principles:

First: That the lasting betterment of society, especially in a democracy, cannot be wrought without wise conservation and expansion of the capacities of the individual by means of a universal education which utilizes the fruits of research under the guidance of philosophy; and

Second: That the state itself has no higher function than to further human development and happiness by means of education designed to enable each of its members to approximate his spiritual and mental potentialities.

Membership in the fraternity is open to both graduate and undergraduate men who are majoring in the field of education or who are in related fields and who have definitely chosen teaching as their career. Candidates are elected by members of the fraternity on the basis of an outstanding scholastic record, upon the general capacities of the candidate to perform well in all phases of his educational career, and upon an unqualified recommendation by the faculty of the School of Education.

Selection to the fraternity does not provide a panacea for success in education, but is bestowed as sound recognition of accomplishment and of future potential in the field.

Graduation does not end active membership, but merely serves as a springboard for the fulfillment of the responsibilities and obligations of research, service, and leadership in the field of education.

8. SCHEDERS

Scheders is a club for students in the School of Education. This club was organized in the second semester of the academic year 1947–48. The name is derived as follows: Sch (ool) (of) Ed (ucation) plus ers.

Membership is open to graduate and undergraduate students and to pre-education freshmen and sophomores. The club is both a social and a professional organization, promoting social activities among and between students and faculty members, and the advancement of professional growth and development of prospective teachers. Scheders has two faculty advisers and co-ordinates its program with other activities of the School of Education.

For the meetings the program committee usually has a speaker, a discussion, or a report

on some topic of professional interest. With the assistance of the professional educational societies—Phi Lambda Theta and Phi Delta Kappa—Scheders sponsors weekly coffee-hours for all students and faculty in the School of Education. One of the foremost activities of the club is the sponsorship of the annual School of Education Open House which takes place shortly after the opening of the school year in September. Other activities in which the group takes an active part are: homecoming activities of the School of Education and the Education Careers Conference.

Scheders is a growing organization. It has succeeded in providing an atmosphere of good fellowship and professional growth for prospective teachers on the university campus.

9. FOREIGN STUDENTS

Proficiency in English adequate to the student's needs for his work at the University of Wisconsin is presupposed. Foreign students whose native language is not English must pass an English proficiency examination under the auspices of the Department of English. Students who cannot satisfy this requirement shall be given the status of auditor. However, upon demonstration of the necessary proficiency in English, they may change from auditor to credit status any time during the first eight weeks of the semester. For further information students should consult their academic adviser, the special adviser for foreign students, or the Office of Admissions.

For foreign students who are admitted with junior or senior standing, the general course requirements other than those of the major, or related to the major, may be waived. The major department may make such an arrangement for individual students. Advisers should consult University Document 808 or call the Office of Admissions.

A special office is maintained, at present in Bascom Hall, to assist in the counseling and orientation of foreign students.

10. ADMISSION AND REGISTRATION

1. Students electing a major in Art Education, in Applied Art, in Physical Education, in Occupational Therapy and in Recreation will register in the School of Education at the beginning of the freshman year.

2. Freshmen and sophomores in the College of Letters and Science who expect to transfer to the School of Education at the junior level to work for the University Teachers' Certificate and qualify to teach in the elementary or secondary school, are required to comply with the same general regulations outlined in the bulletin of the College of Letters and Science. (Bulletin of the College of Letters and Science, 1952–54, p. 34.) Admission to the Program for the Preparation of Elementary School Teachers in the freshman and sophomore years is approved by the School of Education but official registration is in the College of Letters and Science.

The pre-education programs of students who enter the School of Education should include the basic requirements for the B.A. or B.S. degree (or the requirements of the course in Integrated Liberal Studies) in the College of Letters and Science. However, no student will be accepted into the School of Education unless his scholastic record is sufficiently high to indicate the probability of success in some teaching field. Students who expect to enter the School of Education, after two or more years of college work, are advised to take at least elementary courses in as many as possible of the fields that serve as foundations for the later required professional courses. Such subject-fields are Physiology or Zoology, Psychology, and a selection from the introductory courses in the several Social Studies.

3. All students who are candidates for the University Teachers' Certificate shall present evidence of their speech proficiency by meeting the requirements of either Option A or Option B, see page 334. It is required that students registered in other colleges of the University, who plan to prepare for the University Teachers' Certificate, meet one of the options before registering for the professional courses in education.

4. Students in special courses having a complete four-year curriculum, such as the Course in Chemistry, the Course in Humanities, and the Schools of Commerce, Journalism and Music, will retain their classifications in their respective colleges, but must also register in the School of Education at the beginning of the junior year.

5. Students electing a teaching major in agriculture or in home economics must register concurrently in the College of Agriculture and in the School of Education at the beginning of the junior year.

11. DEGREES

The School of Education grants the following degrees: Bachelor of Science (Education), Bachelor of Science (Art Education), Bachelor of Science (Applied Art), Bachelor of Science (Physical Education) and Bachelor of Science (Occupational Therapy); jointly, with the College of Agriculture, Bachelor of Science (Agriculture and Education) and Bachelor of Science (Home Economics and Education).

Only students qualifying for degrees in the School of Education may receive the University Teachers' Certificate and the recommendation of the School of Education, with the exception of those in the special courses noted in 4 and 5 above.

12. REQUIREMENTS FOR GRADUATION AND FOR THE UNIVERSITY TEACHERS' CERTIFICATE

Graduation from the School of Education and recommendation for the University Teachers' Certificate are based upon the following conditions and requirements:

A. Elementary Education:

I. A total of 128 credits and 128 grade-points, including the basic requirements for the B.A. or the B.S. degree or the requirements of the course in Integrated Liberal Studies as outlined in the bulletin of the College of Letters and Science.

II. Requirement in United States History and Institutions. A new requirement in United States History and Institutions has been established in all of the undergraduate schools and colleges in the University. It must be met by all students who receive degrees in June 1954, or thereafter. The requirement, outlined below, is for all bachelor's degrees in the College of Letters and Science and the School of Education. The student may satisfy this requirement in one of three ways:

1. By passing, by the beginning of the junior year, an attainment examination in United States History based on college-level work.
2. By completing satisfactorily, in college, a continuous year course in United States History. A year course is here understood to be one so listed in the Announcement of Courses (i.e., History 4, 12–112, 113, 117, 120, 121, 122); or two semester courses which, as to content, are in chronological sequence (i.e., any two *consecutively numbered* semester courses chosen from the following: History 101, 102, 103, 104, 105, 106, 107, 108, 109).
3. By combining a semester in advanced United States History with any one of the following courses: Economics 1a; English 140; Geography 146; Integrated Liberal Studies 23; Philosophy 139; Political Science 7, 110, 112a, 112b, 165, 166, or 171; or Sociology 178. The student may choose the semester of history from one of the following semester courses: History 101, 102, 103, 104, 105, 106, 107, 108, 109, or 111; or he may complete either semester of one of the following year courses: History 112, 113, 117, 120, 121, or 122.

III. Preparation to teach in at least one of the following areas:

Kindergarten
Primary grades (1–3)
Intermediate grades (4–6)
Upper grades (7–8)

IV. Students in the School of Education (except majors in Occupational Therapy and in Applied Art who are not candidates for the University Teachers' Certificate) shall

present evidence of their speech proficiency by meeting the requirements of Option A or Option B as follows:

OPTION A: A student may enroll in a special non-credit speech course, in which his speech for teaching will be evaluated on standards set by the Speech Examination Committee. Students who come to this course proficient in speech will be so certified as soon as the fact is ascertained. Others will receive special advice and training. If, in spite of this added help, the student fails to be certified, he must reach the required standard through special clinic or course assignments.

OPTION B: A student enrolled in a speech-skills course (Speech 1, 2, 3, 4, 6, 7, 8a, 8b, 9, 13, 16, 18, 22, 29, 105, 110, 115, 122, 123, 135, or 136) may elect to be certified by his instructor as proficient in speech for teaching, the certification to be based on standards set by the Speech Examination Committee. Notification to the instructor of the selection of this option must be made by the student at the beginning of the semester. If the student fails to be certified, he must reach the required standard through special clinic or course assignments prescribed by the Committee.

EXCEPTION: The Speech Committee may modify the requirements for special students who cannot be certified under the above procedures, if the Committee is satisfied that the teaching situations to which the students are to go are such that the above standards are not applicable.

V. The recommendation of the responsible authorities as to fitness for teaching.

VI. The presentation of a certificate of physical health and fitness from the University Medical Examiner.

VII. Completion of the following profession requirements: Credits

EDUCATION 11a, 11b, 21a, 21b—Introduction to elementary education (one cr. per course)	4
EDUCATION 73—The child: His nature and his needs	3
EDUCATION 75—The nature and direction of learning	4
EDUCATION 31a, 31b—Curriculum and instruction in the elementary school (4 cr. per sem.)	8
EDUCATION 41—Supervised teaching in the elementary school	16
EDUCATION 42—The teacher and the American educational system	2

VIII. Other course requirements:

EDUCATION 1, 2, 7, 8—Integrated arts (two credits per course)	8
MATHEMATICS 9—Mathematics for elementary teachers	4

(May be counted toward the general degree requirements in the area of science and mathematics.)

3. SECONDARY EDUCATION:

I. A total of 124 credits and 124 grade-points, including the basic requirements for the B.A. or the B.S. degree (or the requirements of the course in Integrated Liberal Studies) as outlined in the bulletin of the College of Letters and Science. (See requirements in United States History and Institutions—page 334.)

II. Preparation for teaching one major subject and one minor subject. (The Wisconsin Department of Public Instruction requires two academic minors.)

To fulfill the requirements of preparation for teaching the selected major, a student must present credits in amount and kind as prescribed for a teaching major by the department of such major subject. This department prescription must in all cases include at least 24 credits, and in addition, credit for the departmental teachers' course. (See Academic Teaching Majors and Minors—pages 356–372.)

To fulfill the requirements of preparation for the teaching of the selected minor subject or subjects, a student must present credits in amount and kind as prescribed

by the department of such minor subjects. This departmental prescription must contain 15 credits, exclusive of the departmental teachers' course. (See Academic Teaching Majors and Minors—pages 356–372.)

III. Students in the School of Education (except majors in Occupational Therapy and in Applied Art who are not candidates for the University Teachers' Certificate) shall present evidence of their speech proficiency by meeting the requirements of Option A or Option B (see section IV, page 334.)

IV. The recommendation of the department of the major subject, or the responsible authorities of the special courses, as to fitness for teaching.

V. The presentation of a certificate of physical health and fitness from the University Medical Examiner.

VI. Completion of the following professional requirements (18 credits)

	Credits
EDUCATION 73—The child: His nature and his needs	3
EDUCATION 74—The school and society	3
EDUCATION 75—The nature and direction of learning	5
*A course in the teaching of the major subject (senior year)	5
*A course in the teaching of the minor subject	2

C. For information concerning the graduation requirements in the four-year courses in Art Education, Applied Art, Occupational Therapy, Physical Education and Athletic Coaching for Men, Physical Education for Women, and Recreation Leadership, see pages 338–354.

The requirements for graduation in Agriculture and Education and Home Economics and Education, Business Education and Music are given on pages 372–379.

13. SPECIAL STATUTORY REQUIREMENTS

For teachers of science, the social studies, and agriculture.

Chapter 445—*Laws of* 1935, *State of Wisconsin,* reads as follows:
"In granting certificates for the teaching of courses in science and the social studies, adequate instruction in the conservation of natural resources shall be required." See *Geography* 128, *Conservation of Natural Resources* (first and second semester); or *Economics* 117, *Outline of Land Economics* (first semester).

Chapter 307—*Laws of* 1935, *State of Wisconsin,* reads as follows:
"In granting certificates for the teaching of courses in economics, the social studies, and agriculture, adequate instruction in co-operative marketing and consumers' co-operatives shall be required." See *Agricultural Economics* 127, *Co-operation* (first semester or second semester).

The Wisconsin Department of Public Instruction has interpreted the law on conservation and co-operatives as applying to teaching majors in the fields named and to teaching minors.

14. REGULATIONS OF THE WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION FOR THE CERTIFICATION OF TEACHERS IN WISCONSIN

ELEMENTARY SCHOOL. Recommended graduation from an approved four-year elementary school course in an accredited college.

HIGH SCHOOL. Graduation from an approved four-year course in an accredited college, with the following minimum requirements:

* If a student has both the major and the minor in the same methods area, then he may carry a two-credit elective course in the Department of Education.

A. Academic preparation

1. One major subject—24 semester hours; and two minor subjects—15 semester hours each

or

2. Two major subjects—24 semester hours each

B. Professional requirements for a first license—total of 18 semester hours as follows:

1. Educational psychology or psychology of learning.....3 hours
2. Teachers' course in major subject.....2 hours
3. Practice teaching.....5 hours
4. Elective semester hours in approved courses.....8 hours

SPECIAL. Licenses and certificates to teach special subjects will be issued upon graduation, with satisfactory attainment, from an approved four-year course in an accredited college, with major preparation in the special fields, and with recommendations by the authorized supervisory officials. At least one academic minor must be included in the college course. The major preparation must be based upon a minimum of thirty semester hours in addition to the required eighteen semester hours of professional training.

FOUR-YEAR COURSES IN THE SCHOOL OF EDUCATION

COURSES IN ART EDUCATION AND APPLIED ART

LEADING TO THE DEGREES OF BACHELOR OF SCIENCE (ART EDUCATION) AND BACHELOR OF SCIENCE (APPLIED ART)

FREDERICK M. LOGAN, *M.A.*, Associate Professor of Art Education, *Chairman*

The School of Education offers two four-year undergraduate curricula, leading to the degree of Bachelor of Science (Art Education), for those intending to teach art, and Bachelor of Science (Applied Art) for those whose interests and qualifications are in the professional art fields. For graduate students with the necessary prerequisites, the Department of Art Education offers a major in art education, with related courses in education, leading to the degree of Master of Science in Art Education or in Applied Art. In both graduate and undergraduate sequences the student may specialize in such fields as painting, graphics, sculpture, creative design, commercial design, ceramics, metal work, and stage design. The right to retain one specimen of work from each student in each class is reserved by the department.

A student who has completed the ILS program, and then transfers to the Department of Art Education or Applied Art, will be considered to have completed all of the general (non-departmental) requirements.

Students registered in the College of Letters and Science may elect for credit without special permission of the dean of that college, the following courses: Freshmen and others, Art Education 50; sophomores and others, Art Education 52, 54, 55, 56, 63, 64, 70, 71, 140, 160, and 168, if the departmental prerequisites have been met. Students registered in other colleges must secure permission from their deans.

EQUIPMENT

The Department of Art Education is housed in the Education Building, conveniently situated on the upper campus, with studios overlooking Lake Mendota. The building contains an exhibition gallery, a painting and life studio, studios for sculpture, ceramics, art metal, graphic arts, design, stage design, school crafts and drawing. The Memorial Union has a gallery for contemporary exhibitions, while the Union Workshop gives opportunity for remunerative art activities outside the classroom.

REQUIREMENTS FOR GRADUATION COURSE IN ART EDUCATION

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (ART EDUCATION)

The curriculum offered here is planned to prepare future teachers and supervisors of art for public and private schools, colleges, and universities. A total of 124 credits and 124 grade-points is required for graduation. From 53 to 68 credits must be taken in departmental courses or in their related options listed below and an additional 18 credits must be taken in the Department of Education. A minimum of 56 academic credits is required, not including the 6 required credits in Art History. If the student intends to teach in the state of Wisconsin, he must have a minor in an academic field. The certification regulations of the Wisconsin Department of Public Instruction provide that this minor shall consist of 15 credits of college courses in any academic subject. However, if the student desires to qualify for the University Teachers' Certificate in his minor field, he must fulfill the specific

requirements established by the department offering the minor. Information on the requirements for the certification of teachers in states other than Wisconsin may be obtained from the office of the Dean of the School of Education.

SEQUENCE A:

ENGLISH: 12 credits. Freshman composition, 6 cr., and one year of sophomore literature.

HISTORY: 6 credits. A year course in American history or in 100-group courses, including any history courses taken to satisfy the United States History and Institutions requirement. (See p. 334.)

SCIENCE OR MATHEMATICS: Mathematics, 8 cr., or completion of Mathematics 1b or 3b; Science, 10 cr. in regular year or semester courses, in elementary survey courses, or a combination of these.

EDUCATION: 18 credits. Education 73, 3 cr.; Education 74, 3 cr.; Education 75, 5 cr.; Education 62, 5 cr.; Education elective, 2 cr. (Education 63 is recommended.)

ACADEMIC MINOR: 15–22 credits.

ART EDUCATION: 53–68 credits to include Art History, 6 cr. (3 credits to be selected from Art History 22, 50, 54); Art Education 50, 6 cr.; Art Education 53, 4 cr.; Art Education 52 or 56 (3 cr.); Art Education 54, 3 cr.; Art Education 55, 6 cr.; Art Education 60, 3 cr.; Art Education 61, 6 cr.; Art Education 62, 6 cr.; Art Education 64, 3 cr.

SPEECH: Evidence of speech proficiency by meeting the requirements of either Option A or Option B. (See page 334.)

By the close of the fourth semester and thereafter a grade-point average of 1.3 must be maintained. Students transferring from another college in the University or from another institution will be required to maintain a 1.3 average by the close of their second semester as art majors.

SEQUENCE B:

ENGLISH: 12 credits. Freshman composition, 6 cr., and one year of sophomore literature.

HISTORY: United States History and Institutions, 6 cr. (See p. 334.)

FOREIGN LANGUAGE: Knowledge of one foreign language evidenced by: (1) completion of 14 college credits, or passing the appropriate intermediate attainment examination (students who enter college without foreign language preparation); (2) completion of 10 college credits; or passing the appropriate intermediate attainment examination (students who enter college with one year of the language completed in high school); (3) completion of 6 college credits, or passing the appropriate intermediate attainment examination (students who enter college with two or more years of the language completed in high school).

SCIENCE OR MATHEMATICS: Mathematics, 8 cr., or completion of Mathematics 1b or 3b; Science, 10 cr. in regular year or semester courses, in elementary survey courses, or a combination of these.

EDUCATION: 18 credits. Education 73, 3 cr.; Education 74, 3 cr.; Education 75, 5 cr.; Education 62, 5 cr.; Education elective, 2 cr. (Education 63 is recommended.)

ACADEMIC MINOR: 15–22 credits.

ART EDUCATION: 53–68 credits to include Art History, 6 cr. (3 credits to be selected from Art History 22, 50, 54); Art Education 50, 6 cr.; Art Education 53, 4 cr.; Art Education 52 or 56 (3 cr.); Art Education 54, 3 cr.; Art Education 55, 6 cr.; Art Education 60, 3 cr.; Art Education 61, 6 cr.; Art Education 62, 6 cr.; Art Education 64, 3 cr.

SPEECH: Evidence of speech proficiency by meeting the requirements of either Option A or Option B. (See page 334.)

By the close of the fourth semester and thereafter a grade-point average of 1.3 must be maintained. Students transferring from another college in the University or from another

institution will be required to maintain a 1.3 average by the close of their second semester as art majors.

COURSE IN APPLIED ART

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (APPLIED ART)

This curriculum is designed for students who are interested in art from a professional or general cultural point of view, and does not fulfill the requirements for the University Teachers' Certificate nor for a license to teach in the state of Wisconsin. A total of 124 credits and 124 grade-points is required for graduation. Of these credits, 58–63 must be taken in departmental courses or in their related options listed below. A minimum of 56 credits must be taken in academic courses, not including the 6 credits required in Art History. Majors in Applied Art must follow one of the sequences listed below:

SEQUENCE A:

ENGLISH: 12 credits. Freshman composition, 6 cr., and one year of sophomore literature.

HISTORY: 12 credits to be taken in year courses unless 100-group courses are selected, including any history courses taken to satisfy the United States History and Institutions requirement. (See page 334.)

SCIENCE OR MATHEMATICS: Mathematics, 8 cr., or completion of Mathematics 1b or 3b; Science, 10 cr. in regular year or semester courses, in elementary survey courses, or a combination of these.

SOCIAL STUDIES AND PHILOSOPHY: A minimum of 9 credits to be selected from Economics 1a, 4 cr.; Sociology 1 or 2, 3 cr.; Georgraphy 7, 3 cr.; Philosophy, 3–6 cr. (Philosophy 53 and 54 are recommended); Psychology 1, 4 cr.; Anthropology 3, 3cr.

ART EDUCATION: 53–68 credits to include Art History, 6 cr. (3 credits to be selected from Art History 22, 50, 54); Art Education 50, 6 cr.; Art Education 53, 4 cr.; Art Education 52 or 56 (3 cr.); 54, 3 cr.; 55, 6 cr.; 60, 3 cr.; 62, 6 cr.; 64, 3 cr.

By the close of the fourth semester and thereafter a grade-point average of 1.3 in art must be maintained. Students transferring from another college in the University or from another institution will be required to maintain a 1.3 average in art by the close of their second semester as art majors.

SEQUENCE B:

FOREIGN LANGUAGE: Knowledge of one foreign language evidenced by: (1) completion of 14 college credits, or passing the appropriate intermediate attainment examination (students who enter college without foreign language preparation); (2) completion of 10 college credits; or passing the appropriate intermediate attainment examination (students who enter college with one year of the language completed in high school); (3) completion of 6 college credits, or passing the appropriate intermediate attainment examination (students who enter college with two or more years of the language completed in high school).

ENGLISH: 12 credits. Freshman composition, 6 cr., and one year of sophomore literature.

HISTORY: 6 credits. A year course in American history, or in 100-group courses, including any history courses taken to satisfy the United States History and Institutions requirement. (See page 334.)

SCIENCE OR MATHEMATICS: Mathematics, 8 cr., or completion of Mathematics 1b or 3b; Science, 10 cr. in regular year or semester courses, in elementary survey courses, or a combination of these.

SOCIAL STUDIES AND PHILOSOPHY: A minimum of 9 credits to be selected from Economics 1a, 4 cr.; Sociology 1 or 2, 3 cr.; Geography 7, 3 cr.; Philosophy, 3–6 cr. (Philosophy 54 is recommended); Psychology 1, 4 cr.; Anthropology 3, 3 cr.

ART EDUCATION: 53–68 credits to include Art History, 6 cr. (3 credits to be selected from Art History 22, 50, 54); Art Education 50, 6 cr.; 53, 4 cr.; 54, 3 cr.; Art Education 52 or 56 (3 cr.); 55, 6 cr.; 60, 3 cr.; 62, 6 cr.; 64, 3 cr.

By the close of the fourth semester and thereafter a grade-point average of 1.3 in art must be maintained. Students transferring from another college in the University or from another institution will be required to maintain a 1.3 average in art by the close of their second semester as art majors.

ART EDUCATION AND APPLIED ARTS CURRICULUM

FRESHMAN YEAR

(For all art majors in Art Education or in Applied Arts and in either Sequence A or B)

First Semester	Credits	Second Semester	Credits
English 1a	3	English	3
Science (Mathematics—4)	5	Science (Mathematics—4)	5
Art Education 50a	3	Art Education 50b	3
Art Education 62a	3	Art Education 62b	3
Art Education 53a	2	Art Education 53b	2
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	15–16		15–16

SOPHOMORE YEAR

(For all art majors in Art Education or in Applied Arts)

Sequence A

English	3	English	3
History	3	History	3
Art Education 54a	3	Art Education 55b	3
Art Education 55a	3	Art History 54	3
Art History 22 or 50	3	Art Education 60a or 64a	3
Art Education 60a or 64a	3	Art Education electives	2–3
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	17–18		16–18

Sequence B

English	3	English	3
Foreign language	3–4	Foreign language	4
Art Education 60a or 64a	3	Art Education 60a or 64a	3
Art Education 55a	3	Art Education 55b	3
Art History 22 or 50	3	Art History 54	3
Art Education 54a	3	Physical Education (women only)	0
Physical Education (women only)	0	Military Training	0
Military Training	0		
	17–18		15–16

JUNIOR YEAR

Sequence A—Art Education

Education 73	3	Education 74	3
Art Education 61a	3	Art Education 61b	3
Education elective	2		

Sequence B—Art Education

Foreign language	3	Foreign language	3
Education 73	3	Education 74	3
Education elective	2	Art Education 61b	3
Art Education 61a	3		

Sequence A—Applied Arts

History	3	History	3
Social Studies and Philosophy	3–4	Social Studies and Philosophy	3
Academic elective	3	Academic elective	3

Sequence B—Applied Arts

Foreign language	3	Foreign language	3
Social Studies and Philosophy	3–4	Social Studies and Philosophy	3
Academic elective	3	Academic elective	3

SENIOR YEAR

Art Education (both sequences)

First Semester	Credits	Second Semester	Credits
Education 75	5	Education 62	5

Sequence A—Applied Arts

History	3	History	3
Academic elective	6	Academic elective	6

Sequence B—Applied Arts

Social Studies and Philosophy	3	Academic elective	6
Academic elective	6		

Art majors in either curricula who have completed the prescribed art courses of the freshman and sophomore years may elect 20 or more credits from the following list, guided by their teaching interests and aptitudes. Before electing courses, students must confer with their advisers.

Art Education

52—Watercolor
54—Sculpture
56—Oil painting
60—Layout and letter structure
63—Commercial design
64—Composition
70—Art metal
71—Ceramics
132—Portraiture and figure painting
140—Stage design
150—Advanced art problems
152—Advanced watercolor
154—Advanced sculpture
155—Advanced life drawing
156—Advanced painting
160—Graphic arts
162—Design research
166a—Silk screen processes
166b—Silk screen processes
167—Graphics research
168—Advanced ceramics
170—Advanced art metal
173—Gem cutting
174—Photographic design
177—Introduction to industrial design
179—Museum techniques

The department recommends that students planning to enter commercial art fields include the following courses in their course of study:

Art Education

50 a & b—Basic drawing
55 a & b—Life drawing and anatomy
60—Layout and letter structure
62 a & b—Creative design
63—Commercial design
155—Advanced life drawing and anatomy
160 a & b—Graphic arts
162—Advanced design
163—Advanced commercial design
166 a & b—Serigraphy
174—Photographic design
177—Materials workshop (design)

NON-DEPARTMENTAL COURSES

Students in either curriculum may elect work in the following departments other than Art Education and apply not more than 10 credits so earned to the elective credits in the major:

Home Economics (Related Art)

8—House furnishing
18—Interior design
20—Costume design and selection
28—Home architecture
94—Decorative textiles
95—Weaving
114—Technique of interior design
115—Traditional interior design
116—Traditional interior design
121—Advanced costume design
194—Advanced studies in related art

Agricultural Engineering

18—Architectural drawing

Horticulture (Landscape Design)

6—Landscape design
12—Home grounds design
101—Advanced home grounds design
102—Public grounds

Physical Education

146—Theory and philosophy of dance

Drawing

10 or 12—Elements of drawing

MINOR IN ART EDUCATION

A minimum of 21 credits, to include Art Education 50a, 3 cr.; 50b, 3 cr.; 53, 2 cr.; 61, 3 cr.; 62, 3 cr.; Education 62, 2 cr.; 5 credits in approved departmental courses. (Students in the College of Letters and Science may anticipate the minor by electing Art Education 50a, 50b, and 62 before the junior year. These courses are free electives and may be taken without special permission of the dean of that college.) Students should have their plan of study approved by the chairman of the department.

COURSE IN OCCUPATIONAL THERAPY

A four-year course, leading to the degree of Bachelor of Science (Occupational Therapy), is offered in the School of Education. For entrance to this course a student must satisfy the general admission requirements of the University. The course is under the joint control of the Schools of Education and Medicine.

No student may transfer to the Course in Occupational Therapy with advanced standing from other colleges or universities unless she is especially qualified and has completed the proper prerequisites.

The curriculum requirements are the completion of 124 credits and at least 124 grade-points, the subjects meeting the following requirements.

To continue beyond the sophomore year in the Course in Occupational Therapy the student must have completed Occupational Therapy I with a grade of *C* or better and have a general grade-point average of not less than 1.3.

Further requirements are as follows:

ENGLISH: 6 credits in freshman composition.

UNITED STATES HISTORY AND INSTITUTIONS: 6 credits. (See page 334.)

SCIENCE: 20 credits, to include at least one course in each of the following subjects: physics, zoology, anatomy, physiology, kinesiology.

PSYCHOLOGY: 10 credits.

FOREIGN LANGUAGE: Requirement may be satisfied either by securing in high school and/or college the equivalent of 14 credits in one foreign language, or by passing the intermediate attainment examination.

SOCIOLOGY: 3 credits.

SPEECH: 2 credits.

TECHNICAL TRAINING: 35 credits to be earned in the Departments of Art Education, Physical Education, Home Economics, and Music, and to include courses in creative design, major arts and crafts, minor crafts, first aid, and therapeutic, recreational, and physical activities for hospital patients.

OCCUPATIONAL THERAPY: 15 credits—theory and practice, to include studies in surgery, medicine, neurology, communicable diseases, theory of occupational therapy and supervised pre-clinical practice.

ELECTIVES: 19 credits.

This academic work is followed by a clinical training year in the following types of hospitals:

Mental hospitals	Not less than 12 weeks
Tuberculosis sanatoriums or services	Not less than 4 weeks
General hospitals	Not less than 4 weeks
Children's hospitals or services	Not less than 4 weeks
Orthopedic hospitals or services	Not less than 8 weeks

The remaining weeks to be arranged.

Upon completion of the requirements herein outlined the student will receive both a degree (B.S., Occupational Therapy), recommended by School of Education, and a Certificate in Occupational Therapy, recommended by the Medical School.

Dr. H. D. Bouman, 157 Service Memorial Institute, is Director of the Course in Occupational Therapy.

Assistant Professor Caroline G. Thompson, Temporary Building 14, is adviser to the students in the Course in Occupational Therapy.

RECOMMENDED SEQUENCE FOR COURSE IN OCCUPATIONAL THERAPY

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a	3	English 1b	3
Foreign language 1a	4	Foreign language 1b	4
Art Ed. 57—Drawing and design	3	Art Ed. 57—Drawing and design	3
Physics 65 or 1	3–5	Zoology 17 or 1	3–5
O. T. 1—Pre-clinical training	1	Phys. Ed. 16	½
Physical Education	0	Phys. Ed. 48	1
		Physical Education	0
	14–16		15–17

SOPHOMORE YEAR

Foreign language 10a	3	Foreign language 10b	3
Art Ed. 54—Elementary modeling	3	Art Ed. 108—Painting for occupational therapy	3
Physiology 1	4	Speech 1	2
Sociology 1	3	U. S. History requirement	3
U. S. History requirement	3	Electives	4
Physical Education	0	Physical Education	0
	16		15

JUNIOR YEAR

Art Ed. 70—Art metal	3	Art Ed. 71—Pottery	3
Art Ed. 175—Crafts for occupational therapy	3	Art Ed. 175	3
Psychology 1—Introduction	4	Anatomy 37	6
Home Ec. 85—Weaving	3	Psychology 105—Human adjustment	3
O. T. 2—Medical lectures	1		
Electives	3		
	17		15

SENIOR YEAR

Psychology 165—Behavior pathology	3	Phys. Ed. 56—Kinesiology	3
O. T. 3—Surgical lectures	2	O. T. 5—Theory of occupational therapy	4
O. T. 4—Practical application of crafts for occupational therapy	3	O. T. 6—Pre-clinical practice	1
O. T. 7a—Communicable diseases	1	O. T. 7b—Neurology and psychiatry	2
O. T. 121—Physical disabilities	2	Home Ec. 94—Decorative textiles	2
Home Ec. 15	2	Home Ec. 119—Child development	2
Electives	2	Electives	3
	15		17

COURSE IN OCCUPATIONAL THERAPY WITH SPECIALIZATION IN MUSIC

In order to provide opportunities for development to students of the *Course in Occupational Therapy* who have adequate skill and a strong interest in the use of music as a therapeutic occupation, the Medical School and the School of Education, in collaboration

with the School of Music, offer a course in Occupational Therapy with specialization in Music. In addition to the regular curriculum in occupational therapy, the following courses in the School of Music are required:

	Credits
Music 11 and/or 12—Theory	4
Music 20a–b—Appreciation and history	4
Applied Music	6
Music 76a—Conducting	2
Music 65 or 75—Instrumental techniques	4
Music Organizations—Four semesters, principally University Chorus or A Cappella Choir	0

The following are recommended as audit courses:

Music 9—String quartets of Haydn and Mozart
Music 38—Vocal problems and interpretation of song literature
Music 115—Music in society

During the student's fifth year of professional training, part of the required ten months of hospital experience will be arranged in an occupational therapy department offering supervised practice in the use of music as a therapeutic medium.

COURSE IN PHYSICAL EDUCATION AND ATHLETIC COACHING FOR MEN

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (PHYSICAL EDUCATION)

ROBERT NOHR, *B.S.*, Professor of Physical Education, *Director*

A total of 124 credits and at least 124 grade-points is required for graduation from this course.

The four-year undergraduate course is so organized that graduates are prepared to be directors and instructors in physical education (including coaching of all sports), health education and recreation. In addition graduates will have the opportunity to prepare themselves to teach one or two academic subjects. Students must be certified before graduation in speech proficiency by the Speech Examination Committee.

The department reserves the right, at any time, to ask students who do not show adaptability in this field to transfer to some other course. An *A* grade from the Student Health Department is necessary as a prerequisite to enrolling in this course.

In addition to the undergraduate curriculum outlined below, opportunity is offered for graduate work leading to the degree of Master of Science in Physical Education or the student may elect a joint major in Education and Physical Education (see bulletin of the Graduate School).

SPECIFIC REQUIREMENTS

	Credits	*Total Credits*
ENGLISH	6	
SPEECH	4	
SOCIAL STUDIES (including courses taken to satisfy the United States History and Institutions requirement. See page 334)	12	
SCIENCE	13	35
Zoology 1 (5)		
Anatomy 39 (4)		
Physiology 2 (4)		
EDUCATION	18	18

PROFESSIONAL COURSES	*Credits*	*Total Credits*
Physical Education Activities (Proficiency work including orientation)	0	

Techniques and Materials in Physical Education	12	
Phys. Ed. 16 — First aid in safety	2	
Phys. Ed. 17 — Athletic conditioning and training	1	
Phys. Ed. 58 — Kinesiology	2	
Phys. Ed. 59 — Nature and function of play	3	
Phys. Ed. 71 — Camp administration and Scouting	3	
Phys. Ed. 103 — Physiology of exercise	2	
Phys. Ed. 119a—School health examinations	3	
Phys. Ed. 119b—Physical education for the handicapped	2	
Phys. Ed. 164 — School health and hygiene	3	
Phys. Ed. 168 — Organization and administration of physical education and athletics	2	35

Electives

Academic—Minors in teaching (one or two)	15–33
Education—(Minor teaching courses)	0–2
Physical Education	0–4
Free Academic	4–17
Total	124

SAMPLE DISTRIBUTION OF COURSES

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Zoology 1—Animal biology	5	Anatomy 39—Human anatomy	4
Speech 8a	2	Speech 8b	2
Electives	4–6	Electives	6–7
Phys. Ed. 6—Physical education activities	0	Phys. Ed. 7—Physical education activities	0
Military Training	0	Military Training	0
	14–16		15–16

SOPHOMORE YEAR

Physiology 2—Elementary physiology	4	Phys. Ed. 16—First aid and safety education	2
Phys. Ed. 17—Athletic conditioning and training	1	Phys. Ed. 71—Camp administration and Scouting	3
Phys. Ed. 59—Nature, function and organization of play	3	Electives	10–12
Electives	7–8	Phys. Ed. 9—Physical education activities	0
Phys. Ed. 8—Physical education activities	0	Military Training	0
Military Training	0		
	15–16		15–17

JUNIOR YEAR

Phys. Ed. 58—Kinesiology	2	Phys. Ed. 103—Physiology of exercise	2
Phys. Ed. 119a—School health examinations	3	Phys. Ed. 119b—Physical education for the handicapped	2
Education 73—The Child: His nature and his needs	3	Education 74—The school and society	3
Electives	4–6	Electives	5–7
Phys. Ed. 10—Techniques and materials in physical education	3	Phys. Ed. 11—Techniques and materials in physical education	3
	15–17		15–17

SENIOR YEAR

Phys. Ed. 164—School health and hygiene	3	Phys. Ed. 168—Organization and administration of physical education	2
Education 75—The nature and direction of learning	5	Education 70—The teaching of physical education	5
Electives	4–6	Electives	5–7
Phys. Ed. 12—Techniques and materials in physical education	3	Phys. Ed. 13—Techniques and materials in physical education	3
	15–17		15–17

MINOR IN PHYSICAL EDUCATION (MEN)

This minor is offered to qualify men to assist in the general physical education program, and to coach and supervise athletics in high schools and colleges in connection with teaching of academic subjects. It may be elected by men students majoring in academic fields in the School of Education. Practice work, without academic credit, may be arranged at the discretion of the department according to the student's needs. The completion of this minor does not entitle one to a special physical education teaching license in Wisconsin.

		Credits
I.	PHYSICAL EDUCATION ACTIVITIES, TECHNIQUES AND MATERIALS IN PHYSICAL EDUCATION	10
II.	ELECTIVES	10

From the following list of courses:

PHYS. ED. 16—First aid and safety education
PHYS. ED. 59—Nature and function of play
PHYS. ED. 71—Camp administration and Scouting
PHYS. ED. 103—Physiology of exercise
PHYS. ED. 164—School health and hygiene
PHYS. ED. 168—Organization and administration of physical education
PHYS. ED. 178—Physical education in elementary and secondary schools

III.	EDUCATION 70—The teaching of physical education	2
	TOTAL	22

COURSE IN PHYSICAL EDUCATION FOR WOMEN

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (PHYSICAL EDUCATION)

MARIE L. CARNS, *M.D.*, Professor of Physical Education, *Director*

This course is designed to prepare teachers for all types of positions in physical education, and to lay the foundation for future specialization in this profession or in related fields. A student may major either in general physical education or in dance.

The department reserves the right to ask a student to withdraw if she cannot meet standards in terms of health, general aptitude, and scholarship.

A student who must work to earn part of her expenses may not carry a full program during her first semester.

A student transferring from another institution may need extra time to complete the requirements.

Regulation class costumes are required.

GRADUATE WORK. In addition to the undergraduate curriculum outlined below, opportunity is offered for graduate study leading to the degree of Master of Science in Physical Education or jointly in Physical Education and Education. The degree of Doctor of Philosophy is offered as a joint major with any one of the following: Anatomy, Education or Physiology. The bulletin of the Graduate School will be sent on request.

GENERAL MAJOR

A total of 125 credits and at least 125 grade-points is required for graduation with a major in General Physical Education.

Requirements are planned to give a broad, substantial foundation as a basis for sound technical training. To this end there is emphasis upon basic sciences, applied sciences, educational psychology, and principles of education and teaching.

The student may meet the requirements for a minor in Health Education, Community Leadership in Recreation, or General Science.

SPECIFIC REQUIREMENTS

	Credits
ENGLISH, to include:	8–9
A course in composition beyond freshman English.	
UNITED STATES HISTORY AND INSTITUTIONS (see page 334)	6
SCIENCE, to include:	19–27
One course each in zoology, physics, human anatomy, and kinesiology. Physiology, to include a course in physiology applied to physical education activities.	
PSYCHOLOGY	2–4
ART AND MUSIC	4–6
One course each or equivalent.	
Requirement will be waived upon presentation of a suitable substitute.	
	38–52
EDUCATION, to include:	
Courses required for the University Teachers' Certificate, including, in addition to required student teaching, one week of field work in teaching.	
A course in tests and measurement in physical education.	
A course in health information for teachers.	
	21
PROFESSIONAL COURSES, to include:	
Practice, principles, and techniques of physical education with a minimum of 6 credits in dance	21–23
A course in movement and its rhythmic structure	2–3
A course in therapeutic gymnastics	2–3
A course in organization and administration of physical education	2
Advanced courses in physical education, to include a course in principles of relaxation	4
	31–35
SPEECH CERTIFICATION—Option A or Option B (see page 334)	
ELECTIVES	35–17

GENERAL MAJOR*

Suggested study lists planned to meet all course prerequisites as well as specific requirements.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Zoology 1—Animal biology	5	Physics 61—General physics	5
Phys. Ed. 30—Physical education theory, practice and technique	2	Phys. Ed. 30—Physical education theory, practice and technique	2
Electives	5–6	Electives	5–6
Phys. Ed. Required	0	Phys. Ed. Required	0
	15–16		15–16

* It is suggested that a student considering a major in General Physical Education or Dance write directly to the Department of Physical Education for Women for further details concerning requirements and possible revisions which may be made after this bulletin is published.

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
United States History	3	United States History	3
Anatomy 36—Human anatomy	4	Psychology 1—Introduction to psychology	4
Phys. Ed. 40a—Group dance	1	Phsy. Ed. 56—Kinesiology	3
Phys. Ed. 31—Physical education theory, practice and technique	2	Phys. Ed. 41—Dance technique for general majors	1
Electives	5–6	Phys. Ed. 31—Physical education theory, practice and technique	2
Phys. Ed. Required	0	Electives	2–3
		Phys. Ed. Required	0
	15–16		15–16

JUNIOR YEAR

Physiology 1—Elements of human physiology	4	Education 75—Nature and direction of learning	4
Education 73—The Child: His nature and his needs	3	Education 169—Health information for teachers of physical education	3
Education 129—Tests and measurements in physical education	2	Phys. Ed. 103—Physiology applied to physical education activities	3
Phys. Ed. 60—Movement and its rhythmic structure	2–3	Phys. Ed. 176—Therapeutic gymnastics	3
Phys. Ed. 32—Physical education theory, practice and technique	3	Phys. Ed. 40b—Rhythms for children	1
Electives	2–3	Phys. Ed. 32—Physical education theory, practice and technique	3
	16–17		17

SENIOR YEAR

Education 69—Teaching of physical education	3	Education 69—Teaching of physical education	3
Education 74—School and society	3	Methods course in the minor	2–3
Phys. Ed. 177—Principles of relaxation	2	Advanced Phys. Ed. Course	2
Phys. Ed. 61—Dance summary	2	Phys. Ed. 168—Organization and administration of physical education	2
Phys. Ed. 33—Physical education theory, practice and technique	2	Phys. Ed. 33—Physical education theory, practice and technique	1
Electives	3–4	Electives	5–6
	15–16		15–17

DANCE MAJOR

A total of 130 credits and at least 130 grade-points is required for graduation with a major in Dance in the Department of Physical Education for Women.

There is a recognized demand today for well-prepared teachers of dance. The intellectual aspect of dance and its increasing advance into the fields of psychology, art and education make it a study well worthy of academic recognition. The course is planned to provide the teacher with a comprehensive view of dance and with the necessary technical training essential both to performance and teaching. Provision is made for courses in sports, fundamentals of physical education and therapeutic gymnastics to enable the teacher to qualify for various types of positions.

The general education requirements for the first two years may be met in the College of Letters and Science Course in Integrated Liberal Studies (ILS). It is strongly recommended that entering freshmen register in the ILS Course because of its excellent humanities background for dance majors. An ILS Bulletin will be sent upon request.

SPECIFIC REQUIREMENTS

	Credits
*English and/or comparative literature	12
*History (Medieval history recommended)	4–6
United States History and Institutions (see page 334)	6
Music, to include dance accompaniment	4–6
*Art (2 courses)	4–6
Speech (including Speech Certification, see page 334)	2–3
Psychology	3–4
**Philosophy, to include philosophy of dance	5–6
	36–46

SCIENCE

*Zoology, *physics, anatomy, kinesiology, physiology and physiology applied to physical education activities. 17–23

EDUCATION

Courses required for the University Teachers' Certificate, to include one week of field work in teaching (or substitute project) in addition to required practice teaching.

A course in health information for teachers. 18–19

PROFESSIONAL COURSES, to include:

Practice, principles and technique of dance and a minimum of 6 credits in general physical education; movement and its rhythmic structure, composition, percussion, dance summary, production and historical survey. 36–38

ELECTIVES 23–4

* The requirement may be satisfied by the ILS curriculum.
** This requirement may be satisfied in part by the ILS curriculum.

DANCE MAJOR*

Suggested study lists planned to meet in minimum time all course prerequisites as well as specific requirements listed above.

For Those Not Electing First Two Years in Integrated Liberal Studies

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	Social Studies	3
Zoology 1—Animal biology	5	English 1b—Freshman composition	3
History	0–3	Physics 17—Survey of physics	4
Phys. Ed. 35—Theory and practice of dance technique	2	History	3
Phys. Ed. 40a—Group dance	1	Phys. Ed 35—Theory and practice of dance technique	2
Phys. Ed. Required	0	Phys. Ed. Required	0
	14		15

SOPHOMORE YEAR

Anatomy 36—Human anatomy	4	Art History	3
Phys. Ed. 60—Movement and its rhythmic structure	2	Phys. Ed. 160—Dance composition (elementary)	2
Art History	2–3	Phys. Ed. 56—Kinesiology	3
Philosophy	3	Phys. Ed. 36—Theory and practice of dance technique	2
Phys. Ed. 36—Theory and practice of dance technique	2	Phys. Ed. 31—Physical education theory, practice and technique	1
Phys. Ed. Required	0	United States History and Institutions (see page 334)	3
English	3	Phys. Ed. Required	0
		English	3
	16–17		17

SUMMER SESSION

Psychology	4
Speech	2
Phys. Ed. 147—Teaching of dance to children	2
	8

* It is suggested that a student considering majoring in Dance or General Physical Education write directly to the Department of Physical Education for Women for further details concerning requirements and possible revisions which may be made after this bulletin is published.

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Physiology 1—Elements of human physiology.	4	Education 75—Nature and direction of learning	4
Music 1a—Elements of musical structure	2	Phys. Ed. 103—Physiology applied to physical education activities	2–3
Education 73—The Child: His nature and his needs	3	Phys. Ed. 37—Theory and practice of dance technique	2
Phys. Ed. 37—Theory and practice of dance technique	2	Phys. Ed. 40b—Rhythms for children	1
Phys. Ed. 133—Dance accompaniment (percussion) or 165—Dance composition (advanced)	2	Phys. Ed. 146—Theory and philosophy of dance	3
Electives	2	Music 1b—Elements of musical structure	2
		Phys. Ed. 32—Physical education theory, practice and technique	2
	15		16–17

SENIOR YEAR

Education 74—School and society	3	Phys. Ed. 38—Theory and practice of dance technique	2
Phys. Ed. 38—Theory and practice of dance technique	2	Education 69—Teaching of physical education	3
Phys. Ed. 61—Dance summary	2	Phys. Ed. 181—Thesis course in dance	2
Education 69—Teaching of physical education	3	Phys. Ed. 176—Therapeutic gymnastics	3
Phys. Ed. 165—Dance composition (advanced) or 133—Dance accompaniment (percussion)	2	Education 169—Health information for teachers of physical education	3
Phys. Ed. 134—Dance accompaniment (music)	2	United States History and Institutions	0–3
Phys. Ed. 181—Thesis course in dance	2		
	16		16

For Those Electing First Two Years in Integrated Liberal Studies

FRESHMAN YEAR

ILS 11—Greek and Roman culture	4	ILS 12—Medieval and renaissance culture	3
ILS 21—Early man and his society	3	ILS 22—Transition to industrial society	4
ILS 31—Physical universe	4	ILS 32—Earth science	3
ILS 41—Theory and practice of writing	2	ILS 42—Nature and function of language	2
Phys. Ed. 40a—Group dance	1	Phys. Ed. 35—Theory and practice of dance technique	2
Phys. Ed. 35—Theory and practice of dance technique	2	Phys. Ed. 30—Physical education theory, practice and technique	1
Phys. Ed. Required	0	Phys. Ed. Required	0
	16		15

SOPHOMORE YEAR

ILS 13—European culture, 1750–1850	4	ILS 14—American culture, 1850–1950	3
ILS 23—Modern industrial society; U.S.A.	4	ILS 24—International scene	3
ILS 33—Biology	3	ILS 34—Biology	4
Anatomy 36—Human anatomy	4	Phys. Ed. 160—Dance composition (elementary)	2
Phys. Ed. 60—Movement and its rhythmic structure	2	Phys. Ed. 56—Kinesiology	3
Phys. Ed. Required	0	Phys. Ed. 36—Theory and practice of dance technique	2
		Phys. Ed. Required	0
	17		17

SUMMER SESSION

Psychology	4
Speech	2
Phys. Ed. 147—Teaching of dance to children	2
	8

JUNIOR YEAR

Physiology 1—Elements of physiology	4	Education 75—Nature and direction of learning	4
Music 1a—Elements of musical structure	2	Music 1b—Elements of musical structure	2
Education 73—The Child: His nature and his needs	3	Phys. Ed. 146—Theory and philosophy of dance	3
Education 74—School and society	3	Phys. Ed. 103—Physiology applied to physical education activities	2–3
Phys. Ed. 133—Dance accompaniment (percussion) or 165—Dance composition (advanced)	2	Phys. Ed. 37—Theory and practice of dance technique	2
Phys. Ed. 37—Theory and practice of dance technique	2	Phys. Ed. 40b—Rhythms for children	1
		Phys. Ed. 32—Physical education theory, practice and technique	2
	16		16–17

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
Education 69—Teaching of physical education	3	Education 169—Health information for teachers of physical education	3
Phys. Ed. 181—Thesis course in dance	2	Education 69—Teaching of physical education	3
Phys. Ed. 165—Dance composition (advanced) or 133—Dance accompaniment (percussion)	2	Phys. Ed. 181—Thesis course in dance	2
Phys. Ed. 134—Dance accompaniment (music)	2	Phys. Ed. 176—Therapeutic gymnastics	3
Phys. Ed. 61—Dance summary	2	Phys. Ed. 38—Theory and practice of dance technique	2
Phys. Ed. 38—Theory and practice of dance technique	2	American History and Institutions	3
	13		16

MINOR IN PHYSICAL EDUCATION (WOMEN)

A minimum of 20 credits, to include 3 credits in orientation to physical education, 4 credits in mechanics and dynamics of movement, 2 credits in health information for teachers, 7 credits in theory and practice in physical education. In addition: 2 credits in Education 69 (theory) and a minimum of 2 credits of student teaching in physical education, 1 credit each to be applied to Education 75 and Education 69.

It is important for the student to secure, as early as possible, detailed information about specific courses and sequence of courses from the Department of Physical Education for Women.

COURSE IN RECREATION LEADERSHIP

The curriculum for Community Leadership in Recreation is a four-year undergraduate program for students interested in leadership for the development of balanced and broad recreation services in the modern community. This curriculum is administered by the School of Education through a staff member in the Department of Education who serves as co-ordinator. An inter-college advisory committee, appointed annually by the Dean of the School of Education, assists the co-ordinator in the advising of students and the development of the program. Those students interested in a *major* or *minor* in this curriculum should consult Assistant Professor H. C. Hutchins, 306B Education Building, who is co-ordinator of this curriculum.

CURRICULUM FOR A MAJOR IN COMMUNITY LEADERSHIP IN RECREATION

A total of 124 credits and 124 grade-points is required for graduation.
Evidence of proficiency in speech must be shown by meeting the requirements of either *Option A* or *Option B* (see page 334).

	Credits
1. B.A. or B.S. requirements.	
2. Foundation Courses (Social studies: Economics, Political Science, Psychology, Sociology and Anthropology.) The student is required to complete two courses each from at least three of the above departments.	19–21
3. Exploratory Courses	
Education 14—Introduction to recreation (required)	2
Recreation Laboratory (no credit)	0
4. Professional Courses (all required)	20–21
Education 73—The child: His nature and his needs (field work)	3
Education 169—Health education	3
Education 74—The school and society	3
or	
Rural Sociology 127—Rural commuuity organization (field studies)	2
Education or Social Work 113—Theory and practice of group leadership (field work)	6

Education or Social Work 114—The organization of recreation services..... 3
Education 155—Adult education (or Education 75)..... 3

5. Resource Courses 20
The student will select a minimum of 10 credits in one area of performance and at least one course in each of two other areas. The areas now include: Art Education, Creative Writing, Speech–Discussion, Home Economics, Landscape Architecture, Library Science, Music, Nature Study, Physical Education, and Speech–Drama. Additional resource areas may be developed, and the offerings within the present areas may be modified.
6. Field Experience. The student will elect a summer of supervised recreation leadership experience in a camp or on a playground.
7. First Aid (if taken in the University)..... 1
Possession of a valid American Red Cross standard or higher first aid certificate at time of graduation.
8. Students in this major may meet the requirements for the University Teachers' Certificate by presenting forty-eight hours of professional and resource courses.

SAMPLE DISTRIBUTION OF COURSES IN A MAJOR IN COMMUNITY LEADERSHIP IN RECREATION

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Science	5	Science	5
English	3	English	3
Freshman Forum	1	Freshman Forum	1
Degree requirements and electives	6	Degree requirements and electives	6
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	15		15

SOPHOMORE YEAR

Social studies	7	Social studies	6
Education 14	2	First Aid	1
English	3	English	3
Degree requirements and electives	4	Degree requirements and electives	6
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
Recreation Laboratory	0	Recreation Laboratory	0
	16		16

JUNIOR YEAR

Education 73	3	Health Education	3
Resource courses	5	Education 74	3
Social studies	3	Resource courses	5
Degree requirements and electives	5	Degree requirements and electives	5
	16		16

SENIOR YEAR

Education (Social Work) 113	3	Education (Social Work) 113	3
Education 155 (or 75)	3	Education (Social Work) 114	3
Resource courses	5	Resource courses	5
Social studies	3	Electives	5
Electives	2		
	16		16

CURRICULUM FOR A MINOR IN COMMUNITY LEADERSHIP IN RECREATION

	Credits
Required Courses	11
Education 14—Introduction to recreation	2
Education (Social Work) 113—Theory and practice of group leadership	6
Education (Social Work) 114—The organization of recreation services	3
Resource Courses—a minimum of	6–8
A minimum of 6 credits in two areas for students majoring in Art Education, Home Economics, Music, Physical Education, or Speech. A minimum of 8 credits in two or three areas for all other students.	
Total credits in minor	17–19
Students taking the minor are encouraged to take the one-year Recreation Laboratory or to have one summer of supervised recreation leadership experience, or both, for no credit.	

THE PROGRAM FOR THE PREPARATION OF ELEMENTARY SCHOOL TEACHERS

(Requirements for Graduation and the University Teachers' Certificate—Elementary Education—see page 334.)

General Nature of the Program

The Elementary Education Program is a four-year program of teacher education leading to a Bachelor of Science degree in Education.

The program is designed to prepare general elementary school teachers for kindergarten and grades one through eight. There are also programs in the School of Education for preparing special elementary school teachers in art, speech, physical education, and music.

Sequences of courses in general education, professional education, and programs of laboratory and field experiences are included as related phases of the program over the four years. The student should consult his faculty adviser for assistance in planning an area of concentration and in selecting additional general education courses in the junior and senior years.

The program is for both men and women.

Who May Enter the Program

Any student qualified to enter the University as a beginning freshman may apply for admission to the program for preparing elementary school teachers. Since the number is restricted, it is recommended that early application be made. The applicant will be notified of the action taken on his application for admission to this program at the time he is notified of admission to the University.

How to Apply for Admission to Program

Write to the Dean of the School of Education, University of Wisconsin, Madison 6

Role in the University

Students in the program for elementary school teachers are regular members of the university student body and are eligible for participation in all extra-curricular activities, intercollegiate athletics, and special interest functions open to other students of the University.

For the first two years, the student will be a member of both the School of Education and the College of Letters and Science student bodies.

The Program of Studies

An adviser in the School of Education will work closely with the student to help him plan his program of courses for each semester of the four years in the University. The

adviser will help the student to understand the scope of the whole program, to identify and make important decisions, and to make full use of university resources and opportunities.

The program in general education will be developed through work in the College of Letters and Science. There are three alternative programs outlined as requirements of the College of Letters and Science, from which the student may make his selection. These three curricula include the general requirements for the Bachelor of Arts, the Bachelor of Science, and the Integrated Liberal Studies programs.

After the orientation period in the first two years the program for professional education is extended in the junior and senior years.

The following outline is an example of a general program for four years:

GENERAL PROGRAM FOR FOUR YEARS

(The ILS program is used for illustrative purposes); The Program of Integrated Liberal Studies is one of three possible curricula through which the requirements for general education may be earned.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
ILS 11—Greek and Roman culture	4	ILS 12—Medieval and Renaissance culture	3
ILS 21—Early man and his society	3	ILS 22—Transition to industrial society	4
ILS 31—The physical universe	4	ILS 32—Earth science	3
ILS 41—Composition	2	ILS 42—Composition	2
Education 1—Integrated arts	2	Education 2—Integrated arts	2
Education 11a—Introduction to elementary education	1	Education 11b—Introduction to elementary education	1
Military Science (men)	0	Military Science (men)	0
Physical Education (all students)	0	Physical Education (all students)	0

SOPHOMORE YEAR

ILS 13—European culture, 1750–1850	4	ILS 14—American culture, 1850–1950	3
ILS 23—Modern industrial society; U.S.A.	4	ILS 24—The international scene	3
ILS 33—Biology	3	ILS 34—Biology	4
Education 7—Integrated arts	2	Education 8—Integrated arts	2
Education 21a—Introduction to elementary education	1	Education 21b—Introduction to elementary education	1
Electives*	3–4	Electives*	3–4
Military Science (men)	0	Military Science (men)	0
Physical Education (women)	0	Physical Education (women)	0

JUNIOR YEAR

Education 73—The Child: His nature and his needs	3	Education 75—The nature and direction of learning	4
Education 31a—Curriculum and instruction in the elementary school	4	Education 31b—Curriculum and instruction in the elementary school	4
Electives	8–9	Electives	7–8
	15–16		15–16

SENIOR YEAR

Education 41—Supervised teaching in the elementary school**	16	Education 42—The American education system	2
		Electives	13–15
	16		15–17

* It is recommended that Mathematics 9, Mathematics for Elementary Teachers, be taken one of these semesters. This course may also be elected in the junior year.

** These semesters will have to be interchanged in the programs of some students since it is not possible to provide teaching experience for all students during the same semester.

ACADEMIC TEACHING MAJORS AND MINORS

Only such departments and courses of instruction are here indicated as are immediately related to the professional work of the School of Education.

Attention is called to the fact that "all the regulations of the major subject must be met, including at least 15 credits and 15 grade-points in advanced courses (in the major) in the University." (General Announcement of Courses—College of Letters and Science.)

MAJOR IN AMERICAN INSTITUTIONS

PURPOSE

This major in the Division of Social Studies is designed for (a) students in the College of Letters and Science desiring a broad liberal knowledge of American life in a number of its phases and not specialization in a department, (b) students in the School of Education, and (c) students planning to enter the Law School. It is open only to students whose major interest is essentially interdepartmental in scope.

PROCEDURE

A Divisional Committee consisting of Professor Hart *(chairman)*, Brandeis, Harrington, Loomer, McGary, Olmstead, and Barton administers the major. The chairman will assign a member of the committee as an adviser to each student entering the major. At the beginning of the junior year the student will work out a program of studies meeting the requirements below and secure the approval of the adviser representing the committee.

A student who plans to elect the major in American Institutions in the School of Education should, as early as possible, carefully plan his college work so as to complete:

a. the necessary and desirable major and minor combinations required for the University Teachers' Certificate;
b. statutory requirements of courses in conservation and co-operatives;
c. preparation for successful placement in positions in secondary schools.

In fulfilling the requirements of one major and two minor subjects, therefore, the student will normally satisfy the first minor requirement within the 40 credits of the American Institutions major. The second minor of 15 credits, required for certification by the State Department of Public Instruction, should be in a subject outside the general social studies field, and the practice teaching in connection with Education 75 should be in this second minor. For additional information the student should confer with Professor Burr W. Phillips before the beginning of his junior year.

PREPARATION FOR THE MAJOR

Students electing this major will normally have completed one or more of the required courses during their freshman and sophomore years. Integrated Liberal Studies provides a satisfactory background for the major. For other students, course work dealing with the antecedents of American Institutions is recommended in the freshman and sophomore years. This may be obtained in History 5a–b, History 3a–b, or English Literature. It is recommended that majors not planning to take advanced American Literature courses in the major meet their sophomore English requirements by taking English 40.

COURSE WORK

The 40 credits required by the major include:

I. Required Courses, totaling 22 hours, as follows:
6 cr. History 4a–b—History of the United States, 1607–1953 (with the consent of the

adviser, the student may substitute: History 113—History of American thought and culture, or History 121—Social development of the American people).

3 cr. Political Science 7—American government and politics (with the consent of the adviser, the student may substitute: Political Science 110—Government and the problems of democracy).

4 cr. Economics 1a—General economics (with the consent of the adviser, students enrolled in the Integrated Liberal Studies program may substitute: Integrated Liberal Studies 23—Modern industrial society).

3 cr. Geography 103—Geography of Anglo-America (with the consent of the adviser, the student may substitute Geography 146—Historical geography: United States and Canada).

3 cr. Sociology 185—Modern American communities.

3 cr. American Institutions 110—Evaluation of American institutions. This is a final seminar for majors, given during the second semester, and scheduled normally at the end of the senior year.

II. Optional Courses, totaling 18 hours, selected from this list:

Art History and Criticism—131, 135, and 159
Contemporary Trends—103
Economics—1b, 105, 110, 117, 119, 120, 122, 123, 124a, 124b, 126, 127, 134, 135, 136, 137, 139, 142, 143, 144, 145, 146, 148, 152, 158, 162, 166, 172, 177, and 179
English—112, 114, 140, 150, 166, 169, 170, 171, 173, 174, 190, and 191
Geography—104, 125, 126, 127, 128, 129, 146, and 153
History—101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 112, 113, 117, 119, 120, 121, 122, and 137
History of Science—170
Journalism—110, 111, and 114
Philosophy—54, 120, 134, 139, 144, 147, 150, 157, 158, and 162
Political Science—13, 110, 112a–b, 115, 120, 21–121, 122, 123, 126, 131, 134, 135, 139, 143, 148, 152, 159, 163, 165, 166, 170, 171, 172, 173, 174, and 175
Psychology—105
Social Work—145
Sociology and Anthropology—25, 39, 101, 114, 125, 126, 127, 129, 130, 131, 133, 134, 136, 139a–b, 144, 145, 150, 154, 156, 159, 161, 163, 164, 169, 171, 173, 174, 177, 193, 198, and 199
Speech—116, 130, 131, and 156

COURSES OUTSIDE THE COLLEGE OF LETTERS AND SCIENCE

To take these courses, students will need to comply with the Twenty-Credits Rule (see the General Regulations of the College of Letters and Science, Section 17). Permission of the Dean is required for all except those starred:

School of Commerce—*43 and *178
School of Education—104 and 115
College of Engineering: Civil Engineering—141 and 142
Law School—Law in Society
History of Anglo-American Law
College of Agriculture: Agricultural Economics—114

With the approval of his adviser, the student will carefully select courses from the above list so that:

a. not more than 9 of the 18 hours are in one department,
b. at least half of the 40 hours of courses for the major are in courses numbered above 100,
c. at least 12 hours of the 18 hours of optional courses are approved by the adviser as relevant to a theme such as those described below, within the general field of American Institutions.

OPTIONAL THEMES OF INTEREST

Eleven themes are suggested here, any one of which will satisfy requirements II.c. above. The committee may approve a theme not listed here, provided it is interdepartmental in scope. After the description of each theme, representative courses are listed which will be approved by the adviser as relevant to it. But these are merely suggestive, not required, and the adviser will approve any other courses from the list above which are relevant to the theme and meet the individual needs of the student.

1. Rural Life in America. A large part of the American population still lives in rural surroundings, and rural areas will continue to be the great source of population reproduction and replacement for the cities. Traditions of the frontier, the farm, the mining and logging camp, and the village are fundamental in the American social and economic system, even in its urban aspects. Within this theme, students may study the agricultural environment, economy, and society; or they may view developments of American culture from a rural perspective.

   Representative course offerings: Economics 117—Outlines of land economics (Agr. Econ.); History 112a—American economic life: the history of American agriculture; Pol. Sci. 134—Rural local government; Soc. 25—Rural life (Rural Soc.).

2. Urbanization and Industrialization. Since Theodore Roosevelt, national leaders have been concerned with the deep changes in American life occasioned by the shift to the city and the factory. Since most people work for others, central controls of financial investment, of transportation, power and other utilities, and of strategically located land become crucial to the economy. The family ceases to be the unit of work and play; new forces of social disorganization and dependence follow. In a mobile population, vertical affiliations with professional or interest groups replace the old neighborhood affiliations. Cities sprawl over the surrounding countryside, and their industrialized media of communication reach the remotest farmstead. Accentuated social needs have brought forth new professions to which this theme should provide useful background: social work, corporate and industrial management, social research. Medicine, law, teaching, engineering, and architecture encounter new problems and opportunities in an urban industrial society.

   A program of studies on this theme may be selected in preparation for graduate study in metropolitan regional planning. For a description of the special major in Regional Planning (undergraduate), see College of Letters and Science bulletin.

   Representative course offerings: Geography 129—Urban geography; Soc. 177—The modern city; Pol. Sci. 13—Municipal government; Economics 134—Economic history of the United States; or History 122b—American economic life: the growth of industrial and finance capitalism; Economics 122—Labor problems; Pol. Sci. 163—Local planning administration.

3. Conservation and Planning in the Use of American Resources. America's wealth, productive capacity and welfare are intricately related to the quantity, quality and intelligent use of its mineral, soil, water, plant, animal, and population resources. The problems of conservation and planning in the wise use of resources become more critical as the ratio of population to available resources increases, as technology calls for more intensive use of resources, and as we begin to regard our part of the earth as a permanent homestead for the American people. The student will discover many new legal, political, scientific, and economic solutions to specific conservation problems.

   Representative course offerings: Economics 117—Outlines of land economics (Agr. Econ.); Geography 128—Conservation of natural resources; Philosophy 144—Philosophy of social planning; History 111—History of the West.

   One of the following courses dealing with the natural phenomena out of which conservation problems arise may, with the approval of the adviser, be credited toward requirement I.b. above for students electing this theme: Soils 106, Wildlife Management 118, Geology 150 or 136, Botany 160 or 164, Zoology 124.

4. IMPLICATIONS OF TECHNOLOGY FOR AMERICAN LIFE. It is commonplace to speak of "the atomic age." In a wider sense, we may be in the process of a "technological revolution" which will leave its mark on our institutions as deeply as did the earlier phase, now called the Industrial Revolution. The pattern of technological change itself is studied in the history of science. Its interaction with economic institutions, with family, church, and government are explored in cultural anthropology and sociology. It is reflected as a formative influence in specific studies of the farm economy, business corporations, labor unions, law, political parties, government administration. Whether or not the scientific method comprises a philosophy, it has certainly had a powerful effect on American ideals. The interdepartmental course, Contemporary Trends, affords an unusual opportunity to bring these varied approaches into synthesis.

   Representative course offerings: History of Science 170—Modern science; Economics 146—Government and business; Philosophy 120—Philosophy of science; Contemporary Trends 103—Contemporary trends.

5. SOCIAL AND INTELLECTUAL DEVELOPMENT. This theme provides the opportunity to study the development of science, art, literature, philosophy, and law as influenced by, and in turn shaping, the society of which they are parts.

   Representative course offerings: Art History 131—American architecture; or Art History 159—Development of American art; History 113—History of American thought and culture; Philosophy 139—American philosophers; English—Any 100 course in American literature.

6. INTERPRETATIONS OF AMERICAN SOCIAL DEVELOPMENT which have originated in the University of Wisconsin and have become part of its intellectual pattern and are as such known to the world: Frederick Jackson Turner's theory of the role of the frontier in American history and John R. Commons' theory of the "rise of bargaining classes" and of "industrial government."

   It is not the intention to indoctrinate the student but to demonstrate to him by these examples how original thinkers operating within the same culture as his own, have constructed intellectual configurations explaining the past and casting light on the present and future.

   Representative course offerings: Economics 119—Evolution of industrial society; Economics 145—American labor history; Philosophy 139—American philosophers; Pol. Sci. 115—Law in society; History 111—History of the West, 1763–1893.

7. SECURITY AND OPPORTUNITY IN AMERICAN LIFE. With the growth of large-scale social organizations, the traditional American ideal of opportunity comes into apparent conflict with human desires for security. In this theme the student may explore the historical ideals of enterprise, self-reliance and progress through political movements, literature, philosophy, and social manners. With these he may compare the drive for security evidenced by trade associations and union organization, new political alignments, welfare and assistance legislation; or as revealed by religion or psychology. He may thus seek scholarly perspective on what seems destined to remain a many-sided national controversy.

   Representative course offerings: Economics 120—Social security; or Econ. 123—Labor legislation; English 150—American fiction; or English 170—Contemporary American literature; Philosophy 150—A philosophy of democracy; Pol. Sci. 165—History of American political thought; History 108, 109—Recent history of the U. S.

8. AMERICA AND WORLD PROBLEMS. America's new position as the world's strongest nation, and a vigorous participant in international affairs opens up many lines of inquiry. A comparative study may be made of ideals and institutions, American and foreign. America's role may be observed in international trade, organizations, and politics. Students who may elect this might include those who are interested in the responsibilities posed for the citizen by the threat of war and national aggression, or who want a broad base for graduate training in international affairs. Those interested in the foreign service as a vocation, or in a slightly more concentrated study of international affairs should consider the major in International Relations.

Representative course offerings: Economics 144—Capitalism and socialism; Geography 125—Political geography: world survey; History 120—American foreign relations; Social Studies 159—Current problems of American foreign policy (Pol. Sci. 159). Students electing *America and World Problems* as a theme may, with the approval of their adviser, satisfy part of the requirement II.c. above by courses on foreign areas or international affairs not listed under II. above.

9. Old World Contributions to American Life. Our concept of America as "the melting pot" conceals the distinctive influences of older populations and cultures. These are still reflected as differences among national-origin groups in America. But in a wider sense, we have taken up scientific discoveries, literary and artistic movements, legal devices, social ideals and economic practices from older societies. American institutions can be studied as offshoots of European institutions conditioned by developments affecting all human society.

   Representative course offerings: History 113—History of American thought and culture; or History 121—Social development of the American people; Economics 119—Evolution of industrial society; or Econ. 144—Capitalism and socialism; Soc. 145—The individual and his culture; Soc. 164—Problems of American minority groups; English 173—The rise of a national literature in America 1775–1836; Geography 146—Historical geography of the United States and Canada. In this theme, students may, with the approval of the adviser, satisfy the requirement II.c. above by courses on foreign governments or cultures not listed under II. above.

10. An Area of the United States. It is entirely possible to integrate one's study of American Institutions around a particular area of the United States. For instance a student interested in the northern part of Wisconsin would find relevant course work in geography, land economics, rural zoning, wildlife management, local government, archaeology and ethnography, rural sociology, and history. This theme will be especially productive for students who have an opportunity to make a systematic first-hand observation of the area chosen.

11. A Period Illustrative of American Development. An intensive study of an historical period, approached via several of the social studies, lends itself particularly well to an appreciation of the interrelation of institutions with environment and ideas. Examples are the post-Civil War period of railroad building, the period producing the Populist movement, the New Deal.

BOTANY

John Frederick Stauffer, Professor of Botany, *Chairman*

Major. 30 credits, including Botany 1 or 17 and an elementary course in zoology. High-school mathematical preparation is required. Botany 24 may not be counted as an advanced course toward the major. Zoology 6 or 106 may be counted toward the major. (Please note also statutory requirements for certification, described on page 336.) A student who majors in the department and attains a grade-point average of 2.0 or above may be permitted to undertake an independent research problem and write a thesis during the senior year. Such a student should confer with his adviser or with the chairman of the department in regard to the feasibility of electing a thesis.

Minor. A minimum of 15 credits. Attention is called to courses 1 and 2 which, together, constitute a year's work, and which are especially adapted to the needs of those taking a teacher's minor in botany.

Education 97: The teaching of science, 2 or 5 credits.

CHEMISTRY

Farrington Daniels, *Ph.D.*, Professor of Chemistry, *Chairman*

Major. 24 credits in chemistry to include courses 4a and 4b, 8–10 credits; 10 or (11a, 11b), 4–8 credits; 120–122, 3–6 credits; 121, 2 credits; and 107, 2 credits. These course

requirements may be satisfied by similar courses that are approved by the Chemistry Department. Chemistry 130 is recommended as an elective, a year of Physics is also recommended.

To be accepted as a candidate for a teaching major a student must have a grade-point average of 1.5 or better in chemistry courses taken prior to his junior year.

MINOR. 15 credits with a grade-point average of 1.2 or better in these courses. The following courses are required: 4a and 4b, 8–10 credits; 10, 4 credits; 120, 3 credits. These requirements may be satisfied by similar courses that are approved by the Chemistry Department.

EDUCATION 97: The teaching of science, 2 or 5 credits.

COMPARATIVE LITERATURE

GIAN N. G. ORSINI, *Dr. Lett.*, Professor of Comparative Literature, *Chairman*

This major serves a double purpose: first, to acquaint the student with the more important work, in translation or in the original, in the literatures of the world and to show their present-day significance; and second, to enable the student to study in their mutual relationships two or more literatures.

MAJOR. The major in Comparative Literature is planned for those students who may be interested in the critical appreciation of literature or who may have literary ambitions; it will be found to be elastic enough to suit individual needs. The minimum requirements of the major are 46 credits, including the following: (a) 20 credits in Department of Comparative Literature, including Course 9 or its equivalent. Course 165 is strongly recommended. In the senior year 2 to 4 credits may, in the judgment of the adviser, be taken as independent work. The result of this independent work is to be shown by a thesis or documented paper. Courses 100 and 181 are available for such work. (b) 14 credits in literature (not language or composition) courses in at least two other departments, one of which may be English. Not less than 9 of these credits shall be taken in one foreign language, ancient or modern. (c) 12 credits in related courses in at least two of the following departments: Art History, Philosophy, History. Courses in the language departments below the following numbers are not accepted as part of the major: Latin 21, Greek 20, English 37, French 21, German 20, Spanish 21, Italian 21, Scandinavian 21. For other literatures consult the Chairman of the Department of Comparative Literature.

MINOR. (Comparative Literature.) Comp. Lit. 9 and Comp. Lit. 165 are required. At least one other course should be taken to complete a total of 15 credits, the selection depending upon what is offered in the year during which the minor is being completed.

A teachers' course in Comparative Literature is not offered, but majors in Comparative Literature find it possible to fit themselves to teach in two departments and should arrange their teachers' course in accordance with their plans. Education 76 (The Teaching of English), or any other course in the teaching of ancient or modern languages, is accepted in lieu thereof.

BIOLOGICAL ASPECTS OF CONSERVATION

Students interested in this major should consult with Professor John W. Thomson, Room 209, Birge Hall.

Objectives: To provide (a) a knowledge of the importance to man of biological resources; (b) an understanding of some of the relationships of these various resources to one another; (c) training in the natural sciences dealing with these resources; (d) an appreciation of the esthetic and recreational values and possibilities attached to these resources.

While this major will not train professionals in any phase of conservation, it will be training for subprofessionals such as biological aides, wardens, ranger naturalists, museum workers, etc., and will prepare for graduate work in certain phases of conservation. *If taken in the School of Education, it will be preparation for teaching in biology and general science.* It should also be useful as a cultural course and training for citizenship.

1. Courses required of all students:
   A Survey of Botany (Botany 1 or 17)—5 cr. or 3 cr.
   A Survey of Zoology (Zoology 1 or 17)—5 cr. or 3 cr.
   A Survey of Geology (Geology 1 or 17)—5 cr. or 3 cr.
   or A Survey of Geography (Geography 2b or 17)—5 cr. or 4 cr.
   General Chemistry (Chemistry 1a)—5 cr.
   Flora of Wisconsin and Its Conservation (Botany 160)—3 cr.
   Conservation of Aquatic Resources (Zoology 124)—2 cr.
   or Field Zoology (Zoology 126)—3 cr.
   Conservation of Natural Resources (Geography 128)—3 cr.
   Wildlife Ecology (Wildlife Management 118)—3 cr.
   (A semester course or its equivalent in physics is required when taken in the School of Education.)
2. Courses chosen from the following subjects, to bring the total to 50 credits; the number of credits in the 100-group of courses to total at least 25. (Subject to the rule governing election of courses outside of the college in which the student is enrolled.)
   Botany: Economic, Taxonomy, Dendrology, Identification, Ecology, Plant conservation.
   Economics: Land economics.
   Geography: Geography of North America, Geography of Wisconsin, Climatography, Mapping.
   Geology: Physiography, Soil erosion, Glacial geology, Mapping.
   Political Science: Government and natural resources, Rural local government.
   Zoology: Entomology, Ecology, Fishes, Birds, Mammals, Hydrobiology, Parasitology.
   Agricultural Economics: Land economics.
   Agricultural Engineering: Surveys and structures, Drainage and irrigation, Soil erosion.
   Agronomy: Crop production, Pastures.
   Economic Entomology: Farm insects, Taxonomy, Control, Ecology.
   Forestry: Forest products, General forestry.
   Horticulture: Landscape design, Public grounds.
   Rural Sociology: Rural life, Rural local government.
   Soils: General survey, Soil erosion, Forest soils, Genesis and classification.
   Veterinary Science: Animal body, Fur farming.
   Wildlife Management: Wildlife ecology, Wildlife management.
3. At least one summer of practical experience, such as work with the Soil Conservation Service, the Wisconsin Conservation Department, the Fish and Wildlife Service, nature councillor at a camp, Ranger Naturalist, or the equivalent.
4. Attendance at the seminars in Wildlife, Limnology and Plant Ecology is recommended.

ECONOMICS

EDWIN E. WITTE, *Ph.D.*, Professor of Economics, *Chairman*

MAJOR. A minimum of 30 selected credits. (Please note also statutory requirements for certification described on page 336.)

MINOR. Education 84 (for 2 credits) and a minimum of 15 credits in economics, to include Economics 1a and 1b (8 credits).

No regular course in the teaching of economics is offered but a teachers' course in a related subject such as history, will be accepted.

EDUCATION

For description of the courses offered in education, see pages 382–393. For detailed information on the requirements for the University Teachers' Certificate, see pages 334–336.

ENGLISH

MERRITT Y. HUGHES, *Ph.D.*, Professor of English, *Chairman*

By formal action the department recommends for the certificate all those whose general departmental rating is *B minus* or above. It withholds recommendation from all those whose general departmental rating is below *B minus*.

MAJOR. A minimum of 24 credits in advance of all required courses in freshman and sophomore English, and Education 76 (5 cr.). These 24 credits must include (1) one, and only one, of the following: 37, 136, 137; (2) two of the following, one of which must be either Chaucer or Milton: 57, 129, 131, 156, 157, 160, 161, 162; (3) at least one of the following: 112, 114, 132, 133, 134, 135, 138, 139b, 150, 169, 174; (4) English 128; (5) English 123 or 124; (6) three additional credits to be chosen in consultation with the adviser so as to round out the student's total English program, including sophomore literature. This selection must follow these principles:

(a) Teachers have a prime need for work in both nineteenth-century English and nineteenth-century American literature. All those who have not had at least English 40a or 40b should meet this need by taking 6 credits in courses listed in group (3): one course in English and one course in American literature.

(b) Students who have not had English 30 or 33 should consider how the additional 3 credits can best be used to fill out the gaps in their survey of the whole field.

(c) Students who have not had English 32 should consider carefully the need for a course in contemporary literature.

Majors in English are strongly urged to plan out with their advisers near the beginning of the junior year as much as possible of their total program, both in English and in other fields, for the junior and senior years.

MINOR. Education 76 (2 cr.) and a minimum of 18 credits in advance of Freshman English, to be selected as follows: I. Two semesters, and only two semesters, to be chosen from 30, 32, 33, 40 (30 and 33 may not be combined). II. One semester from the composition courses of the following group: 2, 3, 103, 105, 106, 107, 128. III. 123, or 124. IV. One of the following groups: (a) both 134 and 135; (b) one, and only one, among 37, 136, 137; (c) 169 and 174.

EDUCATION 76, The teaching of English, 2 or 5 credits.

FRENCH AND ITALIAN

JULIAN HARRIS, *Ph.D.*, Professor of French, *Chairman*

Students who expect to become teachers of French or Italian are advised to elect related courses in such fields as art history, history, history of science, other languages and literatures (especially English), music, music appreciation, and philosophy. By course work, reading, travel, visiting museums, attending worthwhile concerts, lectures, and theatrical performances, and by association with persons of education and taste, they should develop a broad and deep interest in the intellectual and artistic side of life upon which the humanistic studies are focused. Foreign-language teachers who have this sort of training and experience can be very important members of any community and can make invaluable contributions to the development of their pupils and to the life of the community. As part of their preparation such prospective teachers should seize every opportunity to use the language, by active participation at the French House, in the French or Italian clubs, and in the French or Italian plays.

Those who expect to continue for advanced degrees should consult the bulletin of the Graduate School and elect the courses which are prerequisite to graduate work in the field.

All majors and minors in French and Italian are required to register with the department at the beginning of their candidacy. Only candidates who have a grade-point average of 1.5 in the first two years of courses in the language will be accepted.

FRENCH

MAJOR. Candidates for the University Teachers' Certificate will be expected to be able to read, write, and speak the language with some facility and to have a general knowledge of the literature and civilization of France. The following specific requirements must be met:

1. 20 credits in courses of third-year college level (French 22) or above including:
   (a) 2 credits in practical phonetics (French 190);
   (b) 4 credits in conversation and composition courses (French 25, 124, 127). (Upon recommendation of the chairman of the department, training at the French House or foreign residence may be offered in lieu of this requirement);
   (c) 10 credits in courses in literature in the 100-group including 2–4 credits in French civilization (French 150); 4–6 of these must be taken in the senior year. (In lieu of this senior requirement "upper-group" students may elect to write a senior thesis);
2. The Departmental Certificate of Oral Proficiency for majors. (Examinations for oral proficiency are scheduled toward the end of each semester);
3. A course in the teaching of foreign languages (Education 81, 5 credits).

MINOR. Students intending to offer a minor in French should have their plan of French studies approved by Professor Laura B. Johnson. The following specific requirements must be met:

1. 10 credits in courses of third-year college level (French 22) or above including:
   (a) 2 credits in practical phonetics (French 190);
   (b) 2 credits in French composition and conversation (French 25, 124, 127), to be acquired before the second semester of the junior year. (Upon recommendation of the chairman of the department, training in the French House or foreign residence may be offered in lieu of this requirement);
   (c) 6 credits in French 22 or 3 credits in a more advanced course in French literature or civilization;
2. The Departmental Certificate of Oral Proficiency for minors.* (Examinations for oral proficiency are scheduled toward the end of each semester);
3. 2 credits in Education 81 unless the student's major is another foreign language.

ITALIAN

MAJOR. (1) 24 credits in advance of Italian 1b, including 4 credits in composition and conversation with an average grade of *B*. (2) Education 81, The teaching of French and Italian, 5 credits.

MINOR. (1) 18 credits in advance of Italian 1b, including 2 credits in composition and conversation. (2) Education 81, The teaching of French and Italian, 2 credits.

EDUCATION 81, The teaching of French and Italian, 2 or 5 credits.

GENERAL SCIENCE

(See Natural Science, page 368.)

GEOGRAPHY

RICHARD HARTSHORNE, *Ph.D.*, Professor of Geography, *Chairman*

Students preparing to teach geography as a major or minor subject should register with the department at the beginning of their junior year. Earlier consultation with Mr. Winsor would be helpful.

MAJOR. A minimum of 30 credits as prescribed by the Department of Geography, and Education 90 (5 credits). (Please note also statutory requirements for certification described

* This requirement will be effective for students graduating after June 1953.

on page 336, and departmental statement described in the bulletin of the College of Letters and Science or the General Catalog.)

MINOR. Education 90 (for 2 credits) and a minimum of 15 credits to be prescribed by the Department of Geography. Ordinarily these will include at least one course in physical geography (not more than 5 credits) and selected regional and topical courses in cultural geography.

EDUCATION 90, The teaching of geography. I, II; 2 or 5 credits.

GERMAN

ROE-MERRILL S. HEFFNER, *Ph.D.*, Professor of German, *Chairman*

Students who are preparing to teach German as their major or minor subject should consult Professor Workman, if possible, at the end of their sophomore year, or, by letter during the summer months before the opening of the fall semester of their junior year. Those who have done a considerable amount of work elsewhere, or who have had successful teaching experience, may be excused, by action of the department, from some of the required work. Such excuse will be granted only on the basis of examination, and, in no case will students be recommended by the department unless they have taken at least 6 credits in German at the University of Wisconsin.

MAJOR. A minimum of 27 credits in advance of course 10a. These credits must include courses 25a, 25b (unless 112 is substituted), 131, 191, and 150. In addition, majors in German must take Education 83. A certificate of *oral proficiency in German* is awarded to those who pass the oral proficiency test or who otherwise demonstrate the necessary command of the spoken language. This certificate is required of all teaching majors.

MINOR. A minimum of 15 credits in advance of course 10a. These credits must include courses 25a, 25b (unless 112 is substituted) and 9 credits in German literature, 3 of which must be from Group B (101–109). In addition, a minor in German must elect Education 83.

EDUCATION 81—The teaching of German—2 or 5 credits.

HISPANIC STUDIES (DIVISIONAL MAJOR)

EDUARDO ALVARO NEALE-SILVA, *Ph.D.*, Professor of Spanish, *Chairman*

MAJOR. Prerequisites for registration are: (a) completion of all or nearly all required subjects for the B.A. degree other than foreign languages; (b) Economics 1a (General economics). Although not prerequisites for registration, the following courses are recommended for the freshman and sophomore years, to enrich the student's background: Economics 1b (General economics); Geography 2a–2b (Physical geography); Geography 5 (Physical earth and its resources) or Geography 17 (Survey of physical geography: man's natural environment); Geography 6–7 (World survey of cultural geography: I, Regional aspects; II, Economic aspects); History 2 (Modern European history); History 3 (European civilization, 800 to the present); History 4 (History of the United States); Political Science 7 (American government and politics). Following is a list of the required courses for this majors:

	Credits
Art History 157—Patterns and principles of Spanish art (or cognate fields of Spanish or Spanish-American art offered by this department)	2
Economics 151—Economic problems of Latin America	2
Geography 102—Geography of South America	3
Political Science 130—Governments of Latin America	3
Spanish 47—Spain of today	3
Spanish 48—Spanish America of today	3
Spanish 112—Composition and conversation	2
Spanish courses above 100 in the field of literature	4

A total of 17 cedits chosen from the following group	(17)
Anthropology 109—Archaeology of Mexico, Central, and South America	3
Anthropology 115—The Indians of Central and South America	3
Geography 111—Geography of Middle America	3
History 119—Latin-American history	6
Journalism 121—Interpreting Hispanic affairs	2
Political Science 131—The United States and Latin America	3
Spanish 117—Commercial and industrial language practice in Hispanic countries	2
Spanish 150—Spanish civilization	4
Spanish 151—Spanish-American civilization	4
Total credits required for major	39

Students who major in this field are required to obtain a grade of *B* in Spanish 112. Those who have not taken a second foreign language in high school or college are required to take a minimum of one year of college Portuguese, the language of Portugal and Brazil. For further information consult the bulletin of the College of Letters and Science.

HISTORY

FRED H. HARRINGTON, *Ph.D.*, Professor of History, *Chairman*

MAJOR. 30, or 33, or 35 credits, the number depending on the student's preparatory school training in history. Students entering with two or more units in history are required to take not less than 30 credits on the college level; those with one unit, 33 credits; those entering college with no history, 35 credits. Of the college credits in history, at least 15 must be in advanced courses (i.e., numbered 100–199) taken in residence at the University of Wisconsin.

REQUIRED WORK. History 4a and 4b or 6 credits in an advanced continuous year course covering all periods of American history. European history (2a and 2b or 3a and 3b*) or 6 credits in an advanced continuous year course covering all periods in either general European history or modern European history. Ancient history (10a and 10b) or English history (5a and 5b) or 6 credits in an advanced continuous year course in one of those fields. A semester course, elementary or advanced, in each of the fields of ancient and medieval history counting 5a as Medieval history, if these requirements have not been met by work under the above headings.

Courses 12 (3 cr.) and 22 (4 cr.) of the Department of Integrated Studies are accepted for purposes of the history major as satisfying the requirement of History 3a–3b or 2a and are reckoned as Medieval history; their credits are computed within the block of 30–33–35 credits required for the History major.

Outside the department, Education 85 (5 cr.) and Economics 1a are required. Political Science 25 and Geography 1–2 are recommended. (Please note also statutory requirements for certification, described on page 334.)

MINOR. Education 84 (2 cr.) and a minimum of 18 credits in History distributed as follows: History 10 (6 cr.); either History 3* or History 2 (6 cr.) or Integrated Studies 12 (3 cr.) and 22 (4 cr.); and a continuous year course in the 100-group (113, 117, 120, 122) in American History (6 cr.). The advanced course must be taken in residence at the University of Wisconsin.

EDUCATION 84, The teaching of history and the social studies, 2 and 5 cr. (The attention of graduate assistants is called to Education 186, page 391.)

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* Those who elect History 3 may not elect History 2 and vice versa.

HUMANITIES (DIVISIONAL MAJOR)

For students who are candidates for the degree of Bachelor of Arts (Modern Humanities) or Bachelor of Arts (Classical Humanities) and who are also candidates for the University Teachers' Certificate, with joint registration in the School of Education.

(I) Choice of three of the following: (1) History or a Social Science, 16 credits; (2) English, including courses numbered 30 or 33, 32, or 40, and a course in Shakespeare, 15 credits; (3) Latin, 17 credits beyond Latin 11; (4) French, German, Spanish, or Italian, intermediate examination (14 credits). (II) Satisfaction of the specific requirements for the degree in the Humanities. (III) Completion of the required courses for the University Teachers' Certificate.

The requirements for graduation and certification are as follows: (I) A total of 124 credits and 124 grade-points. (II) Requirements for a teaching major and two teaching minor subjects will be satisfied by the blanket *divisional major*. (III) The B.A. degree in the Humanities. (IV) A rating by the Speech Examination Committee of the School of Education. (V) Recommendation from the Humanities Committee, and, for Classical Humanities students, from the Department of Classics. (VI) Certificate of physical health and fitness from the University Medical Examiner. (VII) Completion of the following professional requirements (18 credits): Education 73, 74, 75 and 81, and one of the following: Education 84, 76, or 83 for two credits. (VIII) Special statutory requirements for those who choose History and Social Science, 6 credits.

JOURNALISM

RALPH O. NAFZIGER, *Ph.D.*, Professor of Journalism, *Director*

MAJOR. A minimum of 30 credits, including journalism 191 and the required studies of the Bachelor of Arts or Bachelor of Science (Journalism) degree.

Journalism candidates for the University Teachers' Certificate are required to register in the School of Education, as well as in the School of Journalism, at the beginning of the junior year. Such students should elect Education 76 (The teaching of English), should complete one minor in English (omitting the advanced courses in English composition numbered 2 and 3) and may substitute a second minor in one social science in place of the 15 credits of advanced social science for the degree in Journalism (see the Letters and Science bulletin or the General Catalog). Evidence of proficiency in speech must be shown by meeting the requirements of either *Option A* or *Option B* (see page 334.)

MINOR. A minimum of 15 credits, including Journalism 3 and 4, Journalism 191, and one semester of Journalism 2.

EDUCATION 76, The teaching of English, 5 credits.

LATIN

WALTER RAYMOND AGARD, *B.Litt. (Oxon.), Litt.D.*, Professor of Greek, *Chairman*

MAJOR. A minimum of 25 credits beyond Latin 1b (two years of high-school Latin), or 17 credits beyond Latin 11 (four years of high-school Latin), including Latin 102 (6 cr), 103 and 104 (6 cr.), 101 (4 cr.). For the teaching major, 5 credits in the methods of teaching Latin (Education 81), in addition to the courses listed above.

MINOR. A minimum of 19 credits beyond Latin 1b (two years of high-school Latin) or 11 credits beyond Latin 11 (four years of high-school Latin), including Latin 102 (6 cr.), 103 or 104 (3 cr.), and 101a (2 cr.). Education 81 is required of all minors who are not majoring in another foreign language.

EDUCATION 81, The teaching of Latin, 2 or 5 cr.

LIBRARY SCIENCE

Students in the School of Education may qualify for a minor* in Library Science by earning 15 credits in the following courses:

L. S. 71—Introduction to bibliographic method	2 cr.
L. S. 72—Introduction to reference	2 cr.
L. S. 73—Introduction to library materials	2 cr.
L. S. 142—Reading interests of children	3 cr.
L. S. 144—Reading interests of adolescents	3 cr.
L. S. 191—The School Library	3 cr.
TOTAL	15 cr.

The purpose of this minor is to prepare students for teacher-librarian positions, to meet licensing requirements in the state of Wisconsin, and also to meet the requirements of the North Central Association of Colleges and Secondary Schools. (This minor meets the pre-professional training requirements for admission to the Library School's graduate program.)

MATHEMATICS

CYRUS COLTON MACDUFFEE, *Ph.D.*, Professor of Mathematics, *Chairman*

MAJOR. Students majoring in mathematics are required to take a year's course in the calculus, and, ordinarily, a year's course in physics, preferably Physics 31. The course in physics should be taken concurrently with or following the course in calculus. In addition to these requirements the major comprises a minimum of 15 credits selected from the following courses: Mathematics 104, 106, 108, 111 or 112, 115, 116, 117, 118, 119, 120, 121, 122, 123, 133, 134, 137. However, students who are enrolled in the School of Education may count 3 credits of Education 93 as part of the 15-credits requirement. Students majoring in mathematics must earn a grade-point average of 1.25 or better in mathematics courses included in the major. Those entering the junior class with advanced standing, who expect to complete a major in mathematics in four semesters, should previously have completed their year's work in the calculus.

MINOR. This is composed of Education 93 and 15 credits in mathematics, including Mathematics 22 or 102b or the equivalent. A grade-point average of at least 1.25 is required in these mathematics courses.

EDUCATION 93, The teaching of mathematics, 2 or 5 cr.

MUSIC

(See pages 375–377.)

NATURAL SCIENCE

MAJOR. Fifty-five credits in science for those who have had less than three years of science in high school; 50 credits for those who have had three years or more of science in high school. These credits must represent one full-year course in each of three of the following science fields: biology, physics, chemistry, and earth science (geology and/or physical geography); 10 additional credits in one of these fields; 4 credits in physiology; and such elective courses in science as may be needed to make up the total requirement of 50 or 55 credits. (Please note also statutory requirements for certification, described on page 336.)

(NOTE: This teaching major in Natural Science will be regarded as fulfilling the requirement of the School of Education for both a major and a minor. Also, the requirement of a major and two minors, as fixed by the *Wisconsin Department of Public Instruction*, is satisfied by the competion of this major.)

* Since practice teaching and methods work are not available, this minor can be counted only as a second minor.

GENERAL SCIENCE MINOR for students whose major is a field other than Natural Science: A minimum of 20 credits, including 5 or 6 credits covering the basic units of physics and 3 credits each in chemistry, botany and zoology, in addition to Education 97. (Please note also statutory requirements for certification, described on page 336.)

EDUCATION 97, The teaching of science, 2–5 credits.

(For additional information consult Professor Ira C. Davis, Wisconsin High School.)

PHYSICAL EDUCATION

(See pages 345–352.)

PHYSICS

RAGNAR ROLLEFSON, *Ph.D.*, Professor of Physics, *Chairman*

MAJOR. A minimum of 32 credits in physics which shall include the following courses: 1 or 31, or 51–52, 102, 103, 104a, 106a, and 106b. The remaining credits will be selected from physics courses numbered 100 and above, but not including 119. In addition, the student shall take Education 97.

MINOR. A minimum of 15 credits in physics selected from the courses listed for a major.

EDUCATION 97, The teaching of science, 2–5 credits.

PHYSIOLOGY

W. B. YOUMANS, *M.D.*, Professor of Physiology, *Chairman*

MINOR. 15 credits, selected from the following: Physiology 105, 115, 116; Physiological Chemistry 104, 114; Anatomy 36; Physical Education 198 (Health Education in the Schools).

POLISH

(See Slavic Languages.)

POLITICAL SCIENCE

W. H. YOUNG, *Ph.D.*, Professor of Political Science, *Chairman*

MINOR. Political Science 7, plus a minimum of 12 credits. In addition, Education 84, The teaching of history and the social studies.

EDUCATION 84, The teaching of history and the social studies, 2 or 5 cr. (The attention of graduate assistants is called to Education 186, page 391.)

PSYCHOLOGY

Fifteen credits in psychology are accepted by the Wisconsin Department of Public Instruction in satisfaction of requirements for one academic minor. However, psychology is not accepted as a minor for the University Teachers' Certificate.

RUSSIAN

(See Slavic Languages.)

SLAVIC LANGUAGES

EDMUND ZAWACKI, *Ph.D.*, Associate Professor of Slavic Languages, *Chairman*

POLISH

MAJOR. (a) 24 credits in advance of course 1b, 15 of which must be in advanced courses. (b) Education 81.

MINOR. (a) 18 credits in advance of course 1b, 10 of which must be in advanced courses. (b) Education 81.

RUSSIAN

MAJOR. (a) 24 credits in advance of course 1b, 15 of which must be in advanced courses. (b) Education 81.

MINOR. (a) 18 credits in advance of course 1b, 10 of which must be in advanced courses. (b) Education 81.

EDUCATION 81, The teaching of French, Italian, Latin and Spanish, 2 or 5 credits. (Special arrangements about practice teaching must be made since no practice teaching in Polish or in Russian is available.)

SOCIOLOGY AND ANTHROPOLOGY

HOWARD P. BECKER, *Ph.D.*, Professor of Sociology, *Chairman*

MAJOR. Thirty credits in sociology and anthropology, to include Sociology 1 and 2 (6 cr.), 151 (3 cr.), 32 or 132 (3 cr.), 139a (3 cr.), and Anthropology 3 (3 cr.); and 20 credits in related social studies including Geography 128 (3 cr.) and Agricultural Economics 127 (3 cr.). Education 84 (5 cr.) is required in addition. (Note also statutory requirements for certification described on page 336.)

MINOR. Sociology 1 and 2 and Anthropology 3 for a total of 9 credits, plus 6 additional approved credits, to make a total of 15, and Education 84 (2 cr.).

EDUCATION 84, The teaching of history and the social studies, 2 or 5 credits.

SPANISH AND PORTUGUESE

SPANISH

E. R. MULVIHILL, *Ph.D.*, Professor of Spanish, *Chairman*

Students who expect to become teachers of Spanish are advised to elect related courses in such fields as art history, history, other languages and literatures (especially English and Latin), music, music appreciation, and philosophy. They should develop a broad and deep interest in the intellectual and artistic side of life upon which the humanistic studies are focused. As a part of their preparation, prospective teachers should avail themselves of the opportunity to use Spanish by active participation in the Spanish House (during the summer session), in the Spanish and Latin-American clubs, and in Spanish plays.

Those who expect to continue for advanced degrees should consult the bulletin of the Graduate School and elect the courses which are prerequisite to graduate work in the field.

All education majors and minors in Spanish must develop adequate oral facility in order to be recommended for a teaching certificate. Before such recommendation is made, the candidate must pass an oral proficiency examination which is given each semester by the department.

MAJOR. Twenty-seven credits in advance of Spanish 10a, and distributed as follows:

Spanish 10b	3 credits	
Spanish 21a and b	6 credits	
Spanish 16	4 credits	
Spanish 25	4 credits	
Spanish 190	2 credits	(with a grade of *B* or above)
Spanish courses on the 100 level	8 credits	(must include one literature or civilization course. At least 2 credits in civilization are recommended.)
	27	

and Education 81 (5 credits) which does not give credit in Spanish. Well-qualifed students may apply to the chairman of the department for permission to write a thesis.

MINOR. Fifteen credits in advance of Spanish 10 as follows:

Spanish 10b	3 credits
Spanish 16	4 credits (1 year of 16 or 25)
Spanish 21a and b	6 credits
Spanish 25	2 credits (with a grade of *B*)
	15

and also Education 81, if not majoring in another foreign language. Minor students are advised to elect Spanish 190.

EDUCATION 81, The teaching of Spanish, 2 or 5 credits.

PORTUGUESE

Special arrangements will be made for students interested in majoring or minoring in this language. In general a major will consist of 16 credits of work in the 100-group, including 4 credits in composition and conversation.

Attention is also called to the teaching major in Hispanic Studies. See pp. 365–366.

SPEECH

ANDREW THOMAS WEAVER, *Ph.D.*, Professor of Speech, *Chairman*

MAJOR. A minimum of 30 credits, including courses 1, 2, 3, 6, 18 or 25, and 141, to be taken in sequence so far as possible. Courses 1, 6, and 16 should be taken concurrently if possible. Twelve credits must be in courses numbered above 100. In addition to the required 30 credits, 5 credits must be earned in Education 198.

MINOR. A minimum of 15 credits in approved courses, including courses 1 and 2. Also, 2 credits in Education 198.

SPEECH CORRECTION MAJOR. A minimum of 30 credits, including courses 1, 2, 25, 121, 125, 126, 141, 143, 179 and 185. In addition to the required 30 credits, 5 credits must be earned in Education 198. Students pursuing this major are required to complete certain extra departmental courses stipulated by the *Wisconsin Department of Public Instruction* as necessary for certification in Speech Correction. These include Clinical Testing (Binet) (Education 128, 3 credits), or Clinical Testing (Performance) (Education 138, 3 credits), Hearing Rehabilitation (Education 152, 3 credits); one of the following courses: Education 119, 120 (Child Development), Sociology 197 (Personality and social adjustment), Home Economics 109 (Humanics); and 9 credits to be selected from other approved courses. (A student who satisfies the requirements of a major in *speech correction* must also satisfy the requirements of an academic minor or the health education minor for the University Teachers' Certificate, but does not need to satisfy the requirements of a second minor for a license to teach in the state of Wisconsin.)

SPEECH CORRECTION MINOR. A minimum of 15 credits, including courses 1, 25, 121, 125, 126, 185. Also Education 198.

EDUCATION 198, Speech in the high school, 2 or 5 credits.

ZOOLOGY

JOHN T. EMLEN, *Ph.D.*, Professor of Zoology, *Chairman*

MAJOR. A minimum of 30 credits including introductory zoology (one only of the following: Zoology 1, 2, 17, or a combination of ILS 33–34 with either Zoology 6 or 107), invertebrate zoology (141 or a combination of 119 with either 112 or 118), vertebrate zoology (142 or 104 or 105), ecology (143 or two of the following: 115, 124, 140), and physiology (Zoology

144 or Physiology 3 or Physiology 115). Botany 1 or 17 is required and counts toward the major. One year of chemistry is prerequisite for the physiology requirement.

MINOR. A minimum of 15 credits. Zoology 1 and 2, which together constitute a year's work, are especially recommended. Botany 1 or 17 may be credited toward the minor provided the major and the other minor are not in a biological science.

EDUCATION 97, The teaching of science, 2–5 credits.

COURSES FOR TEACHERS OF AGRICULTURE AND HOME ECONOMICS

The four-year courses in Agriculture and in Home Economics are given in the College of Agriculture. Students who are planning to teach these subjects, and to qualify for the University Teachers' Certificate, *register in the School of Education at the beginning of the junior year.* Detailed information concerning all the courses offered may be found in the special bulletins of the College of Agriculture.

Graduates of the four-year Course in Agriculture and of the Course in Home Economics who have complied with the regulations relative to registration and to approval of major and minor subjects will be entitled to receive the University Teachers' Certificate upon fulfillment of the special professional requirements indicated below.

SPECIAL STATUTORY REQUIREMENTS

For teachers of science, the social studies, and agriculture.

Chapter 397, Laws of 1935, State of Wisconsin, reads as follows: "In granting certificates for the teaching of courses in economics, the social studies, and agriculture adequate instruction in co-operative marketing and consumers' co-operatives shall be required." See *Agricultural Economics 127*, Co-operation (first semester or second semester).

AGRICULTURE AND EDUCATION

JOHN AMBROSE JAMES, *B.S.*, Professor of Agricultural Education, *Chairman*

Students in the College of Agriculture who wish to prepare for the teaching of agriculture in secondary schools must complete, in addition to a major and a teaching minor, the general requirements of the Long Course in Agriculture and the eighteen credits in education required for the University Teachers' Certificate as outlined below. Also, they must show evidence of proficiency in speech as prescribed under *Option A* or *Option B*, page 334. The major consists of twenty-one credits in the Departments of Education and Agricultural Education which also meet the requirements for the Certificate. Students are advised to follow the elective list furnished by the Department of Agricultural Education in order to have proper technical courses.

Students who receive the degree of Bachelor of Science (Agriculture and Education), and who have satisfied the following requirements, are entitled to receive the University Teachers' Certificate and a license to teach, issued by the State Superintendent: (a) registration in the School of Education at the beginning of the junior year, (b) the recommendation of the College of Agriculture, (c) the completion of the following courses:

	Credits
EDUCATION 73—The child: His nature and his needs	
or	
EDUCATION 74—The school and society	3
EDUCATION 75—The nature and direction of learning	5
AGRICULTURAL EDUCATION 1—Rural education	2
AGRICULTURAL EDUCATION 128—Program building in vocational agriculture	3
EDUCATION 50—The teaching of agriculture	5
	18

MINOR IN BIOLOGY. Botany 1, 5 credits; Zoology 1, 5 credits; Agr. Bact. 1, 4 credits; Genetics 6 or Plant Path. 7, 3 credits; Education 97, 2 credits; total credits, 19.

MINOR IN GENERAL SCIENCE. For students whose major is a field other than natural science. A minimum of 20 credits, including 5 or 6 credits covering the basic units of physics and 3 credits each in chemistry, botany and zoology, in addition to Education 97.

MINOR IN COMMUNITY RELATIONSHIPS. Economics 1a, 4 credits; Agricultural Economics 4, 3 credits; Agricultural Economics 127, 3 credits; Rural Sociology 25, 3 credits; Political Science 7, 3 credits; a course in political science, rural sociology, or American history, 3 credits; Education 84, 2 credits. Total credits, 21.

HOME ECONOMICS AND EDUCATION

FRANCES ZUILL, *M.A.*, Professor of Home Economics, *Associate Dean*

MAJOR. To prepare for teaching home economics in high schools and in vocational schools, a student must fulfill the requirements in the general professional major, the major in clothing and textiles, or the major in foods and nutrition, and, in addition, must include the following courses in education which are required for the University Teachers' Certificate:

	Credits
EDUCATION 73—The child: His nature and his needs	3
EDUCATION 74—The school and society	3
EDUCATION 75—The nature and direction of learning	5
EDUCATION 52—Teaching of home economics (senior year)	5
A course in the teaching of the academic minor	2
	18

Evidence of speech proficiency must be shown by meeting the requirements of either *Option A* or *Option B* (see page 334).

VOCATIONAL SCHOOL REQUIREMENT: Candidates for the University Teachers' Certificate who prepare for teaching homemaking in schools of vocational and adult education must take Education 156 for 4 credits and Education 52 for 3 credits.

ACADEMIC MINOR. The certification regulations of the Wisconsin Department of Public Instruction provide that majors in home economics shall have one academic teaching minor. Such a minor consists of 15 credits of college courses in any academic subject. This does not necessarily meet the requirements of a minor for the University Teachers' Certificate. Chemistry, general science, history, the social studies, and English have proved to be satisfactory academic minors in combination with a home economics major. A minor in chemistry for home economics students includes: Chemistry 1, 10 credits; Biochemistry 1 or 3, 4 credits; Textile Chemistry (Home Econ. 50), 3 credits; Education 97, 2 credits. Other academic teaching minors are described on pp. 356–372.

MINORS FOR STUDENTS IN THE SCHOOL OF EDUCATION. A minor for students who plan to teach home economics, in combination with their academic major, in small high schools of Wisconsin, must include 20 credits in Home Economics 2, 3, 5, 7, 8, 50, 109 or 119, 117, or equivalent, and Education 52 (2 cr.).

MINORS FOR HOME ECONOMICS STUDENTS. Home economics students, with a major in foods and nutrition or in clothing and textiles, should include a minor in another phase of home economics.

(1) A teaching minor in foods and nutrition. A minimum of 20 credits in home economics, including Home Economics 3, 4, and 6.

(2) A teaching minor in textiles and clothing. A minimum of 20 credits in home economics, including Home Economics 2, 5, 11, 50, and 97.

(3) A teaching minor in related art. A minimum of 20 credits in home economics, including Home Economics 2, 8, 18, 20, and 194.

EDUCATION 52—The teaching of home economics, 3 or 5 credits.

EDUCATION 156—Teaching of homemaking in schools of vocational and adult education, 2 credits, lect.; 2 credits, off-campus teaching.

EDUCATION 188—Seminar in home economics education, 2 credits.

COURSE FOR TEACHERS OF BUSINESS EDUCATION

RUSSELL J. HOSLER, *Ed.D.*, Associate Professor of Education and of Commerce

Students interested in the major in Business Education should consult Professor Hosler prior to their junior year.

The program in business-teacher education at the University of Wisconsin is offered jointly by the School of Education and the School of Commerce. The student enrolled in this curriculum will be graduated from the School of Commerce, but, in order to receive the University Teachers' Certificate, must register concurrently in the School of Education, and will complete the following requirements:

EDUCATION 73—The child: His nature and his needs, 3 cr.

EDUCATION 74—The school and society, 3 cr.

EDUCATION 75—The nature and direction of learning, 5 cr.
(Includes practice teaching.)

EDUCATION 20—The teaching of the secretarial subjects, 2 or 5 cr.

EDUCATION 77—The teaching of bookkeeping and the social business subjects, 2 or 5 cr.
(Includes practice teaching.)

(NOTE: The student may elect only one of the two methods courses—Education 20 or 77, for 5 credits.)

Evidence of proficiency in speech must be shown by meeting the requirements of either *Option A* or *Option B* (see page 334).

COMMERCE

a. The Pre-Commerce and basic Commerce courses required of all students in the School of Commerce.

b. Economics 1b, to complete requirements for University Teachers' Certificate minor. (The student may elect a minor other than economics.)

c. The following courses in secretarial training (enrollment in these courses for credit is limited to those students enrolled in the business education curriculum):

COMMERCE 63—Beginning typewriting, 2 cr.

COMMERCE 64—Advanced typewriting, 2 cr.

COMMERCE 65—Fundamentals of shorthand, 4 cr.

COMMERCE 66—Advanced shorthand, 4 cr.

COMMERCE 163—Secretarial techniques, 3 cr.

COMMERCE 164—Office procedures, 3 cr.

Students who have had previous training in typewriting or in shorthand will be given attainment examinations prior to enrollment in typewriting or in shorthand. Based upon the attainment examinations, exemption may be granted from Commerce 63, 64, 65, or 66. If the student is exempted from any course (or courses) in typewriting and/or shorthand, he shall select an equivalent number of elective credits.

Commerce 63 and/or Commerce 65 shall be taken without credit by those students who have had more than one year in high school in typewriting and/or shorthand, and who do not meet proficiency standards as determined by the attainment examinations.

A total of not less than 130 credits and 130 grade-points is required to graduate from the curriculum in business education.

The program as outlined in business education will qualify the student for the University Teachers' Certificate with a major in commerce and a minor in economics. It is recommended also that the student secure teaching minors in other subject fields.

COURSE FOR TEACHERS OF MUSIC

S. T. BURNS, *Ph.D.*, Professor of Music and Education, *Chairman*

Candidates for the degree of Bachelor of Music who wish to obtain the University Teachers' Certificate are required to register also in the School of Education at the beginning of the junior year, to give evidence of proficiency in speech as prescribed under *Option A* or *Option B* (see page 334) and to earn (subject to the quality-of-work rule) a total of 130 credits and 130 grade-points, including a minimum of 32 credits in Letters and Science and the 19 required credits in education. The degree for such students will not be awarded unless and until the requirements for the certificate have been met, and *vice versa*. The following courses in education are required:

	Credits
EDUCATION 73—The child: His nature and his needs	3
EDUCATION 74—The school and society	3
EDUCATION 75—The nature and direction of learning	5
EDUCATION 4—Music education for elementary schools	4
EDUCATION 5—Music education for secondary schools	4

MINOR. Designed for persons who have some musical background and skill and who wish to do part-time music work in a small high school while teaching subjects in their major field. All such music minors must pass entrance tests for admission to the School of Music. Required: 22 credits in the following courses: Music 11a and 11b (Theory), 8 credits; Music 76a (Conducting), 2 credits; Music 65 or 75 (Instrumental techniques), *or* Music 62 (Voice), 4 credits; Music 85, 86, and 87 (Organizations), 6 credits; electives in Music, 2 credits and in addition, Education 4 and 5, 2 credits each.

CURRICULUM FOR A MAJOR IN SCHOOL MUSIC—VOCAL

RECOMMENDED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Music 11a—First-year theory	4	Music 11b—First-year theory	4
Music 20a—Appreciation and history	2	Music 20b—Appreciation and history	2
Music 61, 62, 63, 64a—Applied music	2	Music 61, 62, 63, 64b—Applied music	2
Music 85, 86, 87—Music organizations	1	Music 85, 86, 87—Music organizations	1
English 1a—Freshman English	3	English 1b—Freshman English	3
L & S Electives	4	L & S Electives	4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	16		16

SOPHOMORE YEAR

Music 21a—Second-year theory	4	Music 21b—Second-year theory	4
Music 30a—Music in the Baroque era	2	Music 30b—Music in the Classic era	2
Music 65a, or 75a—Instrumental technics	2	Music 65b, or 75b—Instrumental technics	2
Music 71, 72, 73, 74a—Applied music	2	Music 71, 72, 73, 74b—Applied music	2
Music 85, 86, 87—Music organizations	1	Music 85, 86, 87—Music organizations	1
English	3	English	3
L & S Electives	3	L & S Electives	3
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	17		17

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Music 9a—Quartets of Haydn and Mozart	1	Music 9b—Quartets of Mozart and Beethoven	1
Music 38—Vocal technic and song literature	2	Music 40b—Music in the post-Romantic era	2
Music 40a—Music in the Romantic era	2	Music 76b—Conducting	2
Music 76a—Conducting	2	Music 81, 82, 83, 84b—Applied music	2
Music 81, 82, 83, 84a—Applied music	2	Music 85, 86, 87—Music organizations	1
Music 85, 86, 87—Music organizations	1	Education 75—Nature and direction of learning	5
Education 73—The Child: His nature and his needs	3	Electives	3
Education 74—The school and society	3		
	16		16

SENIOR YEAR

Music 34a—Arranging	2	Music 34b—Arranging	2
Music 91, 92, 93, 94a—Applied music	2	Music 91, 92, 93, 94b—Applied music	2
Music 85, 86, 87—Music organizations	1	Music 85, 86, 87—Music organizations	1
Education 4—Music education for elementary schools	4	Music 83—Choral technic and literature	2
Speech 1a	3	Education 5—Music education for secondary schools	4
Electives	4	L & S Electives	3
		Electives	2
	16		16

CURRICULUM FOR A MAJOR IN SCHOOL MUSIC—INSTRUMENTAL

FRESHMAN YEAR

Music 11a—First-year theory	4	Music 11b—First-year theory	4
Music 20a—Appreciation and history	2	Music 20b—Appreciation and history	2
Music 61, 62, 63, 64a—Applied music	2	Music 61, 62, 63, 64b—Applied music	2
Music 85, 86, 87—Music organizations	1	Music 85, 86, 87—Music organizations	1
English 1a—Freshman English	3	English 1b—Freshman English	3
L & S Electives	4	L & S Electives	4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	16		16

SOPHOMORE YEAR

Music 21a—Second-year theory	4	Music 21b—Second-year theory	4
Music 30a—Music in the Baroque era	2	Music 30b—Music in the Classic era	2
Music 65a—Instrumental technics	2	Music 65b—Instrumental technics	2
Music 71, 72, 73, 74a—Applied music	2	Music 71, 72, 73, 74b—Applied music	2
Music 85, 86, 87—Music organizations	1	Music 85, 86, 87—Music organizations	1
English	3	English	3
L & S Electives	3	L & S Electives	3
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	17		17

JUNIOR YEAR

Music 38—Vocal technics and song literature	2	Music 40b—Music in the post-Romantic era	2
Music 40a—Music in the Romantic era	2	Music 75b—Instrumental technics	2
Music 75a—Instrumental technics	2	Music 76b—Conducting	2
Music 76a—Conducting	2	Music 81, 82, 83, 84b—Applied music	2
Music 81, 82, 83, 84a—Applied music	2	Music 85, 86, 87—Music organizations	1
Music 85, 86, 87—Music organizations	1	Education 75—Nature and direction of learning	5
Education 73—The Child: His nature and his needs	3	Electives	2
Education 74—The school and society	3		
	17		16

SENIOR YEAR

Music 9a—Quartets of Haydn and Mozart	1	Music 9b—Quartets of Mozart and Beethoven	1
Music 34a—Arranging	2	Music 34b—Arranging	2
Music 91, 92, 93, 94a—Applied music	2	Music 91, 92, 93, 94b—Applied music	2
Music 85, 86, 87—Music organizations	1	Music 85, 86, 87—Music organizations	1
Education 4—Music education for elementary schools	4	Education 5—Music education for secondary schools	4
Speech 1a	3	Electives	5
L & S Electives	3		
	16		15

TABLE OF CREDITS

Major	L & S Cr.	Music Cr.	Education Cr.	Electives Cr.	Total Cr.
Applied Music	46	84	0		130
History and Theory	46	84	0		130
School Music — Vocal	32	70	19	9	130
School Music — Instr.	32	72	19	7	130

MINOR IN HEALTH EDUCATION

The teaching minor in Health Education is primarily for students who are preparing to teach in any of the following fields: child development, elementary education, home economics, physical education, recreation, science, and social studies. It provides prospective teachers with an enlightened philosophy of health education, a background of health science, and a core of skills and techniques for motivating desirable health behavior among boys and girls. This minor is planned to prepare teachers to: (1) teach health as a separate course or as a planned integral part of other teaching areas, and (2) assist the school administration and teaching staff in developing a broad school health program.

A teaching minor in a special field requires a total of 20 credits, of which 14 may be earned through courses in closely related areas, and 6 must be in the special field (including a methods course). The following is a composite of the courses which have been approved by the School of Education and the State Department of Public Instruction for certification in health education.

Background Courses. A minimum of 14 credits from this group including some in biological sciences (at least one and preferably two) and some in social sciences (at least one and preferably two). It is desirable that the credits be drawn from several different departments in the following list:

BIOLOGICAL SCIENCES

	Credits
Anatomy	
Human Anatomy 36	6
Physical Education Anatomy 39	4
Agricultural Bacteriology	
General Survey of Bacteriology 1	4
General Survey 4	4
Biochemistry	
Elementary Biochemistry 1	2–4
Survey of Biochemistry 3	4
Chemistry	
Organic Chemistry 120	2
Organic Chemistry 121	2
Integrated Liberal Studies	
Biology 33	3
Biology 34	4
Home Economics	
Nutrition and Dietetics 6	4
Survey of Nutrition Principles 117	2–3
Child Nutrition 147	2
Physical Education (Women)	
Physiology Applied to Physical Education Activities 103 (Or Physiology 116)	3
Physical Education (Men)	
Effects of Physical Activities on the Body 107 (Or Physiology 116)	2
Physical Examinations and Therapeutics 119a or 119b	3

Physiological Chemistry
- Physiological Chemistry 104 5
- Physiological Chemistry 114 3

Physiology
- Elements of Human Physiology 1 4
- Elementary Physiology 2 4
- Physiology 115 5
- Physiology 116 (Or Physical Education 107 or 103) 3

Preventive Medicine
- Health Problems for University Students 1 1

Zoology
- Animal Biology 1 5
- General Zoology 2 5
- Heredity 6 2–3

SOCIAL SCIENCES

Geography
- Geography of the Americas 3 3
- Geography of Anglo-America 103 3
- Geography of Wisconsin 104 2
- Conservation of Natural Resources 128 3

History
- History of the United States 4a or 4b 3
- Recent History of the United States 124 3
- European Civilization 3a or 3b 3
- Modern European History 2a or 2b 3

Home Economics
- Humanities (Home and Family) 109 2
- Development of the Young Child in the Home and Nursery School 119 2

Integrated Liberal Studies
- Transition to Industrial Society 22 4
- Modern Industrial Society 23 4

Psychology
- Introduction to Psychology 1 4
- Applied Psychology 50 2
- Psychology of Human Adjustment 105 3
- Psychology of Human Emotions 108 3
- Child Psychology 147 3
- Psychology of Adolescence 148 3

Political Science
- American Government and Politics 7 3
- Introduction to Public Administration 143 3

Social Work
- Introduction to the Field of Social Work 145 3
- Child Welfare 162 2–3

Sociology
- Man and Society 1 3
- Social Disorganization 2 3
- Man and Culture (Anthropology) 3 3
- Marriage and the Family 60 3
- Sociology of the Family 159 3
- Social Psychology 139 3
- Contemporary American Society 96 3
- The Modern City 124 3
- Treatment and Prevention of Social Disorganization 154 3

Processes of Social and Community Disorganization 169 3
Modern Population Problems 163 3
Racial and Minority Groups in the U. S. 164 3

Rural Sociology
Rural Life 25 3
Rural Community Organization 127 2
The Family in Rural Society 129 2

HEALTH EDUCATION

Health Education courses—a minimum of 6 credits from this group:
*Education 169—Health education for teachers ..... { 3
6-credit sequence { 3
Education 197—Problems and materials in health education (equivalent: Phys. Educ. (men) 164—School health and hygiene, 3 cr.)
Education 170—School and community health problems 3

* Education 169 is allowable for credit in the College of Letters and Science under the Twenty-Credits rule.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
cr—number of credit hours per semester
*—credit to be arranged

Courses numbered under 100 may be credited only by undergraduates; those in the 100-group may be credited by both undergraduates and graduates; those in the 200-group are ordinarily open only to graduates.

ART EDUCATION AND APPLIED ART

PROFESSORS ALBRIZIO, ANNEN; ASSOCIATE PROFESSORS ALLCOTT, GRILLEY, LOGAN, *chairman*, SESSLER; ASSISTANT PROFESSORS ANDERSON, ANDREWS, COLESCOTT, MEEKER, SEVERINO, VIERTHALER, WILDE, ZINGALE; INSTRUCTORS LITTLETON, ZAGORSKI.

The following courses are open to Letters and Science students in the same way as regular Letters and Science subjects: Art Education 50a, 50b, open to freshmen and others; Art Education 52, 54, 55, 56, 62, 64, 71, 140, 160, and 168 open to sophomores and upperclassmen. Other courses are open to election by Letters and Science students upon approval of the dean of that college.

50a. BASIC DRAWING. I, II; 3 cr. Freehand drawing and perspective. Open to freshmen. Mr. Grilley, Mr. Meeker, Mr. Wilde.

50b. BASIC DRAWING. I, II; 3 cr. Freehand drawing, light and shade. Prerequisite: Art Education 50a. Mr. Grilley, Mr. Meeker, Mr. Wilde.

52. WATERCOLOR. Yr; 2–3 cr. Prerequisites: Art Education 50b, 64a. Mr. Anderson, Mrs. Annen, Mr. Zingale.

53. ART SURVEY. Introduction of the fine art field. Yr; 2 cr. Open to Art Education freshmen. Mr. Severino.

54. SCULPTURE. Yr; 3 cr. Mr. Albrizio, Mr. Andrews.

55. LIFE DRAWING AND ANATOMY. Yr; 3 cr. Prerequisite: Art Education 50b. Mr. Grilley, Mr. Meeker, Mr. Wilde.

56. OIL PAINTING. Yr; 3 cr. Prerequisites: Art Education 64a and 55a. Mr. Grilley, Mr. Meeker, Mr. Zingale.

57. DRAWING AND DESIGN. Yr; 3 cr. For Occupational Therapy and Recreation students. Staff.

60. LAYOUT AND LETTER STRUCTURE. Yr; 3 cr. Proportions of the classical letter. Contemporary layout and lettering adaptations. Open to freshmen in the Course in Art Education. Mr. Anderson, Mr. Zagorski.

61. ELEMENTARY SCHOOL ARTS. Yr; 3 cr. Prerequisite: Junior standing. Mr. Andrews.

62a. CREATIVE DESIGN. Yr; 3 cr. Open to freshmen. Home Economics majors with a prerequisite of Home Economics 2 (Introduction to related arts) may enter either semester. Mrs. Annen, Mr. Colescott, Mr. Zagorski.

62b. CREATIVE DESIGN. Yr; 3 cr. Prerequisite: Art Education 62a. Mrs. Annen, Mr. Colescott, Mr. Zagorski.

63. COMMERCIAL DESIGN. Yr; 3 cr. Prerequisites: Art Education 50, 60, 62. Mr. Anderson.

64. COMPOSITION. Sem; 3 cr. Prerequisite: Art Education 50b. Mr. Zingale, Mr. Wilde.

70. ART METAL. Yr; 3 cr. Problems in copper, silver, gold, pewter, lapidary. Prerequisite: Art Education 62. Mr. Vierthaler, Mr. Zagorski.

71. CERAMICS. Yr; 3 cr. Prerequisite: Art Education 62. Mr. Littleton.

108. PAINTING FOR OCCUPATIONAL THERAPY. Sem; 3 cr. Prerequisite: Art Education 57b. Mrs. Annen, Mr. Logan.

132. FIGURE PAINTING AND PORTRAITURE. Yr; 3 cr. Prerequisite: Art Education 56. Mr. Meeker.

140. STAGE DESIGN. Yr; 3 cr. First semester: Principles of design in relation to scenic designing. Mr. Logan. Second semester: Application of these principles; scene construction and lighting in the University Theater. Mr. Buerki. Prerequisite: Art Education 62. Also open to students registered in or with credit in Speech 10a or 19b or graduate standing in speech.

150. ADVANCED ART PROBLEMS. Yr; 1–3 cr. Special course open only to seniors and graduate students, with consent of chairman and instructor.

152. ADVANCED WATERCOLOR. Yr; 2–3 cr. Prerequisite: Art Education 52, or equivalent. Mrs. Annen, Mr. Anderson, Mr. Zingale.

154. ADVANCED SCULPTURE. Yr; 3 cr. Prerequisite: Art Education 54 or equivalent. Mr. Albrizio.

155. ADVANCED LIFE DRAWING. Yr; 1–3 cr. Figure composition; methods of interpreting the human figure. Mr. Grilley, Mr. Meeker, Mr. Wilde.

156. ADVANCED PAINTING. Yr; 2–3 cr. Prerequisite: Art Education 56. Mr. Anderson, Mr. Grilley, Mr. Zingale.

160. GRAPHIC ARTS. Yr; 3 cr. Prerequisites: Art Education 62, 64a and consent of instructor. Mr. Sessler.

162. DESIGN RESEARCH. Yr; 2–3 cr. Advanced work in field of creative design. Prerequisite: Elementary course in design. Mrs. Annen.

163. ADVANCED COMMERCIAL DESIGN. Yr; 3 cr. Prerequisite: Art Education 63 or equivalent. Mr. Anderson.

166a. SILK SCREEN PROCESSES. Sem I; 3 cr. Prerequisite: Consent of instructor. Mr. Meeker.

166b. SILK SCREEN PROCESSES. Sem II; 3 cr. Prerequisites: Art Education 166a, consent of instructor. Mr. Meeker.

167a. ADVANCED GRAPHICS. I; 2–3 cr. Advanced work in wood-cut, wood engraving, and etching. Prerequisite: Art Education 160b. Mr. Sessler.

167b. ADVANCED GRAPHICS. II; 2–3 cr. Advanced work and original research in lithography. Prerequisite: Art Education 160b. Mr. Sessler.

168. ADVANCED CERAMICS. Yr; 2–3 cr. Prerequisite: Art Education 71 or consent of instructor. Mr. Littleton.

170. ADVANCED ART METAL. Yr; 3 cr. Projects include enameling, jewelry techniques. Mr. Vierthaler.

173. GEM CUTTING. II; 2–3 cr. A lecture-laboratory course in Lapidary Science. Special emphasis on natural phenomena of design elements and proper cutting on individual gem

stones. Prerequisites: Art Education 70a and 70b or Geology 106, junior standing, consent of instructor. Mr. Vierthaler.

174. PHOTOGRAPHIC DESIGN. Yr; 3 cr. Application of design principles to photography. Prerequisite: Art Education 64 for art education majors; consent of instructor for other majors. Staff.

175. CRAFTS FOR OCCUPATIONAL THERAPY. Yr; 3 cr. Prerequisite: Art Education 57a. Staff.

177. MATERIALS WORKSHOP (DESIGN). Yr; 3 cr. Prerequities: Art Education 62b, junior standing. Mr. Zagorski.

179. MUSEUM TECHNIQUES. Sem; 2 cr. Prerequitie: Junior standing.

180. ADVANCED INDEPENDENT STUDY. Yr; *cr. Open only to upper-group students with consent of the chairman and instructor. Staff.

200. RESEARCH PROBLEMS. Yr; *cr. Prerequisite: Graduate standing. Staff.

210. SEMINAR, ART EDUCATION. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Logan, Mr. Severino.

211. READING AND RESEARCH PROBLEMS IN ART EDUCATION. Yr; *cr. Prerequisite: Graduate standing. Staff.

THE TEACHING OF ART. See Education 62, 63, and 171, pages 384 and 389.

EDUCATION

PROFESSORS BARR, BORCHERS, BURNS, DAVIS, DAWE, EDGERTON, EYE, FOWLKES (DEAN), GREGG, HENDERSON, HERRICK, HILL, JAMES, JENSEN, JOHNSON, KRUG, LITTLE, LOW, MAYOR, *chairman*, NOHR, PHILLIPS, RAGSDALE, ROTHNEY, SOUTHWORTH, WILLING, WITTICH, ZUILL; ASSOCIATE PROFESSORS ALLCOTT, CRONIN, DALRYMPLE, EBERMAN, ESTVAN, C. HARRIS, T. HARRIS, HOSLER, KREITLOW, LIDDLE (ASSOCIATE DEAN), PETERSON, SHOEMAKER, STANLEY, TRUMP; ASSISTANT PROFESSORS ALLEN, ARNOLD, BACHMAN, BEERY, BJORAKER, HUTCHINS, KLAUSMEIER, MAXFIELD, PELLA, PETZOLD, RHUE, ROSEMAN; LECTURERS GAUGER, IVERSON, SEARLES, SHANNON, WHITE; INSTRUCTORS GOLDGRUBER, LENGFELD, SAWIN, WALKER, WEIGHTMAN, WINSOR.

UNDERGRADUATE PROFESSIONAL EDUCATION COURSES

ELEMENTARY EDUCATION

Education 1, 2, 7, 8, 11a, 11b, 21a, 21b, 31a, 31b, 41, 42, 73 and 75 are basic education courses required of students working to qualify for certification to teach in the elementary school. (Education 73 is a prerequisite for Education 75 and is to be taken concurrently with Education 31a. Education 75 is a prerequisite for Education 41 and is to be taken concurrently with Education 31b.)

SECONDARY EDUCATION

Education 73, 74, 75, a course in the teaching of the minor subject and a course in the teaching of the major subject are basic education courses required of students working to qualify for certification to teach in the secondary school. (Education 73 is a prerequisite for Education 75. Education 75 is a prerequisite for the methods course in the major. Education 75 and the methods course in the minor field are to be taken concurrently.)

Important: Course prerequisites are specified in the course descriptions. Check your Education course sequences very carefully.

UNDERGRADUATE PROFESSIONAL EDUCATION COURSE DESCRIPTIONS ELEMENTARY AND SECONDARY SCHOOL

1. INTEGRATED ARTS. I; 2 cr. Direct studio experiences in areas of visual and plastic arts; movement and dance; speech and dramatics; and music. (Open only to candidates for the

University Teachers' Certificate—Elementary School.) Mr. Logan and staff.

2. INTEGRATED ARTS. II; 2 cr. Continuation of Education 1 with emphasis on the understanding of the interrelatedness of the arts and their place in contemporary society. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Prerequisite: Education 1. Mr. Logan and staff.

7. INTEGRATED ARTS. I; 2 cr. Continuation of Education 2 with emphasis on greater maturity in and understanding of the arts. Observation and study of drama and art productions of the campus in addition to direct studio experiences. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Prerequisite: Education 2. Mr. Logan and staff.

8. INTEGRATED ARTS. II; 2 cr. Continuation of Education 7. Greater emphasis on the role of art in the personal and social development of the individual. Continued studio experiences and participation in the art and cultural life of the university community. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Prerequisite: Education 7. Mr. Logan and staff.

11a. INTRODUCTION TO ELEMENTARY EDUCATION. I; 1 cr. Overview of programs of elementary education. Field trips and observations. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Mr. Eberman, Miss Rhue, and staff.

11b. INTRODUCTION TO ELEMENTARY EDUCATION. II; 1 cr. Examination of the general nature of the instructional program of the elementary school. Field trips and observations. Continuation of Education 11a. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Mr. Eberman, Miss Rhue, and staff.

21a. INTRODUCTION TO ELEMENTARY EDUCATION. I; 1 cr. Definition of the persistent problems of teaching and learning in the elementary school. Field trips and observations. Continuation of Education 11b. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Mr. Eberman, Miss Rhue, and staff.

21b. INTRODUCTION TO ELEMENTARY EDUCATION. II; 1 cr. Continuation of emphasis on definition and analysis of persistent problems of teaching and learning. Field trips and observations. Continuation of Education 21a. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Mr. Eberman, Miss Rhue, and staff.

31a, I; 31b, II. CURRICULUM AND INSTRUCTION IN THE ELEMENTARY SCHOOL. Yr; 4 cr. per semester. Principles and practices in organizing and developing the instructional program; major emphasis on social studies, science, arithmetic, reading and other language arts. Includes school observation and participation. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Prerequisites: Junior standing and Education 21b. Education 31a is to be taken concurrently with Education 73. Education 31b is to be taken concurrently with Education 75. Staff.

41. SUPERVISED TEACHING IN THE ELEMENTARY SCHOOL. I, II; 16 cr. Full-time teaching for a 10–12 week period under intensive supervision. Workshop sessions of 4–6 weeks to help students to prepare for teaching, to develop needed methods, techniques and materials, and to evaluate progress and correct weaknesses revealed. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Prerequisites: Senior standing, Education 31b and Education 75. Staff.

42. THE TEACHER AND THE AMERICAN EDUCATION SYSTEM. I, II; 2 cr. Major topics will include a consideration of the foundations of a democratic philosophy of education, current educational trends, and teacher status. (Open only to candidates for the University Teachers' Certificate—Elementary School.) Prerequisites: Senior standing, Education 31b and Education 75. Staff.

73. THE CHILD: HIS NATURE AND HIS NEEDS. I, II; 3 cr. Major stages in the social, physical, and mental development of children from birth through adolescence; identification of

the more specific problems children meet in growing up; techniques in observing children, and interpreting their behavior. (Open only to candidates for the University Teachers' Certificate—Elementary or Secondary School.) Prerequisite: Junior standing. Staff.

74. THE SCHOOL AND SOCIETY. I, II; 3 cr. Social control of the school. The community school. Democracy and education. Professional status of teachers. (Open only to candidates for the University Teachers' Certificate—Secondary School.) Staff.

75. THE NATURE AND DIRECTION OF LEARNING. I, II; 3, 4 or 5 cr. (4 cr. with 1 cr. in educational practice, applies to majors in Course in Physical Education—Women and Elementary Education; 3 cr. for majors in Recreation and Dietetics; 5 cr. applies to all others, and includes 2 cr. in education practice.) The nature, processes, outcomes, and conditions of learning; organization and direction of pupil learning activities. (Open only to candidates for the University Teachers' Certificate—Elementary or Secondary School.) Prerequisites: Junior standing, Education 73. Staff.

4. MUSIC EDUCATION FOR ELEMENTARY SCHOOLS. I; 2, 3, or 4 cr. Teaching materials and procedures for the development of musical responsiveness through singing, playing, listening and creating; problems of organization and administration of elementary music programs. Lectures, laboratory practice and observation of classroom teaching. Mr. Burns.

5. MUSIC EDUCATION FOR SECONDARY SCHOOLS. II; 2, 3, or 4 cr. The development of music curricula to meet the needs of junior and senior high-school students; problems of teaching and administering high-school music classes and organizations. Lectures, laboratory practice and observation of classroom teaching. Mr. Burns.

14. INTRODUCTION TO RECREATION. I, II; 2 cr. The nature of recreation and its effect on people; history of the movement in America; personal and environmental resources for recreational experience. Mr. Hutchins.

20. TEACHING OF SECRETARIAL SUBJECTS. I; 2–5 cr. Mr. Hosler.

50. TEACHING OF AGRICULTURE. I, II; 2–5 cr. Mr. James, Mr. Bjoraker.

52. TEACHING OF HOME ECONOMICS. I, II; 3–5 cr. Miss Henderson.

62. TEACHING OF ART. II; 2–5 cr. Miss Allcott.

63. DEVELOPMENT AND PRACTICES OF AMERICAN ART EDUCATION. Sem; 2 cr. Present status and practice of general art education as the product of strong art movements and general curricular developments. Mr. Logan.

69. TEACHING OF PHYSICAL EDUCATION (WOMEN). Yr; 6 cr. (4 cr. educational practice, 2 cr. theory.) Practice teaching at two age levels. Prerequisite: Senior major in physical education. Miss Cronin, Miss Bassett, and others.

70. TEACHING OF PHYSICAL EDUCATION (MEN). I, II; 2–5 cr. Mr. Anderson, Mr. Nohr.

76. TEACHING OF ENGLISH. I, II; 2–5 cr. Mr. Shoemaker.

77. TEACHING OF BOOKKEEPING AND THE SOCIAL BUSINESS SUBJECTS. II; 2–5 cr. Mr. Hosler.

81. TEACHING OF FRENCH, GERMAN, ITALIAN, LATIN, AND SPANISH. I, II; 2 or 5 cr. Miss Johnson, Miss Weightman.

84. TEACHING OF HISTORY AND THE SOCIAL STUDIES. I, II; 2–5 cr. Mr. Phillips.

90. TEACHING OF GEOGRAPHY. I, II; 2–5 cr. Mr. Winsor.

93. TEACHING OF MATHEMATICS. II; 2–5 cr. Mr. Mayor.

97. TEACHING OF SCIENCE. I, II; 2–5 cr. Mr. Davis.

113. THEORY AND PRACTICE OF GROUP LEADERSHIP. Yr; 2–3 cr. Importance and meaning of group experience. Needs of group members. Qualities of leadership. *Section A, 3 credits,* field work in selected recreational agencies. *Section B, 2 credits,* class work only. Prerequisites: Senior standing, demonstrated leadership ability, and consent of instructor.

114. The Organization of Recreation Services. I, II; 3 cr. Recreation services at the federal, state, county and community levels; organization of community recreation services under public and private auspices; administrative problems inherent in the provision of these services. Mr. Hutchins.

156. Teaching Home-making in Schools of Vocational and Adult Education. I, II; 2 cr. Miss Henderson.

198. Speech in the High School. I, II; 2 or 5 cr. Methods for adapting the speech program to large or small rural or city high schools. Individual training, the special class, integration with other subject matter fields, and the extra-curricular program. Miss Borchers.

CLASSIFICATION OF ADVANCED COURSES

A. Educational Foundations
   - Field I. Human Development, Behavior, and Learning
   - Field II. Educational Survey, Theory and Criticism
   - Field III. Measurement, Statistics, and Research Procedures

B. Educational Functions
   - Field IV. Administration and Supervision
   - Field V. Curriculum Planning and Teaching of School Subjects
   - Field VI. Educational Diagnosis and Remediation
   - Field VII. Guidance and Personnel Services

C. Individual Study.

EDUCATIONAL FOUNDATIONS

FIELD I. HUMAN DEVELOPMENT, BEHAVIOR, AND LEARNING

118. Human Abilities and Learning. I, II; 3 cr. Principles and techniques of learning; individual differences in education. Prerequisite: Education 75. Mr. Ragsdale.

119. Human Development in Infancy and Early Childhood. I; 3 cr. An advanced course dealing with the behavior and development of children up to adolescence. (Not open to students who have had, or are taking Psychology 147.) Mr. Jensen.

120. Human Development in Adolescence. II; 3 cr. Physical, physiological, social, and mental changes which characterize the transition from childhood to adult life. Mr. Jensen.

123. Early Childhood Education. (See Field V.)

124. Education for Self-adjustment. Sem; 3 cr. An exploration and evaluation of verbal responses, action patterns, and problem-solving techniques which maintain and foster integrity of the self.

125. Nature of the Exceptional Child. II; 3 cr. Psychological nature of mental, social, and physical deviates.

153. Conceptual Learning. Sem; 3 cr. Nature and development of generalization, meaning, and transfer in complex forms of learning involving the higher mental processes.

179. Field Work in Child Development.

206 (formerly 107). Laboratory Study of School Learning Problems. II; 2 cr. Experimental study of individual and group learning processes; development of laboratory techniques; interpretation of laboratory data.

207. Field Study of School Learning Problems. I, II; 2 cr. Systematic study of school learning problems in actual school situations. Staff.

208. Foundations of Student Adjustment. I, II; 3 cr. Principles and facts of human nature underlying the development of adjustment; motivation, nature and organization of ability; socio-psychological factors. Mr. Ragsdale.

209. Modern Psychological Theories and Education. II; 3 cr. Critical study of the

educational implications of conflicting psychological theories and systems. Prerequisite: Education 118. Mr. Ragsdale.

210 (formerly 176). Theory and Practice of Learning. II; 3 cr. Study of current experimental and theoretical literature having implications for the conduct of school learning. Mr. Ragsdale.

219. Seminar in Child Development. Yr; 2 cr. Mr. Jensen.

249. Seminar in Educational Psychology. Yr; 2 cr. Mr. Ragsdale.

FIELD II. EDUCATIONAL SURVEY, THEORY, AND CRITICISM

104. Social History of Education. I; 3 cr. Survey of school development from early times to the present. Previous courses in the history of western civilization will be helpful. Mr. Willing.

106. Comparative Education. II; 2–3 cr. Survey of foreign school systems, especially those of France, Germany, England, Russia, and Latin America. Mr. Willing.

108. History of Educational Theory and Criticism. I; 3 cr. Reading and discussion of educational classics. Education 104, though not a prerequisite, is a desirable foundation for this course. Mr. Willing.

115. Social Issues and Education. II; 3 cr. Contemporary social issues or problems and their significance for educational purposes and practices. Mr. Krug.

155. Principles of Adult Education. I; 2–3 cr. Philosophy and practice of adult education as evidenced through programs of forums, discussion groups, institutes, extension and correspondence courses, evening-school programs. Mr. Kreitlow.

168. Rural Education: Community Backgrounds. II; 3 cr. Influences of rural community life on the educational program. Principles involved in determining educational needs and in making needed adaptations in rural schools. Mr. Kreitlow.

209. Modern Psychological Theories and Education. (See Field I.)

215. The Educational Thought of John Dewey. II; 2–3 cr. Study of *Democracy and Education* and other educational writings of John Dewey. Mr. Willing.

217. Modern Pilosophies of Education. I; 3 cr. Critical comparison of present-day schools of thought on the nature, objectives, and functions of American education. Mr. Willing.

218. Seminar in Educational Theory and Criticism. II; 2 cr. Special problems and assignments. Prerequisite: Education 108, 115, 209, or 217. Mr. Willing.

220. Issues in Rural Education. I, II; 3 cr. Survey and analysis of major issues and problems confronting rural education. Implications for rural life. Evaluation of proposed solutions. Mr. Kreitlow.

221. Issues in Secondary Education. Sem; 3 cr. Analysis of the major issues or problems in secondary education today. Implications for secondary school organization, administration, and curriculum planning. Mr. Krug.

222. Issues in Elementary Education. I; 2–3 cr. Critical survey of issues and trends; their social, educational bases; implications for elementary schools; examination and analysis of major problems. Mr. Herrick, Mr. Eberman.

248. Seminar in Recent Developments in Higher Education. Yr; 2 cr. Mr. Little.

271 (formerly 268). Financial Support of Public Education. I; 3 cr. Contemporary bases for raising and distributing Federal, state, and local funds for public education. Previous courses in economics, especially in finance, recommended. Mr. Peterson.

FIELD III. MEASUREMENT, STATISTICS, AND RESEARCH PROCEDURES

111. Principles of Appraisal and Evaluation in Education. II; 3 cr. Introduction to a general theory of appraisal that is applicable to such aspects of a school as its equipment, personnel, teaching practices, administrative organization, etc. Principles of organizing, conducting, and interpreting the findings of an evaluation program. Mr. C. Harris.

112. Statistical Method Applied to Education. I; 3 cr. An introductory course in descriptive statistics; measures of central tendency and variability; correlational techniques; and related topics. Mr. Barr.

131. Foundations of Educational Measurement. I; 3 cr. Introduction to a theory of mental measurement, with particular reference to measuring or assessing intelligence and personality. Problems of reliability, objectivity, validity, types of scales, types of norms, etc., will be considered. Mr. C. Harris.

201. Techniques of Educational Research. II; 3 cr. Reading and interpretation of research literature; study of research methods; and planning of research studies. Mr. Barr.

211. Factor Analysis. I; 3 cr. Introduction to factor theory; survey of contributions of Spearman, Holzinger, Thurstone, Hotelling, Kelley, etc. Mathematical relationships among different types of solutions. Application of factor methods in educational research. Mr. C. Harris.

212. Advanced Statistical Techniques as Applied to Education. II; 3 cr. Design of educational experiments; analysis of variance; co-variance; Chi-square and other tests; regression theory as relating to experimental analysis; and related topics. Mr. Barr.

213. Statistical Analysis and Design in Educational Research. II; 3 cr. Survey of major types of statistical design in educational research. Various types of correlation analysis, random vs. cluster sampling procedures, sequential analysis, and the like will be treated. Mr. C. Harris.

225. Test Construction. I; 3 cr. Principles of test construction and test validation. Methods of studying and improving written examinations, performance tests, anecdotal records, etc. Mr. C. Harris.

226. Seminar in Measurement, Statistics, and Research Techniques. Yr; 2 cr. For advanced students pursuing research in this area. Mr. C. Harris.

EDUCATIONAL FUNCTIONS

FIELD IV. ADMINISTRATION AND SUPERVISION

193. Introduction to Supervision: The Planning and Evaluation of Educational Programs. II; 3 cr. Class discussion; field trips and observation. Mr. Barr, Mr. Eye.

261. National, State, and County School Administration. I; 3 cr. Mr. Gregg.

262. Local School Administration. II; 3 cr. Mr. Gregg, Mr. Eye.

263. Administration of Teacher Personnel. 2–3 cr. Basic considerations in personnel relationships, methods, and problems. Mr. Eye.

268 (formerly 271). Business Administration in Local School Systems. II; 3 cr. Financial accounting; unit costs, financial reports, insurance; depreciation; budgetary procedure and school budgets. Mr. Gregg, Mr. Peterson.

271 (formerly 268). Financial Support of Public Education. (See Field II.)

272. School Building and School-Building Programs. II; 2–3 cr. Determination of school-plant needs based upon educational program, population, and utilization studies. Evaluation of existing school plant. Mr. Gregg.

275. Legal Aspects of School Administration. I; 3 cr. The legal character of the public school corporation. Legal authority, powers, and liabilities of school personnel. Legal con-

trol of school finances, curriculum, property. Especial emphasis on state and Federal court decisions. Mr. Peterson.

278. SEMINAR IN SCHOOL ADMINISTRATION. I, II; 2 cr. For advanced students and others pursuing research problems. Mr. Gregg.

FIELD V. CURRICULUM PLANNING AND TEACHING OF SCHOOL SUBJECTS

GENERAL CURRICULUM PLANNING

174. INTRODUCTION TO CURRICULUM PLANNING. I; 2–3 cr. The concept of curriculum in modern American education. Foundation principles and major objectives. Mr. Willing, Mr. Krug.

175. PRACTICES OF CURRICULUM PLANNING. I; 3 cr. Development of curriculum guides and teaching aids. Use of teaching aids in pupil-teacher planning. Organization of curriculum programs on the state-wide basis and in local school systems. Prerequisite: Education 174 or consent of instructor. Mr. Willing, Mr. Krug, Mr. Liddle.

244. SEMINAR IN CURRICULUM CONSTRUCTION. II; 2 cr. Opportunity to develop curriculum materials or work on individual problems in curriculum. Prerequisite: Consent of instructor. Mr. Krug.

CURRICULUM PLANNING AT SCHOOL LEVELS

123. EARLY CHILDHOOD EDUCATION. I, II; 2–3 cr. Trends, principles and methods in the education of preschool children. Miss Dawe.

140. ELEMENTARY SCHOOL CURRICULUM. II; 3 cr. Basic concepts of elementary education; the relation of the elementary pupil to the curriculum; newer developments in each area. Mr. Herrick.

147. CURRICULUM PROBLEMS AND PRACTICES IN KINDERGARTEN-PRIMARY EDUCATION. 3 cr. A study of the basic theories and principles underlying kindergarten-primary education; modern trends in the education of children at this level; study of materials of instruction and techniques of teaching recommended for kindergarten-primary grades. Miss Bachman.

240. SEMINAR IN ELEMENTARY EDUCATION. Yr; 2 cr. Mr. Herrick.

141. SECONDARY SCHOOL CURRICULUM. I; 2–3 cr. Social function of the secondary school; recent developments; historical development of the curriculum; types of curricula; relation of the curriculum and the extra-curriculum; preparation of units of instruction. Mr. Krug, Mr. Liddle.

157. PART-TIME EDUCATION. 3 cr.

CURRICULUM PLANNING AND INSTRUCTIONAL MATERIALS

163. CLASSROOM USE OF RADIO AND TELEVISION. 2–3 cr.

165. METHODS IN AUDIO-VISUAL INSTRUCTION. Section 165E, as applied to elementary education; section 165S, as applied to secondary education; section 165C, as applied to adult education. The role of and selection and use of audio-visual teaching materials. Consideration given to the chalkboard, community study, graphics, three-dimensional materials; maps, globes, and charts; classroom radio, classroom television, 16mm. sound film, still projection devices, tackboard and study displays. Emphasis on effective utilization of audio-visual materials. Prerequisite: Consent of instructor. Mr. Wittich, Mr. Allen, Mr. Iverson, Mr. White.

166A. LOCAL PRODUCTION OF AUDIO-VISUAL MATERIALS. 2–3 cr. Designed for teachers, audio-visual directors, and others interested in laboratory experience in production of photographic slides, view-graph cells, models, terrain maps, filmstrips, and 16mm. sound motion pictures. Emphasis on course-of-study implementation through production techniques feasible at the local level. Camera required. Prerequisite: Consent of instructor. Mr. Wittich, Mr. Allen, Mr. Iverson, Mr. White.

166B. Local Production of Audio-Visual Materials. 2–3 cr. Survey and practice of techniques in the production of 16mm. sound film for educational and instructional purposes via straight projection or TV means. The following steps in the production of 16mm. silent and sound motion-picture film: Research and authentication, script writing, direction and photography, cutting and editing, sound: narrative, environmental, sync and post sync; and finally conforming. Prerequisite: Consent of instructor. Equipment: 16mm. semi-professional motion-picture camera recommended. Mr. Wittich, Mr. Allen, Mr. Iverson, Mr. White.

265. Seminar in Audio-Visual Education. 2 cr. Primarily to offer further study of problems involved in the administration and supervision of audio-visual instruction. Opportunity for wide reading and specific problem consideration. Prerequisite: Education 165 or consent of instructor. Mr. Wittich, Mr. White.

Curriculum Planning in Relation to Teaching Procedures and Teacher Education

235. Seminar in the Development and Improvement of Teaching Methods. Yr; 2 cr. Criticism and report upon current methods of teaching; planning experimental studies of teaching methods and related topics. Mr. Barr.

245. Seminar in the Pre-Service and In-Service Education of Teachers. Yr; 2 cr. For advanced students interested in problems of teacher education. Mr. Barr.

290. Field Practice in Supervision, Curriculum, and Method. I, II; 2–3 cr. Designed to supply first-hand experience in supervision, curriculum making, and teaching through directed field practice. Students assigned to co-operating schools and activities according to needs. Staff.

Curriculum Planning and Instruction in the School Subjects:

Art:

171. Contemporary Practices in Art Education. Sem; 3 cr. Recent experimental and theoretical developments in art education, analyses of standard teaching techniques and practical adaptation for classroom use of specific new art methods and mediums. Prerequisite: Graduate standing or teaching experience. Staff.

Business Education:

121. Improvement of Instruction in Shorthand and Typewriting. I; 3 cr. Problems in development of occupational proficiency in shorthand and typewriting; achievement and aptitude tests; standards of achievement; integration of shorthand, typewriting, English, and style. Prerequisite: Teaching experience. Mr. Hosler.

159. Teaching Distributive Education Subjects. 3 cr.

160. Organization of Distributive Education Programs. 3 cr.

162. Improvement of Instruction in the Basic Business Subjects. 3 cr. A course for teachers of basic business subjects. Objectives, instructional materials available, teaching techniques, and testing procedures. Analysis of research in the field. Mr. Hosler.

173. Basic Principles of Business Education. II; 3 cr. Philosophy of business education; administrative and supervisory problems; department organization; guidance, placement, and follow-up practices; and the critical analysis of research in business education. Mr. Hosler.

English Language and Literature:

133. Reading in the Elementary School. I; 2–3 cr. Problems arising in a well-rounded reading program; development of basic reading abilities and skills; improvement of attitudes and tastes, adjusting materials and methods to individual needs.

142 (formerly 233). Reading in the Secondary School. II; 3 cr. The development and

evaluation of effective reading habits, especially in the content fields, in junior and senior high schools. Mr. T. Harris.

146. Children's Literature. 3 cr. To acquaint students with the best books for children through wide reading and interpretive study of literature of all time. Evaluation and use of current materials. Miss Bachman, Miss Rhue.

158. Directing Instruction in the Language Arts. II; 3 cr. Mr. Pooley.

177. New Perspectives in the Teaching of English. 3 cr. For teachers of secondary school English and language arts; application of language knowledge to the improvement of skills and attitudes needed for growth in reading, writing, speaking, and listening; consideration of an effective growth curriculum in language arts. Mr. Shoemaker.

178. Current Approaches to the Teaching of Literature in Secondary Schools. 3 cr. Consideration of various types of organization and approaches to literature which will contribute toward the development of values important to high-school students. Evaluation of types of literature and methods of presentation. Mr. Shoemaker.

194. Language Arts in the Elementary School. I; 2–3 cr. Survey and critical appraisal of programs and practices; development of criteria for planning and evaluating language arts programs by staff or individual teachers; specific study of individual problems; summary and evaluation of investigations and trends. Miss Bachman, Mr. Estvan.

Foreign Languages:

187. Advanced Problems in the Teaching of Foreign Languages. 2–3 cr. Intended for teachers with experience. Preparation of teaching units. Use of audio-visual aids. Miss Johnson.

196. Foreign Language Workshop. 3 cr. This course is offered in summers as a three-week course with separate sections for Latin, French, German, and Spanish. It is concerned with the cultures of the countries and with the literature in these languages as well as with teaching problems. The workshop is offered jointly by the Department of Education and the language departments of the College of Letters and Science.

Health:

169. Health Information for Teachers. 3 cr. Basic scientific health knowledge and its application to the total school program. Prerequisite: Consent of instructor. Mr. Southworth.

170. School and Community Health Problems. 3 cr. Analysis of child health problems, and ways of solving these problems through home, school, and community planning and action. Dr. Southworth.

197. Problems and Materials in Health Education. 3 cr. Principles, materials, and techniques of health education in elementary and secondary schools. Special emphasis on sex education. Prerequisite: Junior standing or consent of instructor. Dr. Southworth.

Home Economics:

154. Home Economics in Vocational Programs. 2 cr. An advanced course for teachers in vocational home-making programs; planned to fit the needs of those eligible for higher classification. Miss Henderson.

156. Teaching Home-making in Schools of Vocational and Adult Education. I, II; 2 cr. Miss Henderson.

188 (formerly 288). Curriculum Studies in Home Economics Education. 3–4 cr. Opportunity for experienced teachers to do intensive work on selected problems related to the teaching of home economics. Miss Henderson, Miss Zuill, Miss Dalrymple.

288 (formerly 188). Seminar in Home Economics Education. I; 2 cr. Miss Zuill, Miss Dalrymple.

MATHEMATICS:

164. INVESTIGATIONS IN THE TEACHING OF ARITHMETIC. 2–3 cr. Mr. Mayor, Mr. Eberman, Miss Rhue.

192. STUDIES IN CURRICULUM AND INSTRUCTION IN MATHEMATICS. II; 3 cr. Mr. Mayor.

MUSIC:

102. STUDIES IN CURRICULUM AND INSTRUCTION IN SCHOOL MUSIC. II; 3 cr. Problems in curriculum development and the psychological factors which determine procedures in school music teaching. Prerequisite: Teaching experience. Mr. Burns.

105a. THE SCHOOL BAND; PROBLEMS IN DIRECTING AND ADMINISTERING. 2 cr. A seminar and laboratory course dealing with the development of school bands; individual problems and research. Prerequisite: Teaching experience. Mr. Dvorak, Mr. Marcouiller.

105b. THE SCHOOL BAND; MARCHING PARADES AND PAGEANTRY. 2 cr. Outdoor activities of the school band; purpose and values; precision drills, maneuvers and field formations. Prerequisite: Teaching experience. Mr. Dvorak, Mr. Marcouiller.

109. MUSIC IN THE ELEMENTARY SCHOOL. 3 cr. Mr. Burns.

110. TEACHING OF MUSIC APPRECIATION IN SECONDARY SCHOOLS. 3 cr. Mr. Burns.

202. SEMINAR IN MUSIC EDUCATION. 2 cr. Planned primarily for Master's and Doctoral candidates having a joint major in Music and Education. Topics include discovering broad problems in the field of Music Education; breaking down a broad problem into workable segments for study; developing a bibliography on the problem; techniques for covering bibliographic references and for recording, filing and utilizing data; applicability of various research techniques to the problem. Mr. Petzold.

SCIENCE:

135. SCIENCE IN THE ELEMENTARY SCHOOL. I; 3 cr. Mr. Pella.

137. ADVANCED PROBLEMS IN SCIENCE EDUCATION. II; 3 cr. Mr. Davis.

237. SEMINAR IN SCIENCE EDUCATION. 2 cr. Research methods in improving instruction in elementary and secondary education. Mr. Davis.

SOCIAL STUDIES:

132. SOCIAL STUDIES IN THE ELEMENTARY SCHOOL. I; 2 cr. Survey and critical appraisal of programs and practices; development of criteria for planning and evaluating social studies programs by staff or individual teachers; specific study of individual problems; summary and evaluation of investigations and trends. Mr. Estvan.

185. ADVANCED PROBLEMS IN THE TEACHING OF HISTORY AND THE OTHER SOCIAL STUDIES. II; 2 cr. Mr. Phillips.

190. STUDIES IN CURRICULUM AND INSTRUCTION IN GEOGRAPHY. II; 3 cr. Mr. Winsor.

291. SEMINAR IN THE TEACHING OF HISTORY AND GEOGRAPHY. Mr. Phillips, Mr. Winsor.

SPEECH:

189. SPEECH IN THE ELEMENTARY SCHOOL. 2–3 cr.

198. SPEECH IN THE HIGH SCHOOL. I; 2 or 5 cr. Methods for adapting the speech program to large or small rural or city high schools. Individual training, the special class, integration with other subject-matter fields, and the extra-curricular program. Miss Borchers.

299. SEMINAR IN SPEECH EDUCATION. 2 or 4 cr. History of speech teaching in the United States. Implications for the teaching of speech derived from scientific research. Miss Borchers.

PRACTICE TEACHING:

186. PRACTICE TEACHING (COLLEGE LEVEL). Yr; 2 cr. Prerequisite: Graduate assistantship in the department of the major.

FIELD VI. EDUCATIONAL DIAGNOSIS AND REMEDIATION

122. Diagnosis and Treatment of Pupil Adjustment Difficulties. I; 3 cr. Identification, treatment, and prevention of problem behavior in schools. Mr. T. Harris.

125. Nature of the Exceptional Child. (See Field I.)

126. Quantitative Techniques in Educational Diagnosis. II; 2–3 cr. Selection, use and interpretation of tests and other instruments of appraisal in diagnosing and guiding pupil behavior. Mr. T. Harris.

127. Remedial Reading. I, II; 3 cr. Principles and techniques of diagnosis and remediation of reading disability. Mr. T. Harris.

128. Binet and Wechsler Testing. I, II; 3 or 5 cr. Instruction and practice in the use of the revised Binet and Wechsler-Bellevue Scales of Intelligence. Mrs. Arnold.

130. Measurement of the Physically Handicapped. II; 3 cr. Instruction and practice in the use of intelligence, achievement, and other tests for the deaf, blind, crippled, and multiple handicapped. Prerequisites: Education 128 and consent of instructor. Mrs. Arnold.

139 (formerly 151). Education of the Mentally Handicapped. 3 cr.

144. Education of the Partially Seeing Child. 3 cr.

145 (formerly 152). Hearing Rehabilitation. 3 cr.

148 (formerly 134). Practice in Reading Clinic. II; 4 cr. Two hours participation daily in the summer reading clinic. Grades 3 to 12. Prerequisite: Education 127 or consent of instructor. Mr. T. Harris.

149 (formerly 127). Practice in Psycho-Educational Clinic. I, II; 2 cr. Practice in the clinical testing of children, case studies, interviewing, staffing cases, parent and teacher conferences. Prerequisites: Education 128 and consent of instructor. Mrs. Arnold.

182. Advanced Clinic in Speech. 1–3 cr. Mr. Irwin and staff.

230. Seminar in Educational Diagnosis and Remediation. I, II; 2 cr. Mr. T. Harris.

FIELD VII. GUIDANCE AND PERSONNEL SERVICES

176 (formerly 184). Introduction to Guidance and Personnel Services. I, II; 2–3 cr. Policies and practices of organized guidance for school and college levels. Social, educational, and vocational adjustment problems and needs of urban and rural youths. Section 1, graduate students. Section 2, undergraduate students. Mr. Edgerton.

181. Techniques of Guidance and Personnel Services. I, II; 2–3 cr. Methods and standards of interviewing, counseling, case study, testing, recording, orientation, exploration, occupational study, educational information, training, placement, follow-up and supplementary guidance and personnel techniques. Section 1, graduate students. Section 2, undergraduate students. Mr. Edgerton, Miss Low.

183. Job and Occupational Analysis. I, II; 2–3 cr. Basic principles, types, and methods of purposeful analysis appropriately applied to personnel, guidance, and educational problems. Mr. Edgerton.

281 (formerly 285). College Guidance and Personnel Services. II; 2–3 cr. Critical studies of trends and objectives in organizing and administering student personnel activities in institutions of higher learning with special emphasis on individual development services. Mr. Edgerton.

282. Clinical Studies in Guidance. I, II; 2–3 cr. Intensive individual studies of normal youth and those who have difficulties in and out of school. Some opportunity for practical work with youth. Mr. Rothney.

283. Field Work in Guidance and Personnel Services. 2–6 cr. Mr. Edgerton.

284. Seminar in Guidance and Personnel Services. Yr; 2 cr. Analysis of trends and

research in individual counseling, exploratory activities, occupational studies, testing procedures, cumulative records, case studies career preparation, job placement, and employment supervision. Mr. Edgerton.

C. INDIVIDUAL STUDY

The following courses are designed for individuals and small groups engaged in special study. Credit, meetings, and the nature of the study are to be arranged with the staff member chosen to supervise the study.

INDEPENDENT READING:

180. INDEPENDENT READING. Sem. Staff.

280. INDEPENDENT READING. I, II. For the benefit of superior graduate students unable to secure needed content in regular courses. Staff.

RESEARCH OR THESIS:

200. RESEARCH OR THESIS. I, II. Staff.

FIELD WORK AND CLINICAL PRACTICE:

148. PRACTICE IN READING CLINIC. (See FIELD VI.)

149. PRACTICE IN PSYCHO-EDUCATIONAL CLINIC. (See FIELD VI.)

179. FIELD WORK IN CHILD DEVELOPMENT. (See FIELD I.)

207. FIELD STUDY OF SCHOOL LEARNING PROBLEMS. (See FIELD I.)

283. FIELD WORK IN GUIDANCE AND PERSONNEL SERVICES. (See FIELD VII.)

290. FIELD PRACTICE IN SUPERVISION, CURRICULUM, AND METHOD. (See FIELD V.)

PRACTICE TEACHING:

186. PRACTICE TEACHING (COLLEGE LEVEL). (See FIELD V.)

PHYSICAL EDUCATION—MEN

PROFESSORS MANSFIELD, NOHR, *chairman*, RARICK, SOUTHWORTH; ASSOCIATE PROFESSORS FRANCIS, MARTIN, RIPPE, SANGER; ASSISTANT PROFESSORS ANDERSON, BAUER, BEST, WOLF; INSTRUCTORS HICKMAN, JOACHIM, METZEN.

Courses 59, 159 and 164 may be elected by students for credit in the School of Education.

2. PHYSIOLOGY (PHYSICAL EDUCATION—MEN). Sem; 4 cr. Dr. Joachim. (See PHYSIOLOGY 2.)

6. PHYSICAL EDUCATION ACTIVITIES. Sem; 0 cr. Orientation. Proficiency in archery, golf, swimming, and volleyball. Staff.

7. PHYSICAL EDUCATION ACTIVITIES. Sem; 0 cr. Proficiency in badminton, handball, conditioning exercises, and softball. Staff.

8. PHYSICAL EDUCATION ACTIVITIES. Sem; 0 cr. Proficiency in tennis, football, apparatus, tumbling and basketball. Staff.

9. PHYSICAL EDUCATION ACTIVITIES. Sem; 0 cr. Proficiency in wrestling, boxing, track and field, and baseball. Staff.

10. TECHNIQUES AND MATERIALS IN PHYSICAL EDUCATION. Sem; 1–3 cr. Football theory, basketball theory, graded class materials. Staff.

11. TECHNIQUES AND MATERIALS IN PHYSICAL EDUCATION. Sem; 1–3 cr. Baseball theory, rules and officiating, wrestling, swimming, winter sports. Staff.

12. TECHNIQUES AND MATERIALS IN PHYSICAL EDUCATION. Sem; 1–3 cr. Advanced program, football coaching, basketball coaching and boxing. Staff.

13. Techniques and Materials in Physical Education. Sem; 1–3 cr. Track coaching, rhythmics, coaching minor sports. Staff.

16. First Aid and Safety Education. Sem; 1–2 cr. The American Red Cross Certificate will be issued to all who complete the course satisfactorily. Mr. Sanger.

17. Athletic Conditioning and Training. Sem; 1 cr. Open to majors and minors. Mr. Bakke.

23. Technique of Basketball. Sem; 1 cr. Open only to physical education minors. Mr. Mansfield.

29. Technique of Football. Sem; 1 cr. Open only to physical education minors. Mr. Mansfield.

39. Human Anatomy (Physical Education—Men). Sem; 4 cr. Dr. Joachim. (See Anatomy 39.)

58. Kinesiology. Sem; 2 cr. Prerequisite: Human anatomy. Mr. Wolf.

59. Nature, Function and Organization of Play. Sem; 3 cr. Mr. Anderson.

71. Camp Administration and Scouting. Sem; 3 cr. Mr. Anderson, Mr. Martin.

103. Physiology of Exercise. Sem; 3 cr. (See Physical Education 103—Women.)

119a. School Health Examination. Sem; 3 cr. Prerequisites: Anatomy 39, Physiology 2. Mr. Francis.

119b. Physical Education for the Handicapped. Sem; 2 cr. Prerequisite: Physical Education 119a. Mr. Francis.

129. Tests and Measurements in Physical Education. Sem; 2 cr. Miss Glassow.

130. Measurement in Physical Education. Sem; 2 or 3 cr. Mr. Wolf.

159. Play, Recreation and Leisure-Time Problems. Sem; 2 cr. Prerequisite: Physical Education 59 or consent of instructor. Mr. Wolf.

164. School Health and Hygiene. Sem; 3 cr. Prerequisites: Anatomy 39, Physiology 2 or consent of instructor. Mr. Southworth.

168. Organization and Administration of Physical Education. Sem; 2 cr. Prerequisite: Senior or graduate standing or consent of instructor. Mr. Nohr.

178. Physical Education for Elementary and Secondary Schools. Sem; 2 cr. Prerequisite: Senior or graduate standing. Mr. Nohr.

180. Advanced Independent Study. Sem; *cr. Open only to upper-group students of senior rank. Staff.

200. Research. Sem; *cr. Mr. Francis, Mr. Wolf, Mr. Rarick.

263. Problems in Health Education, Recreation, Safety and Other Allied Fields. Sem; 2 cr. Mr. Francis.

291. Problems in Physical Education. Sem; 2 cr. Mr. Francis.

293. Seminar in Research Studies in Physical Education. Sem; 2 cr. (Required of all candidates (Men) for the Master's Degree in Physical Education and in the joint major in Education and Physical Education.) Mr. Nohr.

TEACHER'S COURSE

Education 70. The teaching of physical education. Sem; 2–5 cr. (See Education 70, page 384.) Mr. Nohr, Mr. Anderson.

PHYSICAL EDUCATION—WOMEN

PROFESSORS CARNS, *chairman*, GLASSOW, H'DOUBLER, RARICK; ASSOCIATE PROFESSORS BASSETT, CRONIN, KLOEPPER, SCHADE; INSTRUCTORS EASTHAM, FEE, FOX, FRITZ, GENTHER, GROSS, HAWES, HALVERSON, HOLMES, MARTIN, MORTIMER, SHAFER, SLOAN, UPCHURCH, WALSH.

A student who is not a major or a minor in Physical Education may take starred (*) courses only with the consent of the instructor and the approval of the dean of the college in which the student is enrolled.

*30, *31, *32, *33. PHYSICAL EDUCATION THEORY, PRACTICE AND TECHNIQUE. Yr; 1–4 cr. each. Staff.

*35, *36, *37, *38. THEORY AND PRACTICE OF DANCE TECHNIQUE. Yr; 1–2 cr. each. Special emphasis is placed on the kinesthetic approach to the study of movement as experience. Miss H'Doubler, Miss Kloepper.

40. GROUP DANCE AND RHYTHMS FOR CHILDREN. (a) Group dance. I; 1 cr. Miss Eastham. (b) Rhythms for children. II; 1 cr. Miss Bassett.

41. DANCE TECHNIQUE FOR GENERAL MAJORS. II; 1 cr. Miss Kloepper.

56. KINESIOLOGY. II; 3 cr. Principles of body mechanics; the role of the skeletal, muscular and nervous systems in movement and skill. Prerequisites: Human anatomy, physics. Miss Glassow.

60. MOVEMENT AND ITS RHYTHMIC STRUCTURE. I; 2–3 cr. The study of kinesthetic perception as the basis of rhythmic perception. Analysis of rhythmic elements inherent in movement and the appreciation of their organization as the basis of form in all motor activity. Miss H'Doubler, Miss Kloepper.

*61. DANCE SUMMARY. I; 2 cr. Theory and practice. Participation in the presenting of movement as creative dance experience. Staff.

69. THE TEACHING OF PHYSICAL EDUCATION (EDUCATION 69). Yr; 6 cr. (4 cr. educational practice; 2 cr. theory.) Student teaching at two or three age levels. Prerequisites: Education 75 and technique courses in physical education activities including dance. Miss Cronin, Miss Bassett, Miss Purves.

*81. CAMPCRAFT. I; 1–2 cr. Fall term, 1 cr. Pioneer camping, organization of trips, outdoor cooking, counselor responsibilities. Miss Holmes. Winter term, 1 cr. Arts and crafts. Mr. Vierthaler.

90. ORIENTATION TO PHYSICAL EDUCATION. I; 3 cr. Consideration of basic structures of human body; principles of mechanics involved in bodily movement; physiological responses to physical activities. Mr. Rarick.

103. PHYSIOLOGY APPLIED TO PHYSICAL EDUCATION ACTIVITIES. II; 2–3 cr. A study of the physiological changes which occur in the various systems of the body during exercise, with some practical experience in measuring and observing. Prerequisite: Physiology. Mr. Rarick.

121. PHYSIOLOGICAL EFFECTS OF MOTOR ACTIVITY. The influence of physiological variations upon motor performance. Prerequisite: Physical Education 103 or consent of instructor. Mr. Rarick.

129. TESTS AND MEASUREMENTS IN PHYSICAL EDUCATION. I; 2 cr. Measurement as a functional part of method; its relation to objectives and to analysis. Criteria for selection of tests for the classroom; statistics for the classroom. Development of tests in skill and knowledge. Evaluation of pupil behavior. Miss Glassow.

130. TESTS AND MEASUREMENTS. I; 2 cr. Tests for motor ability and physical fitness; anthropometric measures. Statistics involved in the construction of tests including more than one factor. Prerequisite: Physical Education 129 or consent of instructor. Miss Glassow.

133. Dance Accompaniment (Percussion). I; 2–3 cr. Development of percussion techniques in relation to dance. Improvisation and composition. Prerequisite: Physical Education 60. Given 1952 and in alternate years. Miss Kloepper.

134. Dance Accompaniment (Music). II; 2–3 cr. Relationship between structure and expression in music and dance. Improvisation for dance techniques. Composition. Musical repertoire for dance. Prerequisites: Physical Education 133, Music 1. Mrs. Genther.

146. Theory and Philosophy of Dance. II; 3 cr. A clarification of the meaning of dance, its justification as an educational and creative art activity; its place in the curriculum, a theory of art technique. Prerequisites: Psychology, philosophy, and consent of instructor. Miss H'Doubler.

*147. Teaching of Dance to Children. 2 cr.

*148. Physical Education Curriculum in Elementary Schools. II; 2 cr. The role of physical education in childhood education; a basic curriculum related to age characteristics and needs; evaluation of common practices. Laboratory work in teaching methods (optional). Prerequisite: Teaching experience. Miss Cronin.

156. Advanced Kinesiology. II; 2–3 cr. Prerequisite: Physical Education 56 or consent of instructor. Miss Glassow.

160. Dance Composition (Elementary). II; 2–3 cr. Includes the study of basic principles of form and their application to dance composition. Prerequisite: Physical Education 60. Miss Kloepper.

165. Dance Composition (Advanced). I; 2–3 cr. The study and analysis of content and its psychological bearing on the resulting style and form. The problems of solo and group composition and directing. Prerequisite: Physical Education 160. Given 1953 and in alternate years. Miss Kloepper.

168. Organization and Administration of Physical Education. I; 2 cr. Typical administrative problems of the teacher of physical education. Departmental policies. Local, sectional and national organizations. Prerequisite: Senior standing in the Department of Physical Education for Women or consent of instructor. Miss Bassett, Miss Cronin.

169. Health Information for Teachers of Physical Education. (Education 169.) II; 3 cr. Discussion of subjects vital to health, with emphasis on the role of the teacher of physical education as a constructive participant in a total school health program. Prerequisites: Junior standing in the Department of Physical Education for Women; human anatomy and physiology. Dr. Carns.

174. Supervision in Physical Education. II; 2 cr. Duties of the supervisor, planning and evaluating the supervisory program. Practice in observing and evaluating teaching and in devising observation techniques. Prerequisite: Consent of instructor. Miss Cronin.

176. Therapeutic Gymnastics. II; 2 cr. Discussion of posture deviations. Analysis and practice of exercises for therapeutic purposes. Discussion of the restricted program. Prerequisites: Human anatomy and kinesiology. Miss Schade.

*177. Principles of Relaxation. I; 2 cr. Theory and practice of a specific technique of relaxation. Discussion of other methods. Prerequisites: Human anatomy, physiology, psychology or consent of instructor. Miss Schade.

180. Independent Study. Yr; *cr. Prerequisite: Open only to graduate and upper-group students of senior rank. Staff.

181. Thesis Course in Dance. Yr; *cr. Historical survey of the cultural background of dance in various civilizations with special emphasis on the relation of social structure to the existing dance forms. Preparation and presentation of a lecture-demonstration in dance. Prerequisite: Dance major or consent of instructor. Miss Kloepper, Mrs. Genther.

184. Age Characteristics in Motor Skills. I; 2 cr. Motor development from birth to

maturity with emphasis upon adolescent years; factors contributing to individual differences in motor abilities. Prerequisite: Junior standing. Mr. Rarick.

189. PHYSICAL EDUCATION CURRICULUM FOR JUNIOR AND SENIOR HIGH-SCHOOL GIRLS. I; 2 cr. Prerequisite: Consent of instructor. Miss Cronin.

200. RESEARCH IN PHYSICAL EDUCATION. Staff.

201. FOUNDATIONS OF MOTOR SKILL. (a) I; 2 cr. Kinesthetic perception, its basis and relationship to the learning of motor skill; techniques by which understanding of body mechanics and kinesthetic sensitivity can be increased. Miss Glassow, Miss Schade. (b) II; 2 cr. The nature of rhythmic perception and its relation to kinesthetic perception and to teaching. Miss H'Doubler.

202. RESEARCH PROCEDURES AND CRITICAL ANALYSIS OF PROFESSIONAL LITERATURE. (a) I; 2 cr. Library research applied to physical education; research techniques common to the field; writing of technical reports. An analysis and application of evaluative criteria in research and professional literature in physical education and closely allied areas. Dr. Carns, Mr. Rarick. (b) II; 1 cr. Recent trends and survey of literature in curriculum planning and teaching methods. Miss Cronin.

230. SEMINAR IN MEASUREMENT. II; 2 cr. Prerequisite: Physical Education 130. Miss Glassow.

256. SEMINAR IN KINESIOLOGY. II; 2 cr. Prerequisite: Physical Education 156. Miss Glassow.

265. DANCE SEMINAR. II; 2 cr. Prerequisite: Physical Education 165 or consent of instructor. Miss H'Doubler.

277. SEMINAR IN RELAXATION. II; 2 cr. Prerequisite: Physical Education 177. Miss Schade.

280. ADVANCED INDEPENDENT STUDY. I, II; *cr. Staff.

284. SEMINAR IN MOTOR DEVELOPMENT. II; 2 cr. Prerequisite: Physical Education 184. Mr. Rarick.

296. SEMINAR IN SUPERVISION, CURRICULUM AND TEACHING METHODS. II; *cr. Prerequisite: Teaching experience in physical education. Miss Cronin.

Other courses in physical education open to women are listed under PHYSICAL EDUCATION FOR MEN; they include 16, 59, 159, 164, and 293.

For additional courses in motor learning, physical development, child psychology, and supervision, see the DEPARTMENT OF EDUCATION, pages 382–393.

See also announcements of the School of Music and the Medical School for courses required of physical education students.

Additional elective courses are offered in the Summer Session, descriptions of which may be found in the bulletins of the Summer Session.

COLLEGE OF ENGINEERING

M. O. Withey, Dean

FACULTY

Adkins, Howard Eugene, *M.S.*, Assistant Professor of Mechanical Engineering
Akerman, Joseph Reid, *Ph.D.*, Assistant Professor of Mechanical Engineering
Altpeter, Roger James, *Ph.D.*, Associate Professor of Chemical Engineering
Asmuth, John L., *M.S.*, Instructor in Electrical Engineering
Barker, George John, *B.S.*, *E.M.*, Professor of Mining and Metallurgical Engineering
Benedict, R. Ralph, *M.S.*, Professor of Electrical Engineering
Boettcher, Harold Paul, *M.S.*, Instructor in Mechanics
Bridge, Bert Bernard, Instructor in Mechanical Engineering
Bryan, Edward Henry, *M.S.*, Instructor in Civil Engineering
Buroker, Donald Jasper, *B.S.*, Assistant Professor of Mechanical Engineering
Caldwell, Ralph Russell, *Ph.D.*, Assistant Professor of Electrical Engineering
Cottingham, Willard Sherwin, *M.S.*, *C.E.*, Professor of Civil Engineering
Crandall, Lee Walter, *Ph.D.*, Associate Professor of Civil Engineering
Cutler, Verne C., *M.S.*, Instructor in Mechanics
Daggett, Ronald Lorin, *M.S.*, Associate Professor of Mechanical Engineering
Doke, Howard Bailey, Assistant Professor of Drawing and Descriptive Geometry
Easton, Archie Harter, *B.S.*, Associate Professor of Mechanical Engineering; Director of Truck Research Project
Elliott, Benjamin George, *M.S.*, *M.E.*, Professor of Mechanical Engineering
Engelman, Helmuth William, *M.S.*, Instructor in Mechanical Engineering
Farber, Erich A., *Ph.D.*, Assistant Professor of Mechanical Engineering
Feiereisen, William John, *M.S.*, Assistant Professor of Mechanical Engineering
Fleming, Robert William, *M.S.*, Assistant Professor of Mechanical Engineering
Fluck, Paul George, *Ph.D.*, Assistant Professor of Mechanics
Gage, James Arnold, *M.S.*, Associate Professor of Mechanical Engineering
Garver, John Cormany, *M.S.*, Research Associate in Chemical Engineering
Gilpin, Charles A., *B.S.*, Associate Professor of Mechanical Engineering
Goehring, Henry Goldsmith, *B.A.*, Assistant Professor in Charge of Admission; Placement Director
Griffith, Fuller Orville, Jr., *B.S.*, Assistant Professor of Drawing and Descriptive Geometry
Griswold, Arnold Forrest, Instructor in Mechanical Engineering
Haas, Wilbur Maurice, *M.S.*, Instructor in Civil Engineering
Haft, Everett E., *M.S.*, Instructor in Mechanics
Harker, Ralph Jackson, *M.S.*, Associate Professor of Mechanical Engineering
Harvey, William Raymond, *M.S.*, Assistant Professor; Librarian
Heine, Richard Walter, *M.S.*, Assistant Professor of Mining and Metallurgical Engineering
Higgins, Thomas James, *Ph.D.*, Professor of Electrical Engineering
Holcomb, Charles Edward, *M.S.*, Instructor in Chemical Engineering
Hougen, Olaf Andreas, *Ph.D.*, *Ch.E.*, Professor of Chemical Engineering
Hyland, Patrick Henry, *B.S.*, *M.E.*, Professor of Mechanical Engineering
Jackson, Clayton R., *B.S.*, Instructor in Electrical Engineering
Johnson, Douglas, *M.S.*, Instructor in Chemical Engineering
Kallsen, Henry A., *M.S.*, Instructor in Civil Engineering
Kempka, Gilbert Edward, *B.S.*, Instructor in Mining and Metallurgical Engineering
Kirk, Robert Stewart, *Ph.D.*, Assistant Professor of Chemical Engineering

KOEHLER, GLENN, *M.S.*, Professor of Electrical Engineering
KOLF, RICHARD CLARK, *M.S.*, Instructor in Civil Engineering
KOMMERS, JESSE BENJAMIN, *M.E.*, Professor of Mechanics
LARSON, LUDWIG CONRAD, *B.S., E.E.*, Professor of Electrical Engineering
LAWTON, GERALD WARREN, *M.S.*, Instructor in Civil Engineering
LEIDEL, FREDERICK OTTO, *B.S.*, Instructor in Drawing and Descriptive Geometry
LENZ, ARNO THOMAS, *Ph.D., C.E.*, Professor of Civil Engineering
LEUTWEILER, RICHARD WALTER, JR., *M.S.*, Associate Professor of Mechanical Engineering
LINDBERG, ROY ALFRED, *M.S.*, Assistant Professor of Mechanical Engineering
LIVERMORE, DONALD FRANK, *M.S.*, Assistant Professor of Mechanical Engineering
LIVERMORE, JOSEPH DOW, *B.S.*, Associate Professor of Drawing and Descriptive Geometry
LYDERSON, AXEL, *Ph.D.*, Project Associate in Chemical Engineering
MACK, DAVID JOSEF, *Ph.D.*, Associate Professor of Mining and Metallurgical Engineering
MANN, RICHARD ARNOLD, *M.S.*, Instructor in Mechanics
MARSHALL, WILLIAM ROBERT, JR., *Ph.D.*, Associate Professor of Chemical Engineering
MCNAUL, JAMES WILBUR, *B.S.*, Professor of Mechanical Engineering
MICHAELS, ROBERT W., *M.S.*, Instructor in Chemical Engineering
MILLER, JOHN BERNARD, *M.S.*, Instructor in Electrical Engineering
MYERS, PHILLIP SAMUEL, *Ph.D.*, Associate Professor of Mechanical Engineering
NEILL, WAYNE KENNETH, *Ph.D.*, Associate Professor of Chemical Engineering
NELSON, DELMAR WOOD, *M.S., M.E.*, Professor of Mechanical Engineering
NICHOLS, KENNETH VERNON, *M.S.*, Instructor in Electrical Engineering
NICHOLS, MERLE STARR, *Ph.D.*, Professor of Sanitary Chemistry; Lecturer in Sanitary Engineering; Chemist, State Laboratory of Hygiene
ORTH, HERBERT DENNY, *B.S.*, Professor of Drawing and Descriptive Geometry
PARENT, ROBERT J., *M.S.*, Assistant Professor of Electrical Engineering
PETERS, CHARLES FREDERICK, Instructor in Mechanical Engineering
PETERSON, HAROLD ALBERT, *M.S.*, Professor of Electrical Engineering
PICKETT, GERALD, *Ph.D.*, Professor of Mechanics
PORTER, LEW FOSTER, *M.S.*, Instructor in Metallurgical Engineering
RADER, LLOYD FORREST, *Ph.D.*, Professor of Civil Engineering
RAGATZ, ROLAND ANDREW, *Ph.D.*, Professor of Chemical Engineering
REITAN, DANIEL KINSETH, *Ph.D.*, Assistant Professor of Electrical Engineering
RETHERFORD, ROBERT CURTIS, *Ph.D.*, Associate Professor of Electrical Engineering
RIDEOUT, VINCENT CHARLES, *M.S.*, Associate Professor of Electrical Engineering
ROARK, RAYMOND JEFFERSON, *M.S.*, Professor of Mechanics
ROHLICH, GERARD ADDISON, *Ph.D.*, Professor of Civil Engineering
ROSE, REED ALDEN, *M.S., M.E.*, Associate Professor of Mechanical Engineering
ROSENTHAL, PHILIP CASPER, *M.S.*, Professor of Mining and Metallurgical Engineering
RUNDLE, WILLIAM JUDD, *M.S.*, Assistant Professor of Mining and Metallurgical Engineering
SAEMANN, JESSE CHARLES, JR., *M.S.*, Instructor in Mechanics
SARTELL, JACK A., *M.S.*, Instructor in Metallurgical Engineering
SCHEIBE, ELMER HARRY, *Ph.D.*, Assistant Professor of Electrical Engineering
SCHMITZ, NORBERT LEWIS, *Ph.D.*, Assistant Professor of Electrical Engineering
SCHWEITZER, THEODORE J., *M.S.*, Assistant Professor of Mechanical Engineering
SELL, ROBERT FREDERICK, *B.S.*, Instructor in Civil Engineering
SHERRER, ROBERT E., *B.S.*, Instructor in Mechanics
SHIELS, KENNETH GRINNELL, *M.S.*, Professor of Drawing and Descriptive Geometry; Freshman Adviser
SHOREY, EDWIN ROY, *B.S., E.M.*, Professor of Mining and Metallurgical Engineering
SKILES, JAMES J., *M.S.*, Instructor in Electrical Engineering
SPOONER, MORTON G., *B.S.*, Instructor in Electrical Engineering
STILLER, GORDON O., *B.S.*, Instructor in Drawing and Descriptive Geometry
SWIFT, WAYNE BRADLEY, *M.S.*, Instructor in Electrical Engineering
UYEHARA, OTTO ARTHUR, *Ph.D.*, Associate Professor of Mechanical Engineering
VILLEMONTE, JAMES RICHARD, *Ph. D.*, Associate Professor of Civil Engineering
WAGNER, ELDON CHRISTIAN, *M.S.*, Associate Professor of Civil Engineering

WASHA, GEORGE WILLIAM, *Ph.D.*, Professor of Mechanics
WATSON, CHARLES CHURCHILL, *Ph.D.*, Associate Professor of Chemical Engineering
WEBER, JOHN CARL, *M.S.*, Associate Professor of Electrical Engineering
WENDT, KURT FRANK, *B.S.*, Professor of Mechanics; Associate Director of Engineering Experiment Station
WILLIAMS, DUNCAN EDWIN, *M.S.*, Instructor in Mechanics
WITHEY, MORTON OWEN, *B.S., C.E.*, Professor of Mechanics; Dean of College of Engineering
WOODBURN, JAMES GELSTON, *Ph.D.*, Professor of Civil Engineering
WORSENCROFT, ROBERT ROCKWOOD, *B.S.*, Assistant Professor of Drawing and Descriptive Geometry
YOUNG, WARREN CLARENCE, *M.S.*, Instructor in Mechanics

COLLEGE OF ENGINEERING

DEGREES IN THE COLLEGE OF ENGINEERING

A thorough training in fundamentals is essential preparation for a career in engineering—this conviction underlies the general policies of the College of Engineering of the University of Wisconsin. After a solid foundation of fundamentals has been laid, it seems desirable to give the students a limited amount of specialized training in the main fields into which professional engineering is divided.

In line with this policy, the college offers the following four-year curricula: CHEMICAL ENGINEERING; BIOCHEMICAL ENGINEERING; CIVIL ENGINEERING; ELECTRICAL ENGINEERING; MECHANICAL ENGINEERING; METALLURGICAL ENGINEERING; AND MINING ENGINEERING. (For aeronautical engineering see page 411.) These courses lead to the degree of Bachelor of Science.

The degrees of Master of Science and Doctor of Philosophy can be earned by graduate work in the departments of Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Mechanics, and Mining and Metallurgical Engineering. The professional degrees—"Chemical Engineer," "Civil Engineer," etc.—are granted to graduates of the college who have had at least five years of successful professional practice and at least one of which must have been in a position of responsibility, and who present a satisfactory thesis.

The various curricula leading to a degree are administered with sufficient flexibility to permit a student to satisfy any reasonable desires in regard to the subjects to be studied. Those students who desire a greater amount of liberal education than is provided for in the four-year program are encouraged to arrange special five- or six-year programs.

The courses in engineering are designed to train the student thoroughly in mathematics, the physical sciences, and engineering principles, and to teach the student to apply these fundamentals to the various types of problems that are encountered in engineering practice. In addition to these technical objectives, there is the further objective that the training shall equip the graduates of the college to rise to the highest positions of responsibility in business and public affairs.

Because the College of Engineering is an integral and intimate part of a great university, it offers its students many important advantages. They receive their training in mathematics and the fundamental sciences under the direction of specialists; they have the privilege of choosing their electives from a wide range of courses offered in other colleges on the same campus; they have the excellent laboratory and library facilities that only a large institution can offer; they gain a true perspective of their own profession through contacts with students who are specializing in other fields; and they find relaxation and an outlet for their various talents in a wide range of student activities.

GRADUATE WORK

The graduate work in the College of Engineering is a part of the Graduate School of the University, and is in charge of an administrative committee. Excellent opportunities are offered in the various departments for advanced theoretical work and for research. A special fund is available to be devoted exclusively to experimental work in the engineering laboratories.

For admission to the Graduate School an official transcript of the undergraduate record of the applicant should be forwarded to the Dean of the Graduate School, Bascom Hall, some weeks in advance of the opening of the session.

The degree of Master of Science (in civil engineering, mechanical engineering, etc.) is conferred upon graduates of approved institutions who have completed suitable undergraduate courses and who pursue advanced professional study at the University for one

year or more, present a satisfactory thesis, and pass an oral or written examination upon the field of their graduate work.

The degree of Doctor of Philosophy is conferred upon graduates of the engineering courses under the same requirements as apply to graduates of other divisions of the University.

For statements of these requirements, see the bulletin of the Graduate School.

ENGINEERING EXPERIMENT STATION

The Engineering Experiment Station of the College of Engineering was established by action of the Board of Regents, March 4, 1914. The members of the engineering faculty, together with fellows, scholars and special assistants, devoting their time to research, constitute the members of the staff of the Experiment Station.

The purpose of this Experiment Station is the promotion of the engineering and industrial interests of the state by the scientific study of problems related thereto, although generally such problems prove of wider interest and importance. A wide range of facilities for experimental study is offered by the laboratories of the College of Engineering such as the Hydraulic and Sanitary Engineering Laboratories, the Testing Materials Laboratory, and all the various laboratories of the Departments of Mechanical, Electrical, Chemical, and Mining and Metallurgical Engineering. Besides these there are also the Ordnance Precision Gage Laboratory, and the special Electrical Standards Laboratory, which is operated in connection with the work of the Wisconsin Public Service Commission and serves the state at large, as well as the industries of the state, for many types of tests and the standardizing of electrical metering devices.

The results of the research done under the auspices of the Engineering Experiment Station have appeared in part in papers before the technical societies and in part in the Engineering Series of the University Bulletin. A list of the 193 reprints of technical papers and the 86 bulletins published to date may be secured upon application to the University Editor.

For further information regarding the Engineering Experiment Station address the Dean of the College of Engineering.

BUILDINGS

The College of Engineering occupies completely five permanent buildings. Included are the Engineering building, the Hydraulic and Sanitary Laboratories, the Mechanical Engineering building and the Mining and Metallurgy building. The Department of Drawing and the Surveying Laboratory are presently housed in temporary structures and the Chemical Engineering Laboratories will be housed in a new portion of Engineering after September, 1952.

LIBRARY

The library of the College of Engineering, located in the Mechanical Engineering building, contains a large collection of technical books and complete sets of all important magazines and the transactions of engineering societies. Students have available the current numbers of about 300 engineering periodicals. In addition, they have free access to the University Library, the Library of the State Historical Society, the Library of the Wisconsin Academy of Sciences, Arts and Letters, and the Madison Free Library System.

LABORATORIES

CHEMICAL ENGINEERING

CHEMICAL PROCESS LABORATORY—For experiments in chemical production on a pilot plant scale.

ELECTROCHEMISTRY LABORATORY—For instruction in electroplating, electrolysis, and corrosion.

TECHNICAL ANALYSIS LABORATORY—For testing heating values of coal and oil, for making gas analyses, and for testing petroleum products and water.

PROCESS MEASUREMENTS AND CONTROL LABORATORY—For instruction in the calibration of instruments and in the measurement and control, under industrial conditions, of temperature, pressure, liquid level, and fluid flow.

MICROSCOPY LABORATORY—For the study and identification of textiles, pulp and paper, and other materials.

PLASTICS LABORATORY—Equipment for the production and testing of plastics.

RESEARCH LABORATORIES—Equipment for research investigations on unit operations, applied kinetics and chemical processing.

UNIT OPERATIONS LABORATORY—For the study of the principles of fluid flow, heat transfer, humidification and dehumidification, drying, distillation, absorption, filtration, crushing and grinding, and combustion.

CIVIL ENGINEERING

HIGHWAY LABORATORY—The materials laboratory of the Wisconsin Highway Commission is located on the campus, and its excellent facilities for instruction and research are available to students in the courses in highway engineering.

HYDRAULICS LABORATORY—Occupies a special building on the shore of Lake Mendota and is fully equipped for both instruction and research.

SANITARY LABORATORY—Equipped for both teaching and research. Sewage treatment plants in nearby towns are available for graduate research.

SURVEYING LABORATORY—Equipped to give each student individual practice in the use of surveying instruments.

ELECTRICAL ENGINEERING

ELECTRICAL MACHINERY LABORATORY—Equipped with a wide variety of direct-current and alternating-current machinery and apparatus.

ELECTRICAL STANDARDS LABORATORY—Provides facilities for investigative work in electrical instruments and measurements. Does the official standardizing work for the Public Service Commission of Wisconsin and for the public utilities of the state. Mantains contact with national organizations concerned with standardization and with the National Bureau of Standards, many of whose facilities are available to the laboratory.

ELECTRODYNAMICS LABORATORY—For demonstrating the fundamentals of electrodynamics and of conduction through vacuo and through gases.

HIGH-VOLTAGE LABORATORY—For routine tests and research. Equipped to supply 300,000 volts.

PHOTOMETRIC LABORATORY—For the study and testing of light sources.

SERVO-MECHANISM LABORATORY—For the study of dynamic characteristics of automatic control devices.

INDUSTRIAL ELECTRONICS LABORATORY—For the study of electronic devices and their industrial applications.

COMPUTER LABORATORY—Equipped with high-speed electronic analogue computer for teaching and research.

ACOUSTICS LABORATORY—Equipped for teaching and research in electroacoustical engineering.

ULTRA HIGH FREQUENCY LABORATORY—Equipped with microwave measuring sets, wave guide equipment, antennas and radiators for teaching and research.

ELECTRONICS AND COMMUNICATIONS LABORATORIES—Equipped for teaching and research in the fields of electronics and communications. Equipment includes a wide variety of electronic instruments, artificial telephone line, radio receivers, transmitters, signal generators, bridges, and many other closely related items covering the frequency spectrum from d.c. to microwave frequencies.

MECHANICAL ENGINEERING

AIR CONDITIONING LABORATORY—Well equipped for testing unit heaters, vacuum pumps, air leakage and air distribution. A complete air conditioning system is available for testing and research.

AUTOMOTIVE LABORATORY—Equipped with electric and hydraulic dynamometers for the testing of high-speed automotive-type engines and standard test engines for fuel rating.

BOILER LABORATORY—A variety of boilers is available for test with hand firing, stokers, oil and gas burners.

CALIBRATION LABORATORY—Equipped to test indicators and gages up to 25,000 psi. Other equipment available for checking temperature measuring devices and air velocity meters.

ENGINE LABORATORY—Contains a wide variety of power equipment including reciprocating steam engines, steam turbines with alternators and switch gear, an ammonia refrigerating machine, a two-stage air compressor and several stationary type Diesel engines.

MACHINE LABORATORY—Fully equipped for instruction in general machine shop practice, including many production machines for teaching, tools, tooling and methods as applied to production.

MOTION AND TIME STUDY LABORATORY—Equipped for stop-watch time studies, operation analysis projects and micromotion studies.

MACHINE DESIGN LABORATORY—Equipped with apparatus for testing power belts, hoists, screw springs, metal punching, threads, critical speeds in shafts, balancing, bearings, lubrication, etc.

OIL LABORATORY—Well equipped for determining the properties of fuels and lubricating oils.

PRECISION GAGE CHECKING LABORATORY—Established by the U. S. Army Ordnance. Contains precision measuring equipment for checking gages and component parts.

WELDING LABORATORY—Equipped for electric arc and flame welding and for testing welds.

RESEARCH LABORATORY—Well equipped with instrumentation, apparatus and other facilities for graduate research in internal combustion fields.

TRUCK RESEARCH LABORATORY—Equipped for engineering performance tests on automotive vehicles utilizing electrical resistance strain gages and associated equipment.

MECHANICS

METALS LABORATORY—For instruction and research on metals. Apparatus available for tension, compression, shear, torsion, hardness, impact, and cross bending tests.

CONCRETE LABORATORY—For instruction and research on concrete and concrete products. Large freezer and special curing facilities are available.

SOILS LABORATORY—For experimental work in soil mechanics on such problems as consolidation, shear strength, classification, permeability, bearing strength, and compaction.

CEMENT LABORATORY—For instruction and research in cement, cement and lime mortars, and other masonry materials.

STRUCTURAL LABORATORY—For tests of structural units such as beams, columns, and floor panels. Largest machine has a capacity of 600,000 lbs. and will accommodate tension and compression specimens up to 30 ft. for work in experimental stress analysis.

VIBRATIONS LABORATORY—For instruction in general theory of mechanical vibrations, vibration instruments, balancing, critical speeds, stabilizers. Also equipped for research work in these fields.

FATIGUE LABORATORY—Equipped for fatigue testing of metallic materials.

PHOTOELASTICITY LABORATORY—Equipped for work in experimental stress analysis.

MINING AND METALLURGICAL ENGINEERING

METAL CASTING LABORATORY—This laboratory, located in a separate building, is designed to give the student experience in dealing with foundry methods and problems. Equipment includes a cupola with Stabilog air control, a tilting arc furnace, a Tocco high-frequency induction melting furnace for iron and steel castings, brass and aluminum melting furnaces, complete sand control and sand conditioning equipment, and a variety of casting cleaning equipment.

AN ANALYTICAL LABORATORY is provided for routine and special analyses required by class work or research.

THE METALLURGICAL FURNACE LABORATORY equipment includes a copper and lead blast furnace, a converter and various gas-fired heat-treating, refining and assaying furnaces all equipped with the accessories and controls necessary to their operation.

THE MINERAL DRESSING SUITE includes a crushing and screening laboratory, a mineral dressing laboratory, and control chemical laboratory. The crushing laboratory is equipped with various types of jaw, gyratory and roll crushers, pulverizers, and screening apparatus. The mineral dressing laboratory contains gravity concentrating equipment, a laboratory scale complete heavy-media separating unit, batch flotation testing equipment, and a small-scale complete flotation mill which permits two mineral separations. This suite provides sedimentation and pneumatic sizing equipment and special research isodynamic magnetic separator, complete petrographic microscopic apparatus, laboratory flotation and heavy-media separating equipment provided especially for advanced research in mineral dressing.

THE PHYSICAL METALLURGICAL LARORATORY is equipped with automatically controlled heat-treating furnaces of a wide range of sizes. Both high- and low-temperature units are available. Special features include atmosphere control, salt-bath and lead-pot furnaces for isothermal work, resistance furnaces, and a cubic eighteen-inch globar furnace for high-temperature studies of steel and ceramic products. Induction furnaces, Margules principle viscosity furnaces, dilatometers and pyrometric equipment are provided. A Universal testing machine and a variety of hardness testers are available.

THE X-RAY AND SPECTROGRAPHIC LABORATORIES contain a General Electric Company diffraction apparatus with various types of X-ray tubes, a Dietert grating spectrograph and radiographic X-ray equipment for casting inspection.

THE METALLOGRAPHY LABORATORY contains polishing wheels, table microscopes and cameras for routine metallographic examination of metals and alloys, as well as numerous instruments for research. This research equipment includes a new research metalloscope, Tukon microhardness tester, A-B electrolytic polisher, specimen mount press and other specialized apparatus.

ADMISSION

The general method of admission to the College of Engineering is by presenting a certificate of graduation from an accredited high school with the recommendation of the principal. Sixteen units are the fundamental requirement, which must include 1 unit of algebra and 1 unit of plane geometry. Among the sixteen units, students are advised to present the following: 1½ or 2 units of algebra, 1 unit of plane geometry, ½ unit of solid geometry, ½ unit of trigonometry, 3 units of English, 2 units each of science and history and 2–4 units of foreign language.

Other methods of entrance are by passing entrance examinations or by qualifying as an "Adult Special" student. A fourth method is by submitting evidence of study successfully

pursued in another institution of higher learning. Students seeking to transfer from another institution should write directly to the Dean of the College of Engineering.

For more detailed and explicit information concerning entrance, see the General Information bulletin of the University.

SPECIAL NOTICE REGARDING ALGEBRA

One and one-half units of algebra are required as preparation for the first semester of mathematics regularly scheduled for freshman engineers. Students will be admitted to the College of Engineering with one unit of algebra but those students must normally take one semester of algebra in the University without credit.

The first unit of algebra should include the following subjects: addition, subtraction, multiplication, division of polynomials; equations of the first degree with one unknown number; graphical representation of simple relations between two variables; simultaneous equations of the first degree, including the graphical solution of a pair of linear equations with two unknowns; factoring; fractions; ratio and proportion; the solution of quadratic equations.

The additional one-half unit should cover the following subjects: simultaneous quadratic equations; ratio, proportion, and variation; elementary theory of exponents and radicals; the theory of quadratic equations; additional work in graphical representation; complex fractions; binomial theorem for positive integral exponents; logarithms; arithmetical and geometrical progressions.

All students entering the College of Engineering will be tested in algebra by an examination given during Freshman Period. Usually students having but one year of high-school algebra are unable to pass this examination. It is essential that students in the engineering courses shall possess a good working knowledge of algebra at the time they begin their course, and it is the purpose of the examination to secure this by requiring a review of the subject shortly before entering the University. Students failing in the test are not permitted to enroll in the regular freshman mathematics, but are required to take a review of algebra during the first semester. A special non-credit course, Mathematics 50, is provided for this purpose. Since the regular freshman mathematics course is a prerequisite for several courses in the curricula of the sophomore year, these students should complete their freshman mathematics by taking the second semester of the course in the summer session following their freshman year.

To those who have had but one year of algebra, or for those who wish a review of the subject, a course given by the University Extension Division is recommended. Students who complete this course satisfactorily before entering the University will be admitted without examination to the regular freshman mathematics required of engineers. The instruction fee for students in the state is $12; out of state $20. Students wishing to register for this course should make arrangements with their high-school principal or write to the University Extension Division, Madison, Wisconsin, inquiring about the course in advanced high-school algebra for engineers (Mathematics 50).

Each undergraduate student in engineering is assigned to a member of the faculty who assists in arranging his program of study, watches over his progress, and is available for consultation and advice whenever needed. Normally, the student will have a different adviser each year.

GENERAL REQUIREMENT IN UNITED STATES HISTORY

Every undergraduate student in the College of Engineering is required to include in his program for graduation courses approved by the faculty in which an objective is the improvement of the background of knowledge upon which well-rounded, informed, and responsible citizenship may be based. This requirement must be met by all students who receive degrees after June, 1954. The student may satisfy it in one of three ways:

1. By passing, by the beginning of the junior year, an attainment examination in United States History based on college-level work.

2. By completing satisfactorily, in college, a continuous year course in United States History. A year course is here understood to be one so listed in the Announcement of Courses (i.e., History 4, 12–112, 113, 117, 120, 121, 122); or two semester courses which, as to content, are in chronological sequence (i.e., any two *consecutively numbered* semester courses chosen from the following: History 101, 102, 103, 104, 105, 106, 107, 108, 109).
3. By completing *two* semester courses concerned with the history, government, political thought, civil liberties, economy, or ideals of the United States. Courses approved for this purpose are: Courses in United States History numbered above 100, History 137; Economics 1a; English 140; Integrated Liberal Studies 23; Philosophy 139; Political Science 7, 110, 112a, 112b, 165, 166, 171; or Contemporary Trends 103.

GRADE-POINT SYSTEM

Under the grade-point system, points are awarded as follows: For grade A (*excellent*), three points for each credit; for grade B (*good*), two points; for grade C (*fair*), one point; for grade D (*poor*), no points. In the College of Engineering at least 146 grade-points and 146 credits, exclusive of freshman lecture, band, military science and physical education, are required for graduation from any one of the four-year courses. No student will be admitted to the required courses of his junior or senior year whose point-credit ratio to date is below 1.0, and no student will be recommended for the degree of Bachelor of Science who does not earn at least one grade-point per credit during the last two semesters of his attendance at the University.

Honors and High Honors are awarded at the end of the sophomore year, and at graduation, to students who have spent not less than two full years in residence in the University. The studies, however, may be taken in residence at Madison or Milwaukee, or partly by correspondence. In computing credits and points for honors or high honors, the following subjects are not included: sub-freshman subjects, physical education, military science, band, and freshman lectures; credits obtained by special examination, and credits earned at other institutions.

Sophomore Honors and Sophomore High Honors are awarded on the basis of a minimum of two years' work (not less than 60 credits, exclusive of physical education, military science, band, and freshman lectures) completed in the University. A student earning during these two years 135 grade-points, plus 1.5 grade-points for each credit above 60 will be awarded *sophomore honors;* a student earning during these two years 165 grade-points plus 2 grade-points for each credit above 60, will be awarded *sophomore high honors.*

Honors and High Honors at Graduation. Students having an average of 2.25 or more and less than 2.75 points per credit at graduation, will be awarded *honors.* Students having an average of 2.75 or more points per credit will be awarded *high honors.*

PHYSICAL ACTIVITY REQUIREMENT

All male students in engineering are required to take two years of military training and one year of physical education. Students completing this basic course in military or air science may elect to take the advanced course for four more semesters in which case they are granted 8 additional credits toward graduation.

NAVAL SCIENCE COURSE

Requirements for the Bachelor of Naval Science degree are: a total of 136 credits, including not less than 100 credits of courses required in one of the engineering curricula, together with 24 credits of Naval Science courses prescribed in the NROTC Program.

FRESHMAN ENGLISH

Students who receive a grade of *A* in English 1a *may* substitute a free elective for English 1b.

FOREIGN STUDENTS

While facility in English adequate to the student's needs for his work at the University of Wisconsin is presupposed, every student whose native tongue is not English must, before registering for the first time at the University, take a special English language test for foreign students. A student who shows on this test a knowledge of English so inadequate as to indicate he will have trouble in carrying university work will be allowed to register if he already has a permit to register. He will be required to take English 9, a non-credit course designed to aid foreign students. Before he is allowed to register for the second semester his case must be reviewed by the dean of his college or school.

Others whose performance in the English language test indicates need of special training may be advised (or required by the appropriate college or major department) to take English 9. (English 9 is *not* a substitute for English 1.)

For further information, students should consult their academic adviser, the special adviser for foreign students, or the Office of Admissions. A special office is maintained, at present in Bascom Hall, to assist in the counseling and orientation of foreign students.

FRESHMAN LECTURES

Freshman engineers are required to attend a course of lectures given once a week for the first semester. The speakers include faculty men from various departments of the University who are outstanding in their fields. The purpose of the course is to give the student an adequate conception of the work of the engineer and of the preparation which is necessary for the successful practice of the profession. It also seeks to broaden his horizon by acquainting him with activities in other fields.

INSPECTION TRIPS

Inspection trips to various industrial plants and large construction projects are arranged and conducted by members of the faculty for the junior and senior engineering students. The opportunities enjoyed by the groups of students on these trips are unusual and are not readily obtained by individuals. The inspections offered by the various courses differ and are indicated under the course requirements.

THESES

In all courses, candidates for a second or a professional degree in engineering shall submit a thesis. The thesis requirements for the B.S. degree in the different courses in the College of Engineering are as follows:

In the civil engineering course a thesis is required. In the electrical, mechanical, and mining and metallurgical engineering courses a thesis is optional. In chemical engineering a course in special problems replaces the thesis requirement.

If a thesis is elected, the subject of the thesis shall be selected by the student after consultation between the student, his adviser, and the instructor who is to direct the work, and it shall be submitted to the course committee for approval. The total number of credit hours granted for this work shall be not less than three nor more than five, except by special action. The thesis is to be typewritten according to specifications furnished by the librarian of the University, and before it is accepted it must be approved by the instructor under whom the work has been done. It shall be deposited in the University Library by the second Friday before Commencement.

ADVANCED INDEPENDENT STUDY

Graduate students and "upper-group" juniors and seniors in engineering may satisfy some elective credits in their various courses by advanced independent study of subjects or problems suitable for analytical investigative work. To validate such an election, the student's application and proposed project must be approved by his adviser and by the course committee of the department in which the student is enrolled not later than the end of the

second week of the semester in which the work is to be taken. Such elections shall be placed on the student's semester study list under the course numbers 180 for undergraduate students and 280 for graduate students, and the approval of the Course Committee shall be recorded by the adviser on the class cards. The Course Committee will specify the number of credits for which the proposed independent study is approved.

The proposed study may be of an economic, historical, statistical, theoretical, or experimental type. The object of the study will be to carry forward the investigative work of the departments, and to develop the initiative and investigative ability of the student. The student must submit a typewritten report of his study to be kept for reference in the records of the department. Studies of unusual merit will be accepted as theses and filed in the University Library.

FOREST PRODUCTS LABORATORY

The United States Forest Products Laboratory, located in Madison, offers a number of undergraduate courses which are given by members of its staff, and, in addition, offers an opportunity for research in forest products. A description of the courses which are listed herewith will be found in the General Catalog.

First Semester	Credits	Second Semester	Credits
For. Prod. 101—Properties of wood.....	5	For. Prod. 103—Chemistry applied to Forest Products	2
		For. Prod. 200—Research in Forest Products..	2

PHYSICS OPTION IN ENGINEERING

Students taking a B.S. degree in any branch of engineering who have completed 22 or more credits of physics courses (including the 10–13 credits normally required) will be granted an *Option in Physics,* corresponding to a short curriculum in engineering physics. Time for the extra work in physics may be secured partly by the use of electives and partly through some substitution of physics for the regular engineering requirements.

Students having a B.S. in engineering who are taking graduate work leading to the M.S. degree in any branch of engineering will satisfy a *minor in physics* if they have completed a total of 26 physics credits in their undergraduate and graduate work.

A joint *Master of Science Degree in Engineering and Physics* is established, for which a total of 26 graduate and undergraduate credits in physics is required. A candidate for this degree must have a B.S. degree in engineering and during his graduate year must complete at least 9 credits in approved graduate courses in engineering and at least 9 in approved graduate courses in physics, together with other credits to total 24.

The physics courses, beyond the first course, to meet any of the above requirements would normally be selected from the following list: Physics 102, 103, 104a, 104b, 106a, 106b, 110, 116, 118, 124, 126, 180, 210, 225.

MEMORANDUM ON CO-ORDINATION OF ENGINEERING AND COMMERCE UNDERGRADUATE AND POST-GRADUATE WORK

Interested students may be divided into three classes:

1. Students who hold degrees from engineering and wish to secure a Master of Business Administration degree.
2. Students who wish to secure a bachelor's degree from both engineering and commerce.
3. Students who wish to take the first two years of pre-commerce work in engineering and secure a bachelor's degree only from commerce.

I. *Students Holding Degrees in Engineering and Wish to Secure a Master of Business Administration Degree.*

For such students it is too late to plan their undergraduate engineering work to co-ordinate more closely with requirements in commerce. Consequently, the following compromises are proposed:

Commerce 6 will be waived by the School of Commerce if the student has had C.E. 99 and 2a or other courses that are the approximate equivalent.

Commerce 142, Public Utilities, will be waived for a student who has had M.E. 166 or the approximate equivalent.

Commerce 11 or Commerce 111, Industrial Management, will be waived for a student who has had M.E. 12. The similarity in both of these courses is so great that a student may not receive credit in both courses.

II. *Students Who Wish to Secure a Bachelor's Degree from Both Colleges.*

For those students who wish to secure a bachelor's degree from both colleges, it is desirable to plan as early as possible in the student's career for such a combination. Inasmuch as the engineering curriculum contains a large proportion of required courses, any engineering student of junior or more advanced standing may also take any commerce course for which he has the prerequisites. Since the School of Commerce requires for admission Commerce 8 and 9, Elementary and Intermediate Accounting, it will be well for engineering students to take these courses prior to entering that School, but they may be postponed.

Economics 1a is a prerequisite to many courses in commerce. If it were taken as early as possible the student would still be able to take many courses in commerce which do not require Commerce 8 or 9.

III. *Students Who Wish to Take Their Pre-Commerce Work in Engineering.*

In view of the fact that at present the School of Commerce accepts on probation students who are deficient in one or more of Economics 1a, Commerce 8, and Commerce 9, the School of Commerce will admit as juniors those who are certified by the faculty in Engineering as having successfully completed the sophomore year of any one of the engineering sequences. Such student's progress would be greatly facilitated, however, if Economics 1a, Commerce 8, and Commerce 9 would have been taken.

COMBINED COURSE IN ENGINEERING AND LAW

A student in Engineering desiring to take the combined course in Engineering and Law may, at the beginning of his senior year, elect to take such combination of courses providing he has a grade-point average of 1.5. Such student should have taken at least six credits in social science courses (i.e., economics, sociology, psychology, etc.). Such a student may remain during the senior year in the Engineering College, electing, with the permission of the Dean of Engineering, not more than seven credits in Law. If he wishes to carry more than seven credits, he may transfer to the Combined Course in Engineering and Law and pay the professional fee required of Law students.

COMBINED COURSES IN AGRICULTURAL ENGINEERING AND CIVIL OR MECHANICAL ENGINEERING

The Department of Agricultural Engineering offers a curriculum in Farm Structures and one in Drainage, Irrigation, and Soil Conservation, which lead, at the end of five years of study, to the degrees of Bachelor of Science in Agriculture and Bachelor of Science in Civil Engineering. The curriculum in Farm Power and Machinery leads to the degrees of Bachelor of Science in Agriculture and Bachelor of Science in Mechanical Engineering at the end of five years of study. For descriptions of these curricula, see the bulletin of the College of Agriculture.

COMBINED COURSE IN CIVIL ENGINEERING AND CITY PLANNING

A student in civil engineering may elect the Combined Course in Civil Engineering and City Planning at the beginning of his junior year. See page 415 for the five-year combined curriculum leading to the degrees of Bachelor of Science (Civil Engineering) and Bachelor of Science (City Planning). The Combined Course in Civil Engineering and City Planning is administered by the Department of Civil Engineering.

ENGINEERING CURRICULA

After a student has selected a given curriculum he should adhere to the sequence of required courses. Postponements of such courses will ordinarily not be approved by advisers. In cases where exceptions must be made it becomes the student's responsibility to take such postponed subjects at the earliest opportunity.

AERONAUTICAL ENGINEERING

The College of Engineering offers no separate curriculum and degree in aeronautical engineering. It is believed that because of the high development of the airplane that specialists well grounded in the recognized fields of engineering can most successfully contribute to its further improvement. Thus the electrical instruments and devices in the airplane are the work of electrical engineers; the skillful design and use of materials a challenge to structural specialists; and the power plant the responsibility of internal combustion engine specialists. Accordingly, any of our students who are interested in the special application of their branch of engineering to aeronautics are encouraged to elect such courses as the following. These are available whenever registration is sufficient.

First Semester	Credits	Second Semester	Credits
Mech. 111—Aerodynamics	3	M.E. 112—Airplane stress analysis	3
M.E. 37—Welding	2		
M.E. 169—Internal combustion engines	3	M.E. 171—Gas turbines and jet propulsion	3

CURRICULUM IN BIOCHEMICAL ENGINEERING*

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (BIOCHEMICAL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Drawing 12—Engineering drawing	3	Drawing 23—Engineering drawing and descriptive geometry	3
Chem. 4a—General chemistry	5	Chem. 4b—General chemistry and qualitative analysis	5
M.E. 21 or 22—Metal processing	1	M E. 21 or 22—Metal processing	1
Freshman lectures	0	Military Training	0
Physical Education	0	Physical Education	0
Military Training	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Ch.E. 12—Technical analysis	2
Physics 51—General physics	5	Math. 102b—Calculus	4
Chem. 120—Organic chemistry	3	Physics 52—General physics	5
Chem. 121—Organic chemistry laboratory	2	Ch.E. 18—Fundamentals of chemical engineering	3
Chem. 14—Quantitative analysis	5	Chem. 122—Organic chemistry	3
Military Training	0	Speech 7—Public speaking	2
		Military Training	0
	19		19

JUNIOR YEAR

Biochem. 105—Principles of biochemistry; lecture	3	Agr. Bact. 103—General survey of bacteriology	4
Biochem. 106—Principles of biochemistry; laboratory	2	Ch.E. 99—Engineering reports	3
Chem. 130a—Physical chemistry	3	Chem. 130b—Physical chemistry	3
Chem. 131a—Phyical chemistry laboratory	1	Chem. 131b—Physical chemistry laboratory	1
Mech. 4—Statics and dynamics	4	Mech. 5—Mechanics of materials	3
Ch.E. 116—Material and energy balances	3	Mech. 53—Materials of construction	2
Electives	2	M.E. 65—Thermodynamics	3
		Junior inspection trip	0
	18		19

* Note that the GENERAL REQUIREMENT stated on page 406 must be fulfilled by all students.

SENIOR YEAR

Agr. Bact. 127—Industrial microbiology	4	Biochemistry electives	3-4
Ch.E. 101—Applied electrochemistry	4	Ch.E. 111b—Unit operations	4
Ch.E. 111a—Unit operations	4	E.E. 9—Electrical machinery	3
Ch.E. 142—Chemical engineering materials of construction	3	Ch.E. 117—Process measurements and control	3
M.E. 76—Heat engine testing	2	Electives	4-3
E.E. 8—Electrical machinery	3	Senior inspection trip	0
	20		17

SUMMER SESSION (5 WEEKS)

Ch.E. 114—Operations and process laboratory....5 credits.

FIFTH YEAR

LEADING TO THE M.S. DERGEE IN BIOCHEMICAL ENGINEERING

Agr. Bact 125—Food bacteriology or Biochemistry electives in second semester	4 or 3-4	Agr. Bact. 226—Physiology of bacteria	4
Ch.E. 200—Thesis	3	Biochemistry electives or Agr. Bact. 125—Food bacteriology, 4 cr., in first semester	3-4
Chem. 119—Organic analysis	3	Ch.E. 200—Thesis	3
Electives	2-6	Electives	1-5
	12		12

CHEMICAL ENGINEERING CURRICULUM*

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CHEMICAL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Drawing 12—Engineering drawing	3	Drawing 23—Engineering drawing and descriptive geometry	3
Chem. 4a—General chemistry	5	Chem. 4b—General chemistry and qualitative analysis	5
M.E. 21 or 22—Metal processing	1	M.E. 21 or 22—Metal processing	1
Freshman lectures	0	Physical Education	0
Physical Education	0	Military Training	0
Military Training	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 51—General physics	5	Physics 52—General physics	5
Chem. 120—Organic chemistry	3	Ch.E. 18—Fundamentals of chemical engineering	3
Chem. 121—Organic chemistry laboratory	2	Chem. 122—Organic chemistry	3
Chem. 14—Quantitative analysis	5	Ch.E. 12—Technical analysis	2
Military Training	0	Speech 7—Public speaking	2
		Military Training	0
	19		19

JUNIOR YEAR

Ch.E. 99—Engineering reports	3	Ch.E. 111b—Unit operations	4
Ch.E. 111a—Unit operations	4	Chem. 130a—Physical chemistry	3
Chem. 130a—Physical chemistry	3	Chem. 130b—Physical chemistry laboratory	1
Chem. 131a—Physical chemistry laboratory	1	M.E. 65—Heat-power engineering	3
Mech. 4—Statics and dynamics	4	Mech. 5—Mechanics of materials	3
Ch.E. 116—Material and energy balances	3	Mech. 53—Materials of construction	2
		Ch.E. 117—Process measurements and control	3
		Junior inspection trip	0
	18		19

* Note that the GENERAL REQUIREMENT stated on page 406 must be fulfilled by all students.

SUMMER SESSION (5 WEEKS)

Ch.E. 114—Operations and process laboratory....5 credits.

SENIOR YEAR

Ch.E. 101—Applied electrochemistry	4	Ch.E. 115—Organic processes	3
Ch.E. 118—Chemical engineering thermodynamics	3	Ch.E. 122—Special problems	3-4
Ch.E. 142—Chemical engineering materials of construction	3	Ch.E. 150—Design of chemical processing equipment	3
E.E. 8—Electrical machinery	3	E.E. 9—Electrical machinery	3
M.E. 76—Heat engine testing	2	Electives	6-5
Electives	4	Senior inspection trip	0
	19		18

CIVIL ENGINEERING CURRICULUM*

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CIVIL ENGINEERING)

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Drawing 12—Engineering drawing	3	Drawing 23—Engineering drawing and descriptive geometry	3
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
C.E. 15—Elementary surveying	2	C.E. 16—Elementary surveying	2
Freshman lectures	0	Physical Education	0
Physical Education	0	Military Training	0
Military Training	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 51—General physics	5	Physics 52—General physics	5
Mech. 1—Statics	3	Mech. 2—Dynamics	3
C.E. 17—Topographical and land surveying	3	C.E. 23—Curves and location	4
Econ. 1a—General economics	4	C.E. 99—Engineering reports	3
Military Training	0	Military Training	0
	19		19

SUMMER CAMP (6 WEEKS)

C.E. 116—Summer survey	4	C.E. 122—Route surveying	2

JUNIOR YEAR

Mech. 3—Mechanics of materials	4	Mech. 52—Materials of construction	2
Mech. 51—Materials of construction	2	C.E. 155—Reinforced concrete	3
C.E. 72—Elementary hydraulics	4	C.E. 52—Analysis of simple structures	4
C.E. 181—Hydrology	2	C.E. 132—Highway engineering	3
Geology 9—Engineering geology	3	C.E. 191—Sewerage and sewage treatment	3
M.E. 67—Thermodynamics and heat-power	4	C.E. 103—Economic selection	2
		Electives	2
		Junior trip	0
	19		19

SENIOR YEAR

C.E. 53—Structural design	3	C.E. 54—Structural design	2
Mech. 110—Soil mechanics	3	C.E. 101—Contracts and specifications	2
C.E. 160—Advanced reinforced concrete	3	C.E. 164—Foundations	2
C.E. 195—Water supply	3	E.E. 10 & 60—Elementary electrical engineering	4
Thesis	1	Thesis	2-4
Electives	5	Electives	6-4
Senior trip	0		
	18		18

Total required for graduation and which *must include* 6 credits for summer camp—152 cr.
Electives—16 credits including thesis.

* Note that the GENERAL REQUIREMENT stated on page 406 must be fulfilled by all students.

ELECTIVES

The following lists of elective courses are provided as a guide to those students wishing to specialize in one of the recognized branches of civil engineering.

CITY PLANNING

First Semester	Credits	Second Semester	Credits
C.E. 141[1]—City planning	2	C.E. 141[1]—City planning	2
C.E. 144—Municipal engineering practice	2	C.E. 142—Advanced city planning	2
Commerce 179—Urban land economics	3	C.E. 145—Traffic control	2
		Commerce 178—Housing problems	3

HIGHWAY ENGINEERING

C.E. 133—Advanced highway design	3	C.E. 134—Bituminous materials testing	3
C.E. 135—Soils and aggregates testing	3	C.E. 136—Highway administration	2
C.E. 141[1]—City planning	2	C.E. 141[1]—City planning	2
C.E. 144—Municipal engineering practice	2	C.E. 142—Advanced city planning	2
M.E. 101[1]—Motor vehicle testing and practice	3	C.E. 145—Traffic control	2
		C.E. 162—Highway bridges and culverts	2
		M.E. 101[1]—Motor vehicle testing and practice	3
		Commerce 136—Transportation problems	3

HYDRAULIC ENGINEERING

C.E. 173—Advanced hydraulics	3	C.E. 174—River and irrigation hydraulics	2
C.E. 176—Testing of hydraulic machines	2	C.E. 175—Hydraulic machinery	2
C.E. 182—Hydrological investigations	2	C.E. 177—Fluid mechanics	3
C.E. 184—Water power engineering	2	C.E. 183—Hydraulic design	2
C.E. 270[2]—Hydraulic engineering seminar	1	C.E. 270[2]—Hydraulic engineering seminar	1
		C.E. 285—Seminar in river basin planning	2 or 3

MUNICIPAL ENGINEERING

C.E. 139—Airports	2	C.E. 134—Bituminous materials testing	3
C.E. 141[1]—City planning	2	C.E. 141[1]—City planning	2
C.E. 144—Municipal engineering practice	2	C.E. 142—Advanced city planning	2
C.E. 192—Sewage treatment	3	C.E. 145—Traffic control	2
C.E. 193—Water and sewage analysis	3	C.E. 194[2]—Sanitary engineering seminar	1
C.E. 194[2]—Sanitary engineering seminar	1	C.E. 196—Water treatment	3
		C.E. 197—Industrial waste treatment	2

SANITARY ENGINEERING

C.E. 192—Sewage treatment	3	C.E. 194[2]—Sanitary engineering seminar	1
C.E. 193—Water and sewage analysis	3	C.E. 196—Water treatment	3
C.E. 194[2]—Sanitary engineering seminar	1	C.E. 197—Industrial waste treatment	2
		Agr. Bact. 2 or 103	4

STRUCTURAL ENGINEERING

C.E. 156—Reinforced concrete arch design	2	C.E. 158—Analysis of statically indeterminate structures	2
C.E. 157—Stresses in higher structures	3	C.E. 162—Highway bridges and culverts	2
C.E. 159—Design of timber structure	2	Mech. 106—Advanced mechanics of materials	3
Mech. 101—Advanced statics	2		
Mech. 109—Graphics	2		

SURVEYING AND MAPPING

C.E. 114—Advanced surveying	3	C.E. 119—Photogrammetry	3

TRANSPORTATION

C.E. 133—Advanced highway design	3	C.E. 145—Traffic control	2
C.E. 139—Airports	2	Commerce 136—Transportation problems	3
Commerce 135—Railway transportation	3	Commerce 169—Air transportation	3

GENERAL

C.E. 102—Estimates and costs	2	C.E. 104—Engineering valuation	2

[1] Course may be taken in either the first or the second semester.
[2] Course content is different for the two semesters and may be repeated for credit.

COMBINED CURRICULUM IN CIVIL ENGINEERING AND CITY PLANNING

LEADING TO THE DEGREES OF BACHELOR OF SCIENCE (CIVIL ENGINEERING) AND BACHELOR OF SCIENCE (CITY PLANNING)*

The five-year combined curriculum in Civil Engineering and City Planning is designed to provide professional training in city planning for students who are enrolled in the civil engineering course. Related courses of instruction that are offered will enable students to obtain a broad understanding of the physical, sociological, and economic problems of city planning with sufficient technical skill to qualify them for positions as city planning engineers, municipal engineers, and staff members with planning consultants and agencies.

FRESHMAN YEAR, SOPHOMORE YEAR, AND SUMMER CAMP

Same as in Civil Engineering Curriculum. See page 413.

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Geology 9a—Engineering geology	3	Mech. 52—Materials of construction	2
Mech. 3—Mechanics of materials	4	C.E. 132—Highway engineering	3
Mech. 51—Materials of construction	2	C.E. 142[1]—Advanced city planning	2
Econ. 117[1]—Outlines of land economics	3	Econ. 130[1]—Economics statistics	3
C.E. 141[1]—City planning	2	Econ. 179[1]—Urban land economics	3
C.E. 72—Elementary hydraulics	4	Geography 129[1]—Urban geography	3
		Sociology 171[1]—Planning and social organization	3
	18		19

SENIOR YEAR

M.E. 67—Thermodynamics and heat-power	4	C.E. 52—Structural analysis	4
C.E. 181—Hydrology	2	C.E. 155—Reinforced concrete	3
C.E. 144[1]—Municipal engineering practice	2	C.E. 191—Sewerage and sewage treatment	3
Art History 131[1]—American architecture	3	C.E. 145[1]—Traffic control	2
Econ. 124a[1]—Public finance	3	C.E. 103—Economic selection	2
Pol. Science 13[1]—Municipal government	3	Pol. Science 163[1]—Local planning administration	3
Sociology 163[1]—Modern population problems	3	Speech 7[1]—Public speaking	2
		Junior trip (C.E.)	0
	20		19

FIFTH YEAR

C.E. 139[1]—Airports	2	C.E. 54—Structural design	2
C.E. 143[1]—City planning design	2	C.E. 101—Contracts and specifications	2
C.E. 53—Structural design	3	C.E. 164—Foundations	2
C.E. 195—Water supply	3	C.E. 100—Thesis	2
C.E. 100—Thesis	1	E.E. 10-60—Elementary electrical engineering	4
C.E. 160—Advanced reinforced concrete	3	Electives	5
Mech. 110—Soil mechanics	3		
Electives	2		
Senior trip (C.E.)	0		17
	19	Total	190

* The degrees will be granted at the end of the fifth year upon completion of requirements.

[1] The requirements for the degree of Bachelor of Science in City Planning consist of the requirements for the degree of Bachelor of Science in Civil Engineering and the courses indicated by the superior figure [1] in the combined course curriculum.

ELECTRICAL ENGINEERING CURRICULUM*

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (ELECTRICAL ENGINEERING)

(First Four Semesters Same for Both Options)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Drawing 12—Engineering drawing	3	Drawing 23—Engineering drawing and descriptive geometry	3
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
M.E. 32—Machine practice	2	Speech 8a—Extempore speaking	2
or		or	
Speech 8a—Extempore speaking	2	M.E. 32—Machine practice	2
Freshman lectures	0	Physical Education	0
Physical Education	0	Military Training	0
Military Training	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 53—General physics	5	Physics 54—General physics	5
Econ. 1a—General economics	4	Mech. 4—Statics and dynamics	4
E.E. 20—Electrodynamics	3	E.E. 22—Electrodynamics	3
E.E. 21—Electrodynamics laboratory	1	E.E. 23—Electrodynamics laboratory	2
Military Training	0	Military Training	0
	17		18

PROFESSIONAL OPTION

JUNIOR YEAR

E.E. 30—Alternating-current circuits	4	E.E. 32—Direct-current machinery	3
E.E. 31—Alternating-current circuits laboratory	2	E.E. 33—Direct-current machinery laboratory	1
Mech. 3—Mechanics of materials	4	E.E. 34—Fundamental electronics	4
Mech. 53—Materials of construction	2	E.E. 35—Fundamental electronics laboratory	2
M.E. 64—Thermodynamics and heat-power	3	E.E. 36—Advanced circuits and networks	4
M.E. 74—Heat-power laboratory	2	M.E. 45—Machine design	3
Math. 111—Higher mathematics	3	Electives	3
		Junior inspection trip	0
	20		20

SENIOR YEAR

E.E. 40—Alternating-current machinery	3	Physics 106—Atomic physics	3
E.E. 41—Alternating-current machinery laboratory	2	E.E. 99—Professional expression	3
E.E. 42—Electrical measurements	4	E.E. 138[1]—Power system analysis	3
Professional problems	1	C.E. 71[1]—Hydraulics	3
E.E. 127[1]—Electric power systems	3	E.E. 184[2]—Advanced communications engineering	4
E.E. 151[1]—Industrial electronics	3	E.E. 185[2]—Advanced communications engineering laboratory	2
E.E. 182[2]—Communications engineering	4	Electives	6
E.E. 183[2]—Communications engineering laboratory	2		
Electives	3		
Senior inspection trip	0		
	19		18

NOTE: It is recommended that at least 6 of the elective credits be taken in non-professional courses.

[1] Required for Power Major.
[2] Required for Electronics and Communications Major.
* Note that the GENERAL REQUIREMENT stated on page 406 must be fulfilled by all students.

GENERAL OPTION

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
E.E. 30—Alternating-current circuits	4	E.E. 32—Direct-current machinery	3
E.E. 31—Alternating-current circuits laboratory	2	E.E. 33—Direct-current machinery laboratory	1
Mech. 3—Mechanics of materials	4	E.E. 34—Fundamental electronics	4
Mech. 53—Materials of construction	2	E.E. 35—Fundamental electronics laboratory	2
M.E. 64—Thermodynamics and heat-power	3	Psych. 3—Psychology for engineers	3
M.E. 74—Heat-power laboratory	2	M.E. 45—Machine design	3
Electives	3	Electives	4
		Junior inspection trip	0
	20		20

SENIOR YEAR

E.E. 40—Alternating-current machinery	3	E.E. 99—Professional expression	3
E.E. 41—Alternating-current machinery laboratory	2	E.E. 102—Principles of electrical communication	3
E.E. 42—Electrical measurements	4	C.E. 71—Hydraulics	3
E.E. 127—Electric power systems	3	Technical electives	6
Electives	6	Electives	3
Professional problems	1		
Senior inspection trip	0		
	19		18

NOTE: It is recommended that at least 6 of the elective credits be taken in commerce and/or economics.

SUGGESTED TECHNICAL ELECTIVES:

E.E. 133—Illumination and photometry
E.E. 137—Power distribution
E.E. 151—Industrial electronics
M.E. 12—Principles of industrial engineering
M.E. 115—Industrial plant design
M.E. 116—Motion and time study

SUGGESTED COMMERCE AND ECONOMICS ELECTIVES:

Commerce 109a–b—Commercial law
Commerce 117—Production planning and control
Econ. 142—Public utilities
Commerce 171—Personnel management
Commerce 134—Industrial statistics
Commerce 122—Labor problems
Commerce 173—Job evaluation and merit rating
Commerce 172—Management and labor relations
Commerce 111—Industrial management
Econ. 145—American labor history
Econ. 146—Government and business
Commerce 108a—Accounting principles
Commerce 137—Corporation finance
Commerce 195—Public utility management

MECHANICAL ENGINEERING CURRICULUM*

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Drawing 12—Engineering drawing	3	Drawing 23—Engineering drawing and descriptive geometry	3
Speech 9—Extempore speaking	3	M.E. 25—General machine practice	3
or		or	
M.E. 25—General machine practice		Speech 9—Extempore speaking	
Freshman lectures	0	Physical Education	0
Physical Education	0	Military Training	0
Military Training	0		
	18		18

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 51—General physics	5	Physics 52—General physics	5
Mech. 1—Statics	3	Mech. 2—Dynamics	3
Econ. 1a—General economics	4	Drawing 24—Advanced engineering drawing	2
M.&M.E. 8—Metallography	2	M.&M.E. 33—Foundry	2
or		or	
M.&M.E. 33—Foundry		M.&M.E. 8—Metallography	
Military Training	0	M.E. 37—Welding	2
		Military Training	0
	18		18

JUNIOR YEAR

M.E. 41—Mechanism	3	M.E. 43—Machine elements	3
M.E. 61—Heat power I	3	M.E. 62—Heat power II	3
Mech. 3—Mechanics of materials	4	M.E. 72—Heat power laboratory I	2
Mech. 52—Materials of construction	2	E.E. 6—Electrical circuits	4
M.E. 12—Principles of industrial engineering	3	E.E. 56—Electrical circuits laboratory	1
C.E. 71[1]—Hydraulics	3	M.E. 13—Engineering and manufacturing cost analysis	3
		M.E. 99—Technical writing	3
		Junior inspection trip	0
	18		19

SENIOR YEAR

M.E. 44—Advanced machine design	3	M.E. Electives[2]	6
M.E. 52—Machine design laboratory	2	S.S. 120—Human relations for engineers	3
M.E. 63—Heat power III	3	Contemporary trends 103	3
M.E. 73—Heat power laboratory II	2	Free electives	6
E.E. 7—Electrical machinery	4		
E.E. 57—Electrical machinery laboratory	1		
Professional problems	1		
Free elective	3		
Senior inspection trip	0		
	19		18

* Note that the GENERAL REQUIREMENT stated on page 406 must be fulfilled by all students.
[1] May be deferred to first semester, senior year.
[2] These electives must include courses from two of the three groups listed below.

MECHANICAL ENGINEERING ELECTIVES

FROM WHICH CHOICES MUST BE MADE

GROUP A (Industrial Engineering)	Credits
M.E. 115—Industrial plant design	3
M.E. 116—Motion and time study	3
M.E. 126—Tool engineering	3
GROUP B (Machine Design)	
M.E.141—Dynamic problems in design	3
M.E. 142—Adv. kinematics of machinery	3
M.E. 143—Adv. mechanics of machinery	3

GROUP C (Heat Power)	Credits
M.E. 170—Air conditioning	3
M.E. 161—Adv. thermodynamics for mechanical engineers	3
M.E. 162—Refrigeration	3
M.E. 164—Industrial heat transfer	3
M.E. 166—Power plant econ. and design	3
M.E. 167—Heat power calculations	2
M.E. 168—Heating and ventilating	3
M.E. 169—Internal combustion engines	3
M.E. 171—Gas turbines & jet propulsion	3
M.E. 172—Flow of compressible fluids	3
M.E. 174—Advanced heat power lab.	1
M.E. 178—Heating & ventilating lab.	2

MINING ENGINEERING CURRICULA*

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (MINING ENGINEERING)

A. MINING ENGINEERING OPTION

B. MINING GEOLOGY OPTION (Metallic Minerals)

C. MINING GEOLOGY OPTION (Petroleum)

In all options the work of the first two years is the same. In anticipation of his senior year's selection of one of the three options, the junior elects the indicated courses in geology and/or hydraulic engineering.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Drawing 12—Engineering drawing	3	Drawing 23—Engineering drawing and descriptive geometry	3
C.E. 118—Short course in surveying	3	M.&M.E. 12—Mine surveying	2
Freshman Lectures	0	Physical Education	0
Physical Education	0	Military Training	0
Military Training	0		
	18		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 51—General physics	4	Physics 52—General physics	4
M.&M.E. 101—Excavation and tunneling	3	Chem. 14—Quantitative analysis	4
Geol. 6—Mineralogy	5	Geol. 6—Mineralogy	3
Geol. 9—Engineering geology	3	Geol. 9—Engineering geology	3
Military Training	0	Military Training	0
	19		18

JUNIOR YEAR

M.&M.E. 102—Mining methods	3	M.&M.E. 103—Mining methods	3
Mech. 4—Statics and dynamics	4	M.&M.E. 121—Assaying	3
Geol. 103[1]—Petrology	5	M.&M.E. 127—Principles of extractive metallurgy	3
or		Mech. 5—Mechanics of materials	3
Geol. 112[2]—Stratigraphy	3	Mech. 53—Materials of construction	2
and		Electives[1,2] in Geology and	
Geol. 133—Sedimentation	3	or	
M.&M.E. 99—Engineering expression	3	Hydraulic Engineering	5
Electives	2		
	17 or 18		19

[1] For students who plan to elect the Mining Engineering or the Metallic Minerals Geology Option.
[2] For students who plan to elect the Petroleum Geology Option.
Summer inspection trip required. To be resumed in 1952.
* Note that the GENERAL REQUIREMENT stated on page 406 must be fulfilled by all students.

A. MINING ENGINEERING OPTION

SENIOR YEAR

M.&M.E. 105—Mine engineering	3	M.&M.E. 104—Mineral valuation	3
M.&M.E. 107—Mineral dressing	3	M.&M.E. 106—Mine engineering	3
M.&M.E. 108—Mineral dressing laboratory	2	M.&M.E. 109—Advanced mineral dressing	3
M.&M.E. 125—Metallurgy of nonferrous metals	3	M.&M.E. 151—Future of the mineral industry	3
E.E. 8—Electrical machinery	3	E.E. 9—Electrical machinery	3
Geol. 114—Structural geology	5	Geol. 115—Metamorphic geology or Electives	4
	19		19

B. GEOLOGY OPTION (METALLIC MINERALS)

M.&M.E. 105—Mine engineering	3	M.&M.E. 104—Mineral valuation	3
M.&M.E. 107—Mineral dressing	3	M.&M.E. 106—Mine engineering	3
M.&M.E. 108—Mineral dressing laboratory	2	M.&M.E. 109—Advanced mineral dressing	3
Geol. 114—Structural geology	5	M.&M.E. 151—Future of mineral industry	3
Geol. 141—Minerography	3	Geol. 115—Metamorphic geology	5
Geol. 151—Principles of economic geology	3	Electives in geology	2
	19		19

C. GEOLOGY OPTION (PETROLEUM)

M.&M.E. 105—Mine engineering	3	M.&M.E. 104—Mineral valuation	3
M.&M.E. 107—Mineral dressing	3	M.&M.E. 106—Mine engineering	3
M.&M.E. 108—Mineral dressing laboratory	2	M.&M.E. 109—Advanced mineral dressing	3
Geol. 114—Structural geology	5	M.&M.E. 151—Future of the mineral industry	3
Geol. 123—Petroleum geology	3	Geol. 123—Petroleum geology	3
Electives in geology	3	Geol. 163—Ground water geology	3
	19		18

NOTE: All electives subject to departmental approval.

METALLURGICAL ENGINEERING CURRICULUM*

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (METALLURGICAL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math 52—Elementary analysis	5
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Drawing 12—Engineering drawing	3	Drawing 23—Engineering drawing and descriptive geometry	3
M.&M.E. 22—Introduction to metallurgy	2	M.E. 32—General industrial machine practice	2
Freshman lectures	0	Physical Education	0
Physical Education	0	Military Training	0
Military Training	0		
	17		17

SOPHOMORE YEAR

Math 102a—Calculus	4	Math. 102b—Calculus	4
Physics 51—General physics	4	Physics 52—General physics	4
M.&M.E. 121—Assaying	3	M.&M.E. 124—Metallurgy of iron and steel	3
M.&M.E. 122—Principles of metallurgy	3	Chem. 14—Quantitative analysis	4
Econ. 1a—General economics	4	Electives	3
Military Training	0	Miltary Training	0
	18		18

JUNIOR YEAR

M.&M.E. 128—Metallography of iron and steel	3	M.&M.E. 127—Principles of extractive metallurgy	3
M.&M.E. 131—Foundry metallurgy	3	M.&M.E. 140—Heat treatment of iron and steel	3
M.&M.E. 134—Physical metallurgy	3	Chem. 130b—Physical chemistry	3
Chem. 130a—Physical chemistry	3	Chem. 131b—Physical chemistry laboratory	1
Chem. 131a—Physical chemistry laboratory	1	Mech. 5—Mechanics of materials	3
Mech. 4—Statics and dynamics	4	Mech. 53—Materials of construction	2
M.&M.E. 99—Engineering expression	3	Electives	4
	20		19

* Note that the GENERAL REQUIREMENT stated on page 406 must be fulfilled by all students.

SENIOR YEAR

M.&M.E. 107—Mineral dressing	3	M.&M.E. 133—Properties and uses of industrial alloys	3
M.&M.E. 129—Extractive metallurgy processes	3	M.&M.E. 136—Physical metallurgy of surfaces	3
M.&M.E. 125—Metallurgy of nonferrous metals	3	M.&M.E. 147—Alloy structures	3
M.&M.E. 135—Metallurgical calculations	3	M.&M.E. 148—Metallurgical X-ray and spectrographic studies	3
E.E. 8—Electrical machinery	3	M.&M.E. 150—Metallurgical seminar	2
Electives	3	E.E. 153—Electronics	3
		Electives	2
	18		19

NOTE: Elective credits subject to departmental approval.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters
Sem—a one-semester course
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
cr—number of credit hours per semester
*cr—credit to be arranged

Courses numbered under 100 may be credited only by undergraduates; those in the 100-group may be credited by both undergraduates and graduates; those in the 200-group are ordinarily open only to graduates.

The unit of reckoning the credit is one hour of classroom work per week. Two hours of drawing, laboratory, field, or shop work (which require little outside preparation) count as one hour of classroom work.

For courses required in the engineering curricula but given in the College of Letters and Science, see the bulletin of that college or the General Catalog.

CHEMICAL ENGINEERING

Professors Hougen, *chairman*, Ragatz, Altpeter; Associate Professors Marshall, Neill, Watson; Assistant Professor Kirk; Instructors Holcomb, Johnson, Michaels.

12. Technical Analysis. I, II; 2 cr. Examinations of fuels, gases, and water. Prerequisite: Chemistry 11a or 14. Mr. Johnson.

18. Fundamentals of Chemical Engineering. I, II; 3 cr. Elementary chemical engineering calculations pertaining to density, composition, pressure, the gas laws, gas-vapor mixtures, material balances. Prerequisites: Chemistry 11a or 14 or concurrent registration, Mathematics 52, Physics 51. Mr. Ragatz.

20. Industrial Chemistry. I, II; 3 cr. The chemical, economic, and engineering aspects of selected industries. Prerequisites: Chemistry 120 or concurrent registration, and Chemistry 4b. Mr. Altpeter.

41. Elementary Chemical Engineering Principles. I; 3 cr. Chemical engineering calculations pertaining to density, pressure, the simple gas laws, gas-vapor mixtures, material balances for chemical processes. Flow of fluids with reference to friction losses, metering devices, pumps and piping. Prerequisites: Physics, general chemistry, junior standing. Not open to students in chemical engineering. Mr. Kirk.

42. Survey of Unit Operations. II; 3 cr. Heat transfer, air conditioning, drying, distillation, gas absorption, solvent extraction, filtration, crushing and grinding, size separation. Prerequisite: Ch.E. 41. Not open to students in chemical engineering. Mr. Kirk.

99. Engineering Reports. Fundamentals of technical writing with special emphasis on reports. Mr. Watson.

101. Applied Electrochemistry. I, II; 4 cr. The principles of electrolysis and their applications to electroplating, refining of metals, and chemical manufacture. Prerequisite: Physics 52. Mr. Neill.

111. Unit Operations. Yr; 4 cr. The principles and laws governing fluid flow, distillation,

filtration, drying, gas absorption, mechanical separation of materials, etc. Prerequisites: Mathematics 102b or concurrent registration, and Ch.E. 18. Mr. Kirk, Mr. Johnson, Mr. Michaels.

114. Operations and Process Laboratory. Summer; 5 cr. Manufacture of chemicals, recovery of products from waste materials, experiments in unit operations. Prerequisites: Chemistry 14 or 11a, Ch.E. 111b, 116. Mr. Altpeter, Mr. Neill.

115. Organic Progress Principles. I, II; 3 cr. A survey of the applications of chemical engineering principles in the organic industries. Prerequisites: Chemistry 122 and Ch.E. 111b. Mr. Kirk.

116. Material and Energy Balances. I, II; 3 cr. Application of physical and chemical principles to the solution of thermal problems in the chemical industries. Prerequisite: Ch.E. 18. Mr. Ragatz, Mr. Hougen.

117. Process Measurements and Control. I, II; 3 cr. Measurement and control of temperature, pressure, fluid flow, liquid level, etc. Prerequisite: Physics 52. Mr. Altpeter.

118. Chemical Engineering Thermodynamics. I, II; 3 cr. The principles of thermodynamics and their application to chemical engineering problems and equilibria in chemical and physical processes. Prerequisites: Ch.E. 116. Mr. Altpeter, Mr. Holcomb.

121. Chemical Plant Projects. II; 3 cr. Advanced problems in chemical processing, equipment and plant design. Prerequisite: Ch.E. 142, 150 or consent of instructor. Mr Watson.

122. Special Problems. I, II; 3 or 4 cr. Research problems involving opportunity for extended independent effort. Prerequisites: Ch.E. 111b, senior standing. Staff.

129. Corrosion. II; 3 cr. The application of the principles of electrochemistry to the corrosion of metals. Prerequisite: Ch.E. 101. Mr. Neill.

130. Heat Transmission. I; 3 cr. Theories of heat transfer and their applications to the design of equipment and to process calculations. Prerequisite: Senior standing. Mr. Altpeter.

140. Technology of Plastics. II; 3 cr. The production, properties and fabrication of the plastic materials of industrial importance. Prerequisites: Chemistry 122, 130b. Mr Ragatz.

141. Plastics and High Polymer Laboratory. II; 1–3 cr. Laboratory experiments on the polymerization and testing of plastics. Prerequisites: Chemistry 122, 130b, Ch.E. 140, or concurrent registration. Mr. Ragatz.

142. Chemical Engineering Materials. I, II; 3 cr. The properties of metallic and nonmetallic materials used in the construction of chemical processing equipment. Prerequisites: Chemistry 122 and junior standing. Mr. Ragatz.

150. Design of Chemical Processing Equipment. I, II; 3 cr. Application of the principles of chemical engineering and mechanics to the selection and design of equipment for the process industries. Prerequisites: Ch.E. 111b, 116, Mechanics 5. Mr. Watson.

180. Advanced Independent Studies. I, II; 1–5 cr. Research on assigned topics. Staff.

200. Thesis Research. I, II; *cr. Mr. Altpeter, Mr. Hougen, Mr. Kirk, Mr. Marshall, Mr. Neill, Mr. Ragatz, Mr. Watson.

218. Advanced Chemical Engineering Thermodynamics. II; 3 cr. The application of thermodynamic principles to solutions, complex physical and chemical equilibria and to the estimation of thermodynamic properties from molecular constants. Prerequisite: Ch.E. 118 or consent of instructor. Mr. Hougen.

219. Kinetics and Catalysis. II; 3 cr. The principles of chemical kinetics and catalysis and their application to industrial processes. Prerequisite: Ch.E. 111b, 118, or consent of instructor. Mr. Watson.

220. Distillation. I; 3 cr. The design and analysis of fractionation equipment for

binary and complex mixtures. Prerequisite: Ch.E. 111b, 118, or consent of instructor. Mr. Watson.

221. Diffusional Operations. I; 3 cr. The principles of diffusion and their application to heterogeneous chemical processes and to the unit operations of absorption, adsorption, and extraction. Prerequisite: Ch.E. 111b or consent of instructor. Mr. Marshall.

223. Hydrocarbon Technology. II; 3 cr. The application of the principles of chemical engineering thermodynamics, kinetics, and unit operations to the design and analysis of processes for the production and utilization of hydrocarbons. Prerequisite: Ch.E. 115, 118, 150, or consent of instructor. Mr. Watson.

224. Advanced Problems in Chemical Engineering. II; 3 cr. Applications of ordinary and partial differential equations to the solution of complex problems of chemical engineering, such as unsteady state processes, and transient phenomena in absorption, adsorption, fluid flow, extraction, and leaching. Prerequisites: Mathematics 111 or 112, Ch.E. 111b, 118. Mr. Marshall.

230. Research Seminar. I, II; 1 cr. Mr. Watson.

231. Seminar. I, II; 1 cr. A study of various problems in chemical engineering. Staff.

232. Advanced Corrosion. II; 3 cr. Reading course. Mr. Neill.

233. Advanced Unit Operations. I; 3 cr. An advanced treatment of the operations of drying of solids, drying of gases, atomization, mist and dust collection, and particle technology. Prerequisite: Ch.E. 130, Ch.E. 111b, or consent of instructor. Mr. Marshall.

280. Advanced Independent Studies. I, II; *cr. Staff.

CIVIL ENGINEERING

Professors Woodburn, *chairman*, Cottingham, Lenz, Rader, Rohlich; Associate Professors Crandall, Easton, Villemonte, Wagner; Instructors Bryan, Haas, Kallsen, Kolf, Lawton, Sell; Lecturer Nichols.

GENERAL

99. Engineering Reports. I, II; 3 cr. Practice in preparing technical papers and reports. Prerequisite: English 1b. Staff.

100. Thesis (undergraduate). I, II; 3–5 cr. Required of all students in civil engineering. (See page 408.) Prerequisite: Senior standing. Staff.

101. Contracts and Specifications. II; 2 cr. Professional and contractual relationships of the engineer; preparation of contract documents; the engineer's contacts with the laws of mechanics liens, eminent domain, patents, real property, and water rights. Prerequisite: Senior standing. Mr. Woodburn.

102. Estimates and Costs. I; 2 cr. Practice in scaling quantities and preparing estimates of costs. Prerequisite: Junior standing.

103. Economic Selection. I, II; 2 cr. The application of economic principles to engineering problems; calculation of annual costs, present worth, and prospective rates of return; increment costs, sunk costs, and the economy of equipment replacement. Prerequisite: Junior standing. Mr. Crandall.

104. Engineering Valuation. II; 2 cr. Concepts of value, mortality studies for physical property, methods of estimating depreciation, construction cost indexes and trends; engineering valuations for taxation, rates, insurance, financing, purchase or sale. Prerequisite: C.E. 103 or consent of instructor. Mr. Crandall.

180. Advanced Independent Study (undergraduate). (See page 408.)

200. Thesis (graduate). I, II; 5–8 cr. Required in civil engineering for the M.S. and Ph.D. degrees. (See page 408.) Prerequisite: Graduate standing. Staff.

280. Advanced Independent Study (graduate). (See page 408.)

Junior Trip. II; 0 cr. Visits under direction of the faculty to various industries and construction projects in and about Chicago.

Senior Trip. I; 0 cr. Visits under direction of the faculty to structural, hydroelectric, water supply, and sewage treatment plants and highway projects in southern Wisconsin.

SURVEYING

15. Elementary Surveying. I; 2 cr. Taping; differential and profile leveling; use of compass. Mr. Wagner and staff.

16. Elementary Surveying. II; 2 cr. Use and adjustment of transit; computation of latitudes and departures; elementary triangulation; stadia traverse. Prerequisites: Trigonometry and C.E. 15. Mr. Wagner and staff.

17. Topographic and Land Surveying. I; 3 cr. Computation of land areas; field astronomy; planimeter; contours; transit-stadia mapping; U. S. public land surveys; property surveys. Prerequisite: C.E. 16. Mr. Wagner and staff.

23. Curves and Location. I, II; 4 cr. The principles of location as applied to highways, railways, pipelines, canals, and transmission lines, including surveys, curves, turn-outs, earthwork calculations, haul and the mass diagram, and economy in grades and curves. Prerequisites: Mathematics 51, Drawing 12, C.E. 16. Mr. Kallsen and staff.

114. Advanced Surveying. I; 3 cr. Hydrographic surveys; underground surveying; barometric leveling; precise traverse; field astronomy; property surveys. Prerequisite: C.E. 17. Mr. Wagner.

116. Summer Survey. 4 cr. Four weeks of field and office practice in summer camp. Prerequisite: C.E. 17 or equivalent. Mr. Wagner and staff.

117. Topographic Engineering. II; 3 cr. Theory and practice in surveying for non-engineering students. Use of tape, level, transit, plane table, and compass. Mr. Wagner and staff.

118. Short Course in Surveying. I, 3 cr. Theory and practice of surveying; use of tape, level and transit. For engineering students other than those in civil engineering. Prerequisite: Trigonometry. Mr. Wagner and staff.

119. Photogrammetry. II; 3 cr. Basic principles of photogrammetry, and training in the use of instruments; map projections and grids; radial line plots; mosaics; ground control; stereoscopic plotting methods. Prerequisite: C.E. 17 or 118 or consent of instructor. Mr. Wagner.

122. Practice in Route Surveying. 2 cr. Two weeks of field and office practice in summer camp. Prerequisite: C.E. 23. Mr. Wagner and staff.

HIGHWAY ENGINEERING

132. Highway Engineering. I, II; 3 cr. Principles of highway design; subgrade soils; drainage; construction and maintenance of pavements and road surfaces; economics; finance. Prerequisites: C.E. 23, Mechanics 3. Mr. Rader, Mr. Haas.

133. Advanced Highway Design. I; 3 cr. Problems of an advanced nature in the design of the modern highway; design of rigid and flexible pavements; culverts. Prerequisite: C.E. 132. Mr. Rader, Mr. Haas.

134. Bituminous Materials Testing. II; 3 cr. The testing of bituminous road materials. Prerequisite: C.E. 132. Mr. Rader.

135. Soils and Aggregates Testing. I; 3 cr. Testing of soils and aggregates for highway purposes; soil classification; subgrade drainage; frost phenomena; soil stabilization; applications to road construction. Prerequisite: C.E. 132. Mr. Rader, Mr. Larson.

136. Highway Administration. II; 2 cr. Methods of administration, including historical development, organization of highway departments, highway transportation surveys, planning, finance, administration of construction projects, and control of maintenance operations. Prerequisite: C.E. 132. Mr. Rader.

139. Airports. I; 2 cr. Physical requirements of airport sites; design and construction of hangars, landing fields, and runways; airport administration; law of airports. Prerequisite: Mechanics 3. Mr. Rader.

CITY PLANNING*

141. City Planning. I, II; 2 cr. History of city planning; classes and use of streets; land subdivisions; transit and transportation systems; parks and playgrounds; public buildings; housing; zoning. Prerequisite: Sophomore standing. Mr. Rader.

142. Advanced City Planning. II; 2 cr. Neighborhood and community planning; housing; redevelopment of blighted areas; decentralization of industry and residence; control of land subdivision; planning for the urban region; selection and design of sites for neighborhood units, public buildings, transportation terminals, airports, motor vehicle parking, parks, and recreational facilities; financing municipal improvements; legislation; administrative problems. Prerequisite: C.E. 141. Mr. Rader.

143. City Planning Design. I; 2 cr. Field surveys and office designs of subdivision layouts including public improvements and utilities; site plans for buildings and structures; layouts for transportation terminals, motor vehicle parking, parks and recreational facilities. Prerequisite: C.E. 142. Mr. Rader.

144. Municipal Engineering Practice. I; 2 cr. Width and arrangement of streets; crowns and intersections; sidewalks; curbs and gutters; street surface details; parkways; parks; trees and shrubs. Prerequisite: C.E. 17. Mr. Rader, Mr. Haas.

145. Traffic Control. II; 2 cr. Causes of accidents and congestion; traffic surveys; physical facilities for controlling highway traffic; signs; signals; parking; traffic laws; administration. Prerequisite: Junior standing. Mr. Rader, Mr. Haas.

STRUCTURAL ENGINEERING

52. Analysis of Simple Structures. I, II; 4 cr. Stresses in simple structures and frameworks. Prerequisite: Mechanics 3. Mr. Cottingham, Mr. Crandall and staff.

53. Structural Design. I, II; 3 cr. The analysis and design of simple members, connections, and roof trusses. Prerequisite: C.E. 52. Mr. Cottingham, Mr. Crandall and staff.

54. Structural Design. I, II; 2 cr. The analysis and design of bridge trusses, plate girders, and building frames. Prerequisite: C.E. 53. Mr. Cottingham, Mr. Crandall and staff.

60a. Structural Design. I; 2 cr. A short course in the designing of roofs and buildings. Designed for students in mechanical, electrical, and mining engineering. Prerequisite: Mechanics 3. Mr. Cottingham, Mr. Crandall.

60b. Structural Design. II; 2 cr. A short course in the analysis and design of reinforced concrete structures. Prerequisite: Mechanics 3. Mr. Cottingham, Mr. Crandall.

155. Reinforced Concrete. II; 3 cr. Principles of reinforced concrete construction; analysis and problems in design. Prerequisite: Mechanics 3. Mr. Cottingham and staff.

156. Analysis and Design of Arches. I; 2 cr. Analysis and design of concrete, steel, and wood arches. Prerequisite: C.E. 52. Mr. Cottingham.

157. Indeterminate Structures. I; 3 cr. Principles of virtual work, Williot-Mohr diagrams, stresses in redundant members, and analysis of continuous frames. Prerequisite: C.E. 52. Mr. Cottingham.

* Students desiring work in planning and planting of public grounds, parks, and home grounds, see courses in Horticulture, College of Agriculture.

158. INDETERMINATE STRUCTURES. II; 2 cr. Continuation of C.E. 157 which is prerequisite. Mr. Cottingham.

159. DESIGN OF TIMBER STRUCTURES. I; 2 cr. Elements of joint and truss design in timber; grading, built-up and spaced columns, fasteners and connections, ring connectors. Prerequisite: Mechanics 3. Mr. Crandall.

160. REINFORCED CONCRETE. I; 3 cr. Continuation of C.E. 155 which is prerequisite. Mr. Cottingham and staff.

161. ADVANCED REINFORCED CONCRETE. II; 2 cr. Special problems in reinforced concrete design. Prerequisites: C.E. 155 and 157. Mr. Cottingham.

162. HIGHWAY BRIDGES AND CULVERTS. II; 2 cr. Analysis and design of bridges and culverts for highways. Prerequisites: C.E. 53 and 155. Mr. Cottingham, Mr. Crandall.

164. FOUNDATIONS. I, II; 2 cr. The principles of foundation design and construction. Prerequisite: Mechanics 110 or concurrent registration. Mr. Cottingham and staff.

HYDRAULIC ENGINEERING

71. HYDRAULICS. I, II; 3 cr. Elementary principles of engineering hydraulics applied to water and other fluids; theory and use of instruments for hydraulic measurements. For other than civil engineering students. Prerequisite: Mechanics 2. Mr. Villemonte and staff.

72. HYDRAULICS. I, II; 4 cr. Similar to course 71 but having laboratory work. Required of civil engineering students. Prerequisite: Mechanics 2. Mr. Villemonte and staff.

173. ADVANCED HYDRAULICS. I; 3 cr. Static and dynamic forces exerted by fluids; special problems of measurement of fluids and flow in closed conduits. Prerequisite: C.E. 71 or 72. Mr. Woodburn.

174. RIVER AND IRRIGATION HYDRAULICS. II; 2 cr. Uniform and non-uniform flow in natural and artificial open channels; methods of flood control; development of inland waterways; theory of hydraulic model experiments; water requirements and application of water on irrigated lands. Prerequisite: C.E. 71 or 72. Mr. Woodburn.

175. HYDRAULIC MACHINERY. II; 2 cr. Theory and use of hydraulic pumps and turbines, and their economic selection and installation. Prerequisite: C.E. 71 or 72. Mr. Lenz.

176. TESTING OF HYDRAULIC MACHINES. I; 2 cr. Methods of hydraulic machine testing. Tests are made of water wheels and of centrifugal, reciprocating and gear pumps. Laboratory work with lectures and computing periods. Prerequisite: C.E. 71 or 72. Mr. Villemonte.

177. MECHANICS OF FLUIDS. II; 3 cr. Theory of dimensional analysis and dynamic similarity; fundamental characteristics of fluid flow including effects of gravity, viscosity, and surface tension; theory of boundary layer, lift and propulsion. Prerequisite: C.E. 71 or 72. Mr. Villemonte.

181. HYDROLOGY. I; 2 cr. Water in its physical, geological, and meteorological relations as applied to water power, water supply, irrigation, drainage, soil erosion, and sanitary engineering. Prerequisite: Sophomore standing. Mr. Lenz.

182. HYDROLOGICAL INVESTIGATIONS. I; 2 cr. Investigation of water supply for power, irrigation, soil conservation, or municipal purposes. Prerequisite: C.E. 71 or 72. Mr. Lenz.

183. HYDRAULIC DESIGN. II; 2 cr. Design of hydraulic features of water-power plant based on hydrological investigations of C.E. 182. Prerequisite: C.E. 71 or 72 or consent of instructor. Mr. Lenz.

184. WATER POWER ENGINEERING. I; 2 cr. The theory, investigation and development of water power. Prerequisite: C.E. 71 or 72. Mr. Lenz.

270. HYDRAULIC ENGINEERING SEMINAR. I, II; 1 cr. Theoretical and applied problems in hydraulic engineering, with review of current research and literature. Mr. Lenz and staff.

285. SEMINAR IN RIVER BASIN PLANNING. II; (same as ECONOMICS 285 and POLITICAL SCIENCE 285) 2 or 3 cr. Natural potentialities of river basins; control methods available with modern engineering; private and public means of developing these potentialities; studies of political, administrative, and engineering experience from such river basins as the Tennessee, Columbia, St. Lawrence, and Wisconsin. Prerequisite: Graduate standing or consent of instructor. Mr. Lenz, Mr. Glaeser, Mr. Hart.

SANITARY ENGINEERING

191. SEWERAGE. II; 3 cr. The principles of design and maintenance of sanitary and storm sewer systems; survey of methods of sewage treatment. Prerequisite: C.E. 71 or 72 or concurrent registration. Mr. Rohlich and staff.

192. SEWAGE TREATMENT AND MUNICIPAL WASTE DISPOSAL. I; 3 cr. Development of disposal works and methods of sewage treatment. The student will design units of various types of treatment plants. Prerequisite: C.E. 191. Mr. Rohlich and staff.

193. WATER AND SEWAGE ANALYSIS. I; 3 cr. Study of laboratory methods of chemical and bacterial analysis and the interpretation of results for water, sewage and trade wastes. Prerequisites: Chemistry 2a and 2b or equivalent. Mr. Lawton.

194. SANITARY ENGINEERING SEMINAR. I, II; 1 cr. Review of literature on sanitary engineering, sewage, and trade-waste problems. Mr. Nichols and staff.

195. WATER SUPPLY. I; 3 cr. Development of water supplies for residential, industrial, commercial, and public services. Study of methods of water treatment, sources of supply, and distribution systems. Prerequisites: C.E. 71 or 72, 181. Mr. Rohlich, Mr. Nichols.

196. WATER TREATMENT. II; 3 cr. The application of hydraulics, chemistry and bacteriology to the design and operation of units for the mixing, flocculation, sedimentation, filtration and sterilization of water supplies; water softening; boiler feed-water treatment. Prerequisite: C.E. 195. Mr. Rohlich.

197. INDUSTRIAL WASTE TREATMENT. II; 2 cr. Characteristics and composition of wastes from canning, milk-products, tannery, pulp and paper, meat-packing and slaughter house, brewery and fermentation industries. Sampling and survey methods. Survey of methods of analysis of industrial wastes and remedial measures for treatment and disposal. Prerequisites: Chemistry 2a and 2b or equivalent, and consent of instructor. Mr. Rohlich.

DRAWING AND DESCRIPTIVE GEOMETRY

PROFESSORS ORTH, *chairman*, SHIELS; ASSOCIATE PROFESSOR LIVERMORE; ASSISTANT PROFESSORS DOKE, GRIFFITH, WORSENCROFT; INSTRUCTORS LEIDEL, STILLER.

10. ELEMENTS OF DRAWING. I, II; 3 cr. Elementary architectural drawing, lettering, blueprinting; perspective, house planning and construction. Not open to engineers. Mr. Livermore.

12. ENGINEERING DRAWING. I, II; 3 cr. Orthographic projection, sketching, lettering, dimensioning, tracing, isometric drawing, conventional representations. Orth, Doke, and Worsencroft's *Basic Engineering Drawing*. Staff.

23. ENGINEERING DRAWING AND DESCRIPTIVE GEOMETRY. I, II; 3 cr. Advanced sectioning, theory and practice of dimensioning, auxiliary views, engineering applications of theory of point, line and plane. Millar and Shiels' *Descriptive Geometry*. Prerequisite: Drawing 12. Staff.

24. ADVANCED ENGINEERING DRAWING. II; 2 cr. Sketching from machine parts, detailing from sketches, assembly from details, design layouts, limit dimensioning, multiple threads, forging drawings, welding drawings, reproduction of drawings. Prerequisite: Drawing 23. Orth, Doke, and Worsencroft's *Basic Engineering Drawing*. Staff.

ELECTRICAL ENGINEERING

PROFESSORS PETERSON, *chairman*, BENEDICT, HIGGINS, KOEHLER, LARSON; ASSOCIATE PROFESSORS RETHERFORD, RIDEOUT, WEBER; ASSISTANT PROFESSORS CALDWELL, PARENT, REITAN, SCHEIBE, SCHMITZ; INSTRUCTORS ASMUTH, JACKSON, MILLER, NICHOLS, SKILES, SPOONER, SWIFT.

6. ELECTRICAL CIRCUITS. I, II; 4 cr. General circuit theory including circuit parameters, direct-current circuits, alternating-current circuits, and magnetic circuits. Primarily for mechanical engineers. Prerequisite: Physics 52. Mr. Reitan.

7. ELECTRICAL MACHINERY. I, II; 4 cr. Theory and application of transformers, direct-current motors and generators, alternating-current motors and generators, control systems, and electronic devices. Prerequisite: E.E. 6. Mr. Reitan.

8. ELECTRICAL CIRCUITS. I; 3 cr. Electric and magnetic circuits; electromagnetics; single-phase and polyphase circuit analysis. With laboratory work. Primarily for mining and chemical engineers. Prerequisite: Physics 52. Mr. Caldwell.

9. ELECTRICAL MACHINERY. II; 3 cr. Theory and characteristics of a-c and d-c machinery; Basic principles of electron-tube circuits; electrical control. With laboratory work. Primarily for mining and chemical engineers. Prerequisite: E.E. 8. Mr. Caldwell.

10. ELEMENTARY ELECTRICAL ENGINEERING. II; 3 cr. With laboratory work (E.E. 60). Primarily for civil engineers. Staff.

20. ELEMENTARY ELECTRODYNAMICS. I, II; 3 cr. An introductory course primarily for sophomore electrical engineers. Electric and magnetic circuits. Ohm's and Kirchhoff's laws. Sources of emf. Open to students of other colleges. Prerequisites: Mathematics 102a and Physics 53, or concurrent registration. Mr. Weber.

22. ELEMENTARY ELECTRODYNAMICS. I, II; 3 cr. A continuation of E.E. 20. Electrostatic and magnetostatic fields. Prerequisite: E.E. 20. Mr. Weber.

25. ENGINEERING PAPERS. I, II; 2 cr. Preparation and presentation of technical papers. Open to engineering seniors.

30. ALTERNATING-CURRENT CIRCUIT ANALYSIS. I, II; 4 cr. Basic theory of steady-state analysis of single-phase and polyphase a-c circuits. Introduction to transient-state analysis of single-phase a-c circuits. Prerequisite: E.E. 22. Mr. Higgins.

32. DIRECT-CURRENT MACHINERY. I, II; 3 cr. A continuation of E.E. 1. Construction and operation of direct-current machinery. Prerequisite: E.E. 22. Mr. Schmitz.

34. FUNDAMENTAL ELECTRONICS. I, II; 4 cr. Fundamental theory and basic application of high-vacuum tubes, gas-filled tubes, cathode-ray tubes, photo tubes, solid-state electronics, rectifiers and amplifiers. Prerequisite: E.E. 30. Mr. Retherford.

36. CIRCUITS AND NETWORKS. I; 4 cr. An analytical and experimental study of the steady-state characteristics of network theorems, series and parallel resonant circuits, coupled circuits, transmission lines, the simple transformer and filter circuits. With laboratory work. Prerequisite: E.E. 30. Mr. Koehler.

40. ALTERNATING-CURRENT MACHINERY. I, II; 3 cr. Synchronous machinery, transformers, induction motors. Prerequisite: E.E. 30. Mr. Schmitz.

42. ELECTRICAL MEASUREMENTS. I; 4 cr. A comprehensive study of the basic principles and pertinent mathematical theory of modern electrical measurements. Associated laboratory work. Prerequisite: E.E. 30. Mr. Larson.

99. PROFESSIONAL EXPRESSION. I, II; 3 cr. Designed to give training in effective written and oral expression with special emphasis on the technical report. Prerequisite: Senior standing. Mr. Asmuth.

101. FUNDAMENTALS OF ELECTROACOUSTICAL ENGINEERING. I; 3 cr. Theory of electromechanical and acoustical vibrating systems: electrical and mechanical analogies; lumped

and distributed-constant systems. Prerequisite: Mathematics 111 or equivalent, or consent of instructor. Staff.

102. Principles of Electrical Communication. II; 3 cr. Principles of generation, transmission and reception of electrical signals for communications purposes in both the wire and radio fields. This course is designed for students who are not majoring in electronics and communications. With laboratory work. Prerequisites: E.E. 30 and E.E. 34 or equivalent. Mr. Koehler.

104. Electrical Machine Design. II; 3 cr. Individual design of a direct or an alternating-current machine. Prerequisite: E.E. 32. Given when demand warrants. Staff.

105. Valuation in Engineering. II; 3 cr. Fundamentals of engineering valuation for rate-making, financing, sale, insurance and taxation. Methods of estimating life expectancy for physical property, and cost trends. Prerequisite: Senior standing. Staff.

111. Advanced A-C Machinery. I; 3 cr. An advanced study of a-c machinery with particular emphasis on synchronous machines as complex electrical circuits. The synchronous machine is approached from the standpoint of the ideal synchronous machine. Fundamental flux linkage, reactance constants, and performance relations are developed for balanced and unbalanced operating conditions. Prerequisites: E.E. 40 and Math. 111. Mr. Peterson.

112. Electrical Conduction Through Gases and Vacuum. II; 3 cr. Basic physical theory of gaseous and vacuum tubes and gaseous discharges with typical engineering applications. Theory of sparking, corona, glow- and arc-discharge. With laboratory work. Prerequisite: E.E. 34 or consent of instructor. Mr. Benedict.

115. Control Systems. II; 3 cr. An analytical and experimental study of the steady-state and dynamic characteristics of industrial control elements, servomechanisms, and complete control systems. Rotating amplifiers, magnetic amplifiers, electric, hydraulic, and mechanical devices. With laboratory work. Prerequisite: E.E. 40 or concurrent registration, or consent of instructor. Mr. Schmitz.

116. Transients in Electric Circuits. I; 3 cr. An analytical study of electrical transients; d-c and a-c transients in linear circuits; introduction to the study of Laplace Transform Method. With laboratory work. Prerequisite: E.E. 30, Math. 111, or consent of instructor. Mr. Benedict.

120. Dielectrics and High-Voltage Insulation. II; 3 cr. Theory of the dielectric field and of gaseous, liquid and solid dielectrics, and engineering applications. Testing methods with power frequency and impulse voltages. With laboratory work. Prerequisite: E.E. 30. Mr. Benedict.

127. Electric Power Systems. I; 3 cr. Introduction to the electric power industry; technical problems of electric power networks. Prerequisite: E.E. 40 or concurrent registration. Mr. Peterson.

133. Illumination Engineering. I; 3 cr. Illumination terms, modern measuring instruments, physiological and psychological effects, color and shadow, luminaire distribution curves, incandescent and gaseous-vapor light sources, light control, illumination design, flood lighting, maintenance and economics, wiring; project work consisting of report upon an existing installation or review of current technical article. Prerequisite: E.E. 30. Mr. Larson.

137. Power Distribution. I; 3 cr. Symbols, definitions, historical matters, electrical and mechanical properties of metals, distribution of voltages, distribution planning, system costs, line constants, voltage regulation, underground distribution equipment, power-factor correction, fault currents, protective equipment, metering, rate structures, industrial and commercial building wiring. Prerequisite: E.E. 30. Mr. Larson.

138. Power-System Analysis. II; 3 cr. Power-system circuit analysis, calculation of

transmission line constants; calculation of unbalanced-fault currents by means of symmetrical components; per cent and per unit quantities. Prerequisite: E.E. 40. Mr. Peterson.

151. INDUSTRIAL ELECTRONICS. I; 3 cr. Study of tubes, circuits, and systems in industrial applications of electron tubes. Ignitrons, phase-controlled rectifiers, polyphase rectifiers, oscillators, induction and dielectric heating. With laboratory work. Prerequisites: E.E. 32 and 34 or consent of instructor. Concurrent registration in E.E. 40 is desirable. Mr. Benedict.

153. ELECTRONICS. II; 3 cr. Survey of high-vacuum and gaseous tubes, photo tubes, and other electronic devices, and of their applications in control, instrumentation, and in industry. With laboratory work. Prerequisites: E.E. 6, 8, or consent of instructor. Mr. Benedict.

155. COMMUNICATION ELECTRONICS. II; 3 cr. Fundamental theory and basic applications of the high-vacuum tube, gas-filled tubes, cathode-ray tubes, photo tubes, kinescopes and iconoscopes. With laboratory work. Prerequisite: E.E. 30 or senior standing in physics. Mr. Koehler.

158. ULTRA-HIGH FREQUENCY TECHNIQUE. II; 5 cr. An analytical and experimental study of high-frequency oscillators, such as the klystron and magnetron and special conventional tubes, transmission lines, wave-guides radiation and antennas. With laboratory work. Prerequisite: E.E. 184. Mr. Scheibe.

160. ADVANCED COMMUNICATION ENGINEERING DESIGN. I or II; 3 cr. The design of amplifiers, oscillators, receivers, transmitters, measuring equipment, radio broadcasting systems, and point-to-point communication systems. Prerequisite: E.E. 184 or consent of instructor. Mr. Koehler.

175. ELECTRONIC AIDS TO MEASUREMENTS. II; 4 cr. Fundamentals of electronic circuits (power supplies, amplifiers, oscillators, filters, discriminators, counters); sensors, servos and analog computers; combinations of the above into measuring instruments. 3 hr. lect.; 3 hr. lab. Prerequisites: Graduate standing with previous courses in elementary physics, intermediate electricity, and calculus—or consent of instructor. Mr. Rideout.

180. ADVANCED INDEPENDENT STUDY. I, II; *cr. See page 408. Staff.

182. ELECTRONICS AND COMMUNICATIONS ENGINEERING. I; 4 cr. Fundamental theory of the basic components that are used in electronic and communication systems. This includes an analytical study of vacuum-tube and transistor amplifiers, oscillators, modulators, demodulators and other related topics. Prerequisites: E.E. 34 and E.E. 36. Mr. Rideout.

184. ADVANCED ELECTRONICS AND COMMUNICATIONS ENGINEERING. II; 4 cr. Applications of basic theory of E.E. 182 to transmitters, receivers, electronic instruments, television systems and radar. Elementary principles of transmission, radiation and propagation of electromagnetic energy. Prerequisites: E.E. 182 and E.E. 183. Mr. Koehler.

186. PRINCIPLES OF TELEVISION SYSTEMS. II; 3 cr. A study of the basic principles of television systems to include closed industrial systems, commercial black and white, and color systems. With laboratory work and demonstrations. Prerequisite: E.E. 184 or concurrent registration. Mr. Parent.

200. THESIS RESEARCH. Research projects for thesis credit toward advanced degrees. Staff.

213. SYMMETRICAL COMPONENT APPLICATIONS. II; 3 cr. Principles of the method of symmetrical components. Behavior of induction and synchronous motors under unbalanced voltages. Principles of fault calculations for machines and transmission lines. Prerequisite: E.E. 40. Staff.

214. ADVANCED DYNAMO LABORATORY. II; 3 cr. Advanced laboratory tests with direct and alternating-current machinery. Prerequisite: E.E. 40. Staff.

215. SERVOMECHANISMS. II; 3 cr. Dynamics of feedback control systems; sinusoidal response analysis; synthesis in terms of linear coordinates and logarithmic coordinates. Stability criteria and their application. Optional—associated laboratory work for one hour

additional credit as arranged with instructor. Prerequisites: Mathematics 111 or E.E. 116 or equivalent. Mr. Higgins.

217. Operational Methods of Electric Circuit Analysis. I; 3 cr. Determination of the transient and steady-state performance of networks and transmission lines by Laplace transform theory. Brief exposition of the theory of Heaviside's p-operational calculus. Jeffrey's Q-operational method, and Fourier transform theory. Prerequisite: Mathematics 111 or 112, or E.E. 116, or equivalent. Mr. Higgins.

218. Theory of Nonlinear Electric Circuits. II; 3 cr. Study of the principal methods of solving nonlinear electric circuits. The analytical methods of Kryloff, Van der Pol, and Poincaré; topographical methods; graphical and numerical methods; the general theory of nonlinear resonance, oscillation and stability; application of theory to numerous oscillatory circuits. Prerequisite: Mathematics 111 or 112, or equivalent. Mr. Higgins.

231. Advanced Power-System Analysis. Yr; 3 cr. An advanced analytical study of power-system design and operation with emphasis on steady-state and transient stability. System overvoltage protection and protective relaying are briefly analyzed. Prerequisites: E.E. 127, E.E. 138, or equivalent, and graduate standing. Mr. Peterson.

232. Advanced Theory of Electric Networks. I; 3 cr. The analysis and synthesis of electrical networks used in communication engineering such as filters, attenuators, interstage networks, phase and amplitude equalizers and feedback. Also included are amplifiers, the study of noise in communication networks, and an introduction to information theory. Prerequisites: Mathematics 111 and E.E. 182, or consent of instructor. Mr. Rideout.

233. Matrix and Tensor Theory of Electric Networks and Electric Machinery. II; 3 cr. Analysis and synthesis of electric networks in terms of matrix and tensor analysis; introduction to tensor theory of electric machinery. Prerequisite: Graduate standing. Mr. Higgins.

234. Advanced Communications Measurements Laboratory. I; 3 cr. An advanced laboratory course with emphasis on methods of measuring impedance, frequency, signal power, noise power, etc., in communication circuits. Prerequisite: E.E. 158 or consent of instructor. Mr. Scheibe.

240. Electromagnetic Theory. I; 3 cr. Review of the fundamental laws of electrostatics, magnetostatics, and electrodynamics. Scalar and vector fields. Derivation of the Maxwell field equations. Application of the field equations to the solutions of specific problems. With special emphasis on engineering applications. Prerequisites: Mathematics 111 and E.E. 30 or equivalent. Mr. Koehler.

241. Electromagnetic Radiation and Transmission. II; 3 cr. Applications of Maxwell's field equations to radiation problems. Transmission, reflection, and absorption of radio waves between points on or near the surface of the earth. Radiation field patterns of antennas. Transmission of energy in wave guides. With special emphasis on engineering applications. Prerequisite: E.E. 240. Mr. Koehler.

242. Seminar in Communications Engineering. Yr; 1 cr. Preparation and presentation of material on various topics selected from the more important phases of communication engineering. Prerequisite: E.E. 184 or equivalent. Mr. Koehler.

245. Theory of Vacuum Tubes. I; 3 cr. An analytical study of triodes, pentodes, the triode at high frequencies, space charge problems, electron optics, the klystron, the magnetron, and the traveling-wave amplifier. Prerequisites: E.E. 34 and Math. 111 or consent of instructor. Mr. Retherford.

250. Analog Computing. II; 3 cr. Solution of ordinary differential and other equations by means of analog machines. Prerequisite: Graduate standing or consent of instructor. Mr. Rideout.

259. Techniques of Wave Form Generation and Manipulation. II; 3 cr. A study of the application of circuit techniques to the generation of wave forms, both sinusoidal and

otherwise, and the manipulation of wave forms to meet specific needs. Prerequisites: E.E. 182 and E.E. 116 or Math. 111 strongly recommended or consent of instructor. Mr. Parent.

280. Advanced Independent Study. I, II; *cr. See page 408. Staff.

LABORATORY COURSES

21. Electrodynamics Laboratory. I, II; 1 cr. Elementary circuit experiments and measurements. To accompany E.E. 20. Mr. Weber.

23. Electrodynamics Laboratory. I, II; 2 cr. Elementary electric and magnetic field experiments. To accompany E.E. 22. Mr. Weber.

31. Alternating-Current Circuits Laboratory. I, II; 2 cr. To accompany E.E. 30. Mr. Higgins.

33. Direct-Current Machinery. I or II; 1 cr. To accompany E.E. 32. Mr. Schmitz.

35. Fundamental Electronics Laboratory. I, II; 2 cr. Basic experimental electronics; emission, static and dynamic characteristics, performance of amplifiers, rectifiers, gas-control tubes, phototubes, and solid-state electronic devices. To accompany E.E. 34. Mr. Retherford.

41. Alternating-Current Machine Laboratory. I, II; 2 cr. Tests of a-c generators and motors, transformers, converters, and induction motors. To accompany E.E. 40. Mr. Schmitz.

56. Electrical Circuits Laboratory. 1 cr. Primarily for mechanical engineers. To accompany E.E. 7. Mr. Reitan.

57. Electrical Machinery Laboratory. 1 cr. Primarily for mechanical engineers. To accompany E.E. 6. Mr. Reitan.

60. Elementary Electrical Engineering Laboratory. II; 1 cr. To accompany E.E. 10. Staff.

183. Electronics and Communications Engineering Laboratory. I; 2 cr. An experimental study of the basic components treated in E.E. 182. To accompany E.E. 182. Mr. Rideout.

185. Advanced Electronics and Communications Engineering Laboratory. II; 2 cr. An experimental study of the systems treated in E.E. 184. To accompany E.E. 184. Mr. Koehler.

MECHANICAL ENGINEERING

Professors Elliott, *chairman*, Hyland, McNaul, Nelson; Associate Professors Daggett, Easton, Gage, Gilpin, Harker, Leutwiler, Myers, Rose, Uyehara; Assistant Professors Adkins, Akerman, Buroker, Farber, Feiereisen, Fleming, Lindberg, Livermore, Schweitzer; Instructors Bridge, Engelman, Griswold, Peters.

METAL PROCESSING

21. Welding and Sheet Metal. I, II; 1 cr. Materials, tools and equipment used in sheet metal work, pipe fitting, soldering and welding; theory and practice. For chemical engineers. Mr. Gilpin and staff.

22. Lathe and Bench Work. I, II; 1 cr. Theory and practice in filing, drilling, tapping, layout work and general lathe operation including tools, materials, cutting speeds, feeds, and demonstrations on production machines. For chemical engineers. Mr. Gilpin and staff.

23. Manufacturing Equipment and Materials. I, II; 2 cr. A general survey course covering, by lecture and demonstration, the materials, processes and equipment used in manufacturing plants. Patterns and castings, heat treatment, welding processes, hot and cold forming of metals, press work, powder metallurgy, plastic molding, inspection equipment, lathes, shapers, planers, drilling and boring machines, milling machines, gear cutting,

metal sawing, broaching and grinding. Students perform no actual shop work. Primarily for non-engineering students. Mr. Gilpin and staff.

25. MACHINE SHOP PRACTICE. I, II; 3 cr. A basic course in the study of materials, cutting tools, machine tools, machinability, cutting speeds and feeds, and general machine operations. Demonstrations on production methods, with emphasis on selection of tools, analysis of machine operations and standard times for operation. Mr. Gilpin and staff.

32. GENERAL MACHINE SHOP PRACTICE. I, II; 2 cr. A basic course in the use and application of lathes, milling machines, shapers, drill presses and grinders. Combined with theory in cutting speeds and feeds, machinability, materials, and demonstrations on production machines. For electrical engineers. Mr. Gilpin and staff.

37. WELDING. I, II; 2 cr. Lectures, demonstrations, and practice in the fundamentals and applications of oxy-acetylene welding and cutting, electric arc, electric resistance, inert-gas shielded arc, automatic submerged-melt, hard surfacing, and methods of testing. Welding metallurgy, joint design, stress relief, metal spraying, electrodes, stud, thermit, and atomic-hydrogen welding. Mr. Adkins, Mr. Lindberg, Mr. Peters and staff.

126. TOOL ENGINEERING. II; 3 cr. Theory and practice in the design, production and application of jigs, fixtures, tools and dies. Emphasis on the selection of materials, design technique, and production practice as related to use and economic considerations. Prerequisite: M.E. 23, or 25, or 32. Mr. Gilpin and staff.

127. PRODUCTION PROCESSES. I; 3 cr. An advanced course in production processes with emphasis on the selection of equipment and tools. The course includes a study of production machine features, tools and accessories, tool setups and layouts for a given job, and laboratory applications. Prerequisites: M.E. 25, junior standing in engineering and M.E. 12 or concurrent registration. Mr. Gilpin.

MACHINE DESIGN

41. MECHANISM. I; 3 cr. The relative motions of machine parts including linkages, cams, toothed gears, beltings, chains and ratchets. Prerequisite: One year of drawing and Mechanics 2 or consent of instructor. Mr. Buroker and staff.

43. MACHINE ELEMENTS. II; 3 cr. Study of the application of the principles of mechanics and empirical methods to the design of machine elements. Prerequisites: M.E. 41; Mechanics 3 or consent of instructor. Mr. Buroker, Mr. Fleming, Mr. Livermore.

44. ADVANCED MACHINE DESIGN. I, II; 3 cr. A continuation of M.E. 43 including design problems involving deflections, stresses, fatigue inertia, balancing, and vibration. The design of a complete machine. Prerequisite: M.E. 43. Mr. Harker and staff.

45. MACHINE DESIGN. I, II; 3 cr. A study of the motion and design of basic machine elements for non-mechanical engineering students. Prerequisite: Mechanics 3. Mr. Leutwiler and staff.

52. MACHINE DESIGN LABORATORY. I, II; 2 cr. Experimental determination of the strength of machine elements and the efficiency of machines, including actual stress measurements. Prerequisite: M.E. 44 or concurrent registration. Mr. Harker and staff.

100. SENIOR THESIS. I, II; 1–5 cr. Special project work in mechanical engineering. Prerequisite: Senior standing.

141. DYNAMIC PROBLEMS IN DESIGN. II; 3 cr. Application of analytical methods to design, with particular reference to the torque and force excitations in an engine, and the related vibratory and balancing problems. Prerequisite: M.E. 44 or equivalent. Mr. Harker.

142. ADVANCED KINEMATICS OF MACHINERY. I; 3 cr. Special problems in velocity and acceleration analysis. Studies of actual industrial machines from dynamic standpoint. Special problems in energy analysis. Prerequisite: M.E. 41. Mr. Leutwiler.

143. ADVANCED MECHANICS OF MACHINERY. II; 3 cr. A study of the forces acting on the

various members of a complete machine. Complicated loadings and combined stresses. The design of a complete machine with attention to function, production and economic factors. Prerequisite: M.E. 44. Mr. Leutwiler.

151, 152, 153. ADVANCED MACHINE DESIGN PROJECTS. I, II; 1–3 cr. each. Laboratory projects on which the student works on his own initiative under staff supervision. Prerequisite: Approval of Mechanical Engineering Course Committee.

180. ADVANCED INDEPENDENT STUDY. I, II; *cr. See page 408.

INDUSTRIAL ENGINEERING

12. PRINCIPLES OF INDUSTRIAL ENGINEERING. I, II; 3 cr. A general survey of the problems involved in organizing, planning, and controlling the use of men, money, materials, and machines for production. Prerequisites: Junior standing in Engineering and M.E. 22, or 25, or 32. Mr. Gage, Mr. Gilpin.

13. ENGINEERING AND MANUFACTURING COST ANALYSIS. I, II; 3 cr. An abbreviated course in the uses of industrial cost finding—basic accounting principles with emphasis on procedures used in accounting for material, labor and overhead in job-lot and process cost systems. For engineers. Prerequisite: M.E. 12 and 22, or 25 or 32. Mr. Gage, Mr. Fleming.

100. SENIOR THESIS. I, II; 1–5 cr. Special project work in mechanical engineering. Prerequisite: Senior standing.

115. INDUSTRIAL PLANT DESIGN. I, II; 3 cr. Semester report covering complete design of an industrial plant, including market survey, manufacturing planning, plant layout, organization, and financial analysis. Prerequisites: M.E. 12 or Commerce 111, and M.E. 23, or 25, or 32. Mr. McNaul and staff.

116. MOTION AND TIME STUDY. I, II; 3 cr. Principles and practice, including motion economy, operation analysis, methods, micromotion study, stop-watch time study, analysis and synthesis of data, and formula construction. Prerequisites: Junior standing in engineering, M.E. 12 and M.E. 23, or 25, or 32. Mr. McNaul.

117. PLASTICS AND PLASTIC MOLDING. I, II; 3 cr. Survey of important plastic families; basic molding practices, mold design, and other fabrication methods; equipment selection and engineering application. Prerequisite: Senior standing. Mr. Daggett.

120. MATERIALS HANDLING AND CONTROL. I, II; 3 cr. Development of basic concepts of material control in industrial plants; principles of material handling; equipment characteristics, economic selection and application; survey methods and procedures. Prerequisite: M.E. 12 or Commerce 111. Mr. Daggett.

121. INDUSTRIAL ENGINEERING PRACTICE. 3 cr. Analysis of a comprehensive industrial engineering problem on a class-group basis in the field of production planning, materials handling, time study, industrial organization, or plant layout. Prerequisites: M.E. 12 and consent of instructor.

122. INDUSTRIAL INSPECTION AND QUALITY CONTROL. I, II; 3 cr. A basic course in industrial inspection methods and quality control in industry, consisting of organization for quality control, sampling plans, control charts, gage design, and application of gaging technique using the gages and instruments in the U. S. Ordnance Gage Laboratory. Prerequisite: M.E. 23, 25, or 32. Mr. Gilpin and staff.

151, 152, 153. ADVANCED INDUSTRIAL ENGINEERING PROJECTS. I, II; 1–3 cr. each. Projects on which the student works on his own initiative under staff supervision. Prerequisite: Approval of Mechanical Engineering Course Committee.

180. ADVANCED INDEPENDENT STUDY. I, II; *cr. See page 408. Staff.

HEAT POWER

61. HEAT POWER I. I, II; 3 cr. Basic thermodynamic laws; general energy equation; characteristics of gases; gas processes and gas cycles; gas compressors and combustion engines.

Prerequisites: Physics 51, Math. 102b or concurrent registration. Mr. Farber, Mr. Myers, Mr. Nelson and staff.

62. Heat Power II. I, II; 3 cr. Properties of fluids, including use of vapor tables and charts; flow of fluids in nozzles and flow-measuring devices; mixtures of gases and vapors with emphasis on air-conditioning applications; refrigeration and heat-pump systems. Prerequisite: M.E. 61. Mr. Farber, Mr. Myers, Mr. Nelson and staff.

63. Heat Power III. I, II; 3 cr. Thermochemical calculations; Orsat analysis; fuel calorimeters and heating values; fuel-burning equipment; vapor cycles and steam power applications; steam-power-plant equipment; principles of heat transfer. Prerequisite: M.E. 62. Mr. Farber, Mr. Myers, Mr. Nelson and staff.

64. Thermodynamics and Heat Power. I, II; 3 cr. A course in the thermodynamics of gases and vapors, and their application to the most important types of prime movers and other power plant equipment. For electrical engineers. Prerequisites: Physics 54 and Math. 102b or concurrent registration. Mr. Nelson and staff.

65. Thermodynamics. I, II; 3 cr. A study of the fundamental laws and properties of gases, vapors and mixtures; flow of fluids, power and refrigeration cycles. For chemical engineers. Prerequisites: Physics 51 and Math. 102b, or concurrent registration. Mr. Akerman.

67. Thermodynamics and Heat-Power Engineering. I; 4 cr. A combined lecture and laboratory course in thermodynamics of gases and vapors and their application to the more important types of steam engines, gas engines and boilers. Laboratory determination of losses in and efficiencies of heat engines including power plants and refrigeration equipment. Prerequisites: Physics 51, Math. 102b or concurrent registration. Mr. Akerman.

72. Heat Power Laboratory I. I, II; 2 cr. Instrumentation, calibration, analysis, and equipment testing for mechanical engineers. Prerequisite: M.E. 62 or concurrent registration. Mr. Feiereisen, Mr. Myers, Mr. Schweitzer and staff.

73. Heat Power Laboratory II. I, II; 2 cr. Instrumentation, calibration, analysis, and equipment testing for mechanical engineers. Continuation of M.E. 72. Prerequisites: M.E. 63 or concurrent registration and M.E. 72. Mr. Feiereisen, Mr. Myers, Mr. Schweitzer and staff.

74. Heat Power Laboratory III. I, II; 2 cr. Calibration of instruments and the determination of the efficiencies, losses, and characteristics of simple heat engines, turbines, and internal combustion engines. For electrical engineers. Prerequisite: M.E. 64 or concurrent registration. Mr. Feiereisen, Mr. Myers, Mr. Schweitzer and staff.

76. Heat Engine Testing. I, II; 2 cr. Calibration and adjustment of instruments, determination of losses and efficiencies of heat engines, including power plant and refrigeration plant tests. For chemical engineers. Prerequisite: M.E. 65 or concurrent registration. Mr. Feiereisen, Mr. Myers, Mr. Schweitzer and staff.

100. Senior Thesis. I, II; 1–5 cr. Special project work in mechanical engineering. Prerequisite: Senior standing.

101. Vehicle Testing Theory and Practice. I, II; 3 cr. Theory and practice in the measurement of vehicle characteristics including braking drawbar pull, gradability, acceleration, tractive resistance, cooling, fuel economy, and steering. Prerequisites: Mechanics 2 and M.E. 61. Mr. Easton and staff.

151, 152, 153. Advanced Mechanical Engineering Projects. I, II; 1–3 cr. each. Laboratory projects where the student works on his own initiative under staff supervision. Prerequisite: Approval of Mechanical Engineering Course Committee.

161. Advanced Thermodynamics for Mechanical Engineers. I; 3 cr. A rigorous, detailed study of the first and second laws of thermodynamics, and of ideal and actual thermo-

dynamics process. Prerequisite: M.E. 63 or concurrent registration. Mr. Farber, Mr. Myers.

162. REFRIGERATION. II; 3 cr. Theoretical and practical considerations related to the design and operation of various types of compression and absorption refrigeration systems; properties of refrigerants; heat exchangers; refrigeration piping; automatic controls; low-temperature refrigeration; application. Prerequisite: M.E. 63 or concurrent registration or 64, or 67. Mr. Akerman.

164. INDUSTRIAL HEAT TRANSFER. I; 3 cr. Application of heat transfer principles to mechanical engineering processes involved in power generation, heating, and air conditioning. Prerequisite: M.E. 63 or concurrent registration, or 64, or 65, or 67. Mr. Farber.

166. POWER PLANT ECONOMICS AND DESIGN. I, II; 3 cr. Load curves, selection of power units, power plant layout, building design, equipment selection, estimates, operating charges, fixed charges, etc. Design and estimate of small power plant. Prerequisite: M.E. 63, or concurrent registration, or M.E. 64, or 65, or 67. Mr. Livermore and staff.

167. HEAT-POWER CALCULATIONS. I, II; 2 cr. Calculations used in practice for engines, boilers, and condensers including economic selection of equipment. Also fundamental psychometric calculations in relation to cooling towers, drying processes, condensation, etc. Prerequisite: M.E. 63 or concurrent registration, or 64, or 65. Mr. Elliott, Mr. Rose.

168. HEATING AND VENTILATING. I; 3 cr. The principles and practice of heating, ventilating and air conditioning of buildings. A study of the fundamental processes involved and the related apparatus. Prerequisite: M.E. 63 or concurrent registration, or 64, 65 or 67. Mr. Nelson, Mr. Akerman.

169. INTERNAL COMBUSTION ENGINES. I; 3 cr. Theory and design features of spark-ignition and compression-ignition engines, with emphasis on high-speed types; test methods, valve timing, and performance characteristics; fuels and combustion principles; cycle analysis using combustion charts; carburetion, fuel-injection and ignition systems; supercharging. Prerequisite: M.E. 63 or concurrent registration, or 64 or 67. Mr. Rose, Mr. Engelman.

170. ADVANCED HEATING, VENTILATING AND AIR CONDITIONING. II; 3 cr. Basic calculations for capacity and selection of equipment. Design and specifications for complete systems covering both human comfort and industrial process work. Prerequisite: M.E. 168. Mr. Nelson.

171. GAS TURBINES AND JET PROPULSION. II; 3 cr. An analysis of gas-turbine cycles, their application to industrial and aeronautical uses, and a study of jet propulsion. Prerequisite: M.E. 63 or concurrent registration. Mr. Engelman.

172. FLOW OF COMPRESSIBLE FLUIDS. II; 3 cr. A study of the thermodynamic and fluid-mechanics principles applicable to the flow of a compressible fluid. Topics covered include sub-sonic, trans-sonic, and supersonic flow, normal and oblique shock wave, nozzle and wind-tunnel design, and other related subjects. Prerequisite: M.E. 63 or concurrent registration, or M.E. 64, or 65 or 67. Mr. Farber.

174. ADVANCED HEAT-POWER TESTING. I, II; 1 cr. Continuation of M.E. 73. Dynamometer tests of automotive type spark-ignition and Diesel engines, measurements of steam flow, test of a steam turbine-electric power plant. Prerequisite: M.E. 73. Mr. Feiereisen, Mr. Myers, Mr. Schweitzer and staff.

178. HEATING AND VENTILATING LABORATORY. II; 2 cr. The testing of apparatus used in heating, ventilating and air conditioning, such as boilers, furnaces, firing devices, controls, unit heaters, fans and vacuum pumps. Prerequisites: M.E. 72, 74, 76. Mr. Nelson, Mr. Akerman.

180. ADVANCED INDEPENDENT STUDY. I, II; *cr. See page 408.

200. GRADUATE RESEARCH. I, II; 3–5 cr. Major research projects for thesis credit toward advanced degrees. Prerequisite: Graduate standing in engineering.

202. ENGINE COMBUSTION. 3 cr. A study of the theoretical and experimentally deter-

mined facts underlying combustion in all types of internal combustion engines. Prerequisite: M.E. 161. Mr. Myers, Mr. Uyehara.

203. GRADUATE SEMINAR. I, II; *cr.

217. ENGINE INSTRUMENTATION. 3 cr. The theory and design of instruments to measure rapidly varying physical phenomena, with emphasis on application to internal combustion engines. Mr. Myers, Mr. Uyehara.

280. ADVANCED INDEPENDENT STUDY. I, II; *cr. See page 408.

GENERAL

99. TECHNICAL WRITING. I, II; 3 cr. Study and practice in writing. Planning and preparation of reports. The short and long report. Surveys, observation, mechanics of style. Rough drafts and revision. Clearness of expression and accuracy of fact. Letters of application, acceptance and transmittal. The scientific paper. Mr. Hyland and staff.

120. SOCIAL STUDIES—HUMAN RELATIONS FOR ENGINEERS. I, II; 3 cr. Analysis of human relations problems characteristic of the engineering profession. Policies and procedures. Prerequisites: Senior standing and registration in the College of Engineering. Mr. Lescohier.

DEPARTMENT OF MECHANICS

PROFESSORS KOMMERS, *chairman*, PICKETT, ROARK, WASHA, WENDT (ALSO ASSOCIATE DIRECTOR —ENGINEERING EXPERIMENT STATION), WITHEY (ALSO DEAN); ASSISTANT PROFESSOR FLUCK; INSTRUCTORS BOETTCHER, CUTLER, HAFT, MANN, SAEMANN, SHERRER, WILLIAMS, YOUNG.

1. STATICS. I, II; 3 cr. Treated, as are all of the following courses, with special reference to the requirements of engineers. Prerequisites: Physics 51 or concurrent registration; Math. 102a or concurrent registration.

2. DYNAMICS. I, II; 3 cr. Prerequisites: Mechanics 1; Math. 102b or concurrent registration.

3. MECHANICS OF MATERIALS. I, II; 4 cr. Prerequisites: Mechanics 1 or 4; Math. 102b or concurrent registration.

4. STATICS AND DYNAMICS. I; 4 cr. Prerequisites: Physics 51; Math. 102b or concurrent registration. For chemical, electrical, and mining engineers.

5. MECHANICS OF MATERIALS. II; 3 cr. Prerequisites: Mechanics 1 or 4; Math. 102b or concurrent registration. For chemical and mining engineers.

The next three courses are principally laboratory work, assigned readings and reports, and preparation and manufacture of materials.

51. MATERIALS OF CONSTRUCTION. I; 2 cr. Prerequisite: Mechanics 3 or concurrent registration. For civil engineers.

52. MATERIALS OF CONSTRUCTION. II; 2 cr. Continuation of Mechanics 51.

53. MATERIALS OF CONSTRUCTION. I, II; 2 cr. Prerequisite: Mechanics 3 or 5 or concurrent registration. For chemical, electrical, mechanical, and mining engineers.

100. SENIOR THESIS. I, II; 3–5 cr. Staff.

101. ADVANCED STATICS. I; 2 cr. Continuation of Mechanics 1. Advanced problems in equilibrium and in composition and resolution of forces; virtual work, space frameworks; suspended cables. Prerequisite: Mechanics 1. Mr. Roark.

106. Advanced Mechanics of Materials. II; 3 cr. Some topics (curved beams, flat plates, elastic foundations, etc.) and analyses not included in Mechanics 3. Prerequisites: Mechanics 2 and 3. Mr. Kommers.

107. Mechanical Vibrations. I, II; 3 cr. General theory; vibration instruments; absorbers; stabilizers; critical speeds; balancing. Prerequisites: Mechanics 2, Mechanics 3 or concurrent registration. Mr. Pickett.

109. Graphics. I; 2 cr. The principles of graphical computation, the construction of graphic charts, and the fitting of equations to plotted points. Application is made to various engineering problems. Prerequisite: Mechanics 3. Mr. Kommers.

110. Soil Mechanics. I, II; 3 cr. Soil as an engineering material. Earth pressures, bearing capacity, settlement, consolidation, stability, and permeability applied to earth dams, foundations, and highways. Prerequisite: Mechanics 52 or consent of instructor. Mr. Washa or Mr. Williams.

111. Aerodynamics. I; 3 cr. The wind tunnel, properties of airfoils; airplane controls and propellers; stability and performance. Demonstrations with miniature wind tunnel and water channel. Prerequisite: Mechanics 2. Mr. Roark.

112. Airplane Stress Analysis II; 3 cr. Stress analysis of airplane structures with special reference to governmental requirements. Prerequisites: Mechanics 3 and 111. Mr. Roark.

117. Vibration Laboratory. II; 2 cr. Instruction in the techniques of making vibration measurements. Analysis of vibration data. Theory and use of vibration measuring instruments and associated equipment. Calibration of vibration measuring devices. Prerequisite: Mechanics 107 or concurrent registration. Mr. Pickett or Mr. Boettcher.

118. Fatigue of Engineering Materials. II; 3 cr. Influence of repeated stress in engineering design, fatigue testing machines and procedures, factors influencing fatigue properties, and the theory of fatigue failure. Prerequisite: Mechanics 3 or 5, or consent of instructor. Mr. Fluck.

119. Properties and Uses of Portland Cement Concrete. I or II; 2 cr. An advanced course in Portland cement concrete, including a study of proportioning methods, theories of hardening and setting, properties, prefabricated concrete, precast concrete, construction methods, lightweight aggregates and concrete, causes of disintegration, protective treatments, specifications, and cost estimates. Prerequisite: Mechanics 52, or consent of instructor. Mr. Washa.

120. Experimental Stress Analysis. I or II; 3 cr. A brief review of basic stress-strain relations, followed by a description and demonstration of the more important experimental methods of determining stresses and strains, such as the use of mechanical strain gages, electric strain gages, optical strain gages, photoelastic equipment, brittle lacquers, and models. Prerequisites: Mechanics 2, Mechanics 3 or 5, Mechanics 51 or 53. Mr. Roark or Mr. Young.

180. Advanced Independent Study. I, II; *cr. See page 408. Staff.

200. Graduate Research. I, II; *cr. Staff.

201. Elastic Stability. II; 3 cr. Bending of bars under simultaneous action of axial and lateral loads; buckling of compressed bars, rings and tubes; lateral buckling of beams; torsion of I-beams; buckling of thin plates. Prerequisites: Mechanics 3, Math. 111 or equivalent. Mr. Pickett.

202. Bending of Plates. II; 3 cr. Bending of thin elastic plates; rectangular and circular plates under various distributions of loading and different combinations of free, simply supported, and fixed edges; airport pavements. Prerequisite: Mechanics 215 or concurrent registration. Mr. Pickett.

215. Applied Elasticity. I; 3 cr. Introduction to theory of elasticity, analysis of stress and strain, theory of bending and torsion, flat plate theory, elastic stability, vibration of elastic structures. Prerequisites: Mechanics 2, 3; Math. 110 or 112. Mr. Pickett.

216. Engineering Applications of Operational Methods. II; 3 cr. Introduction to the methods of Laplace transformation as applied to problems of mechanical vibrations under prescribed force or displacement. Prerequisites: Mechanics 107; Math. 111; or consent of instructor. Mr. Pickett.

230. Seminar. I, II; 1 cr. Study of various problems in theoretical and applied mechanics. Staff.

280. Advanced Independent Study. I, II; *cr. Staff.

MINING AND METALLURGICAL ENGINEERING

Professors Barker, *chairman*, Rosenthal, Shorey; Associate Professor Mack; Assistant Professors Heine, Rundle; Instructor Kempka.

8. Metallography for Mechanical Engineers. I, II; 2 cr. The microstructure and properties of steels and metals used in machine construction. Mr. Mack and staff.

12. Mine Surveying. II; 2 cr. Methods of mine surveying, followed by a week's survey of a nearby zinc, iron, or coal mine. Prerequisite: C.E. 118. Mr. Rundle.

22. Introduction to Metallurgy. I; 2 cr. An introductory study of metallurgical operations designed to acquaint the student with the various fields of interest in the career he has selected. Staff.

33. Foundry. I, II; 2 cr. The principles and practices governing the production of metal castings. Sand control, cupola operation, nonferrous casting, core making, molding practice, casting cleaning, and hazards. Mr. Heine and assistants.

99. Engineering Expression. 3 cr. Written and oral reporting on engineering projects. Reports, proposals, correspondence. Mr. Mack.

100. Senior Thesis. I, II; 3–5. Optional in Mining and Metallurgical Engineering. Staff.

101. Excavation and Tunneling. I; 3 cr. Methods of excavation and tunneling. Earth and rock excavation, explosives, excavating equipment. Methods of earth, rock, and subaqueous tunneling. Prerequisite: Chemistry 2b. Mr. Rundle.

102. Mining Methods. I; 3 cr. Prospecting, exploring, developing, and operating mines. Prerequisites: M.&M.E. 101; Geology 9. Mr. Rundle.

103. Mining Development. II; 3 cr. Classroom and drafting room design of a method of mining a selected orebody. Prerequisites: M.&M.E. 101; Geology 9. Mr. Shorey.

104. Valuation of Mineral Properties. II; 3 cr. The methods of evaluating metal, coal, oil, and other mineral properties. Mineral valuation for taxation purposes. Prerequisites: M.&M.E. 103; Geology 6, 114. Mr. Shorey.

105. Mine Engineering. I; 3 cr. The mechanical aspects of mine engineering. Mine safety, mine transport, hoisting, mine drainage. Prerequisites: M.&M.E. 102, 103; Mechanics 4, 5. Mr. Shorey.

106. Mine Engineering. II; 3 cr. Head frames and ore bins, ventilation, signaling and power systems. Prerequisites: M.&M.E. 102, 103; Mechanics 4, 5. Mr. Rundle.

107. Mineral Dressing. I; 3 cr. Study of the principles of mineral dressing. Includes crushing, grinding, screening and classification; gravity and magnetic concentration. Prerequisite: Senior standing. Mr. Shorey.

108. Mineral Dressing Laboratory. I; 2 cr. Laboratory practice in the application of principles developed in M.&M.E. 107. Prerequisite: M.&M.E. 107 or concurrent registration. Mr. Shorey.

109. Advanced Mineral Dressing. II; 3 cr. Classroom and laboratory studies of flotation and heavy media processes of concentration. Prerequisites: M.&M.E. 107, 108. Mr. Shorey.

116. Problems in Design. I or II; 3 cr. Drafting-room design of mining or milling plant and equipment to extract or treat specific ores. Prerequisites: M.&M.E. 103, 105 and 107. Mr. Shorey.

121. Assaying. I, II; 3 cr. The assays of ores with special reference to slag calculations and slag properties. Prerequisites: Chemistry 2b. Mr. Rundle.

122. Principles of Adaptive Metallurgy. I; 3 cr. A study of the fundamental principles of metallurgy. Physical properties of metals and alloys. Simple equilibrium diagrams. Prerequisites: Chemistry 2a and Physics 51. Staff.

124. Metallurgy of Iron and Steel. I; 3 cr. The reduction of iron ores and processes of steel making, control of operations, rolling mills and shaping, specifications. Prerequisites: Chemistry 2a; Physics 51. Mr. Barker.

125. Metallurgy of Nonferrous Metals. I; 3 cr. A study of the methods used in the recovery of nonferrous metals. Prerequisite: Junior standing. Staff.

127. Principles of Extractive Metallurgy. II; 3 cr. Principles of recovering metals from their ores. Chemical principles, fuels, refractories, hydrometallurgy, pyrometallurgy, and electrometallurgy. Prerequisite: Junior standing. Staff.

128. Metallography of Iron and Steel. I; 3 cr. An introduction to metallography and its application to iron and steel products. The effect of heat treatment and mechanical treatment on the microstructure of steel, cast irons and tool steels. Prerequisite: M.&M.E. 122 and 124. Mr. Mack.

129. Extractive Metallurgical Processes. I; 3 cr. The unit operations involved in extracting the principal metals from ores and the application to such metals as copper, lead and zinc. Prerequisites: M.&M.E. 125, 127. Staff.

131. Foundry Metallurgy. I; 3 cr. Foundry materials and furnaces. The manufacture and properties of gray iron, malleable iron, steel, and nonferrous castings. Prerequisites: Chemistry 2b; Physics 52. Mr. Heine.

133. Properties and Uses of Industrial Alloys. II; 3 cr. The processing, properties and uses of important industrial alloys such as alloys for high-temperature service, corrosion-resistant alloys, copper, magnesium, and aluminum-base alloys, powdered metal compacts and other special alloys. Prerequisites: M.&M.E. 8 or M.&M.E. 134 and 140. Mr. Heine.

134. Physical Metallurgy. I; 3 cr. The underlying principles of physical metallurgy. Development of binary diagrams. Physical properties of metals and alloys. Prerequisites: Chemistry 2b; Physics 52; M.&M.E. 122. Mr. Rosenthal.

135. Metallurgical Calculations. I; 3 cr. The calculation of heat balances and charges for iron and steel and nonferrous metallurgical processes. The control of mineral dressing operations. Prerequisites: Chemistry 2b; Physics 52; M.&M.E. 122. Mr. Shorey.

136. Physical Metallurgy of Surfaces. II; 3 cr. Surface adsorption, surface tension, diffusion of gases, corrosion, surface treatments. Prerequisites: M.&M.E. 134; senior standing. Mr. Rosenthal.

137. Advanced Metal Casting. I or II; 3 cr. An advanced study of the metallurgical and engineering principles applied in the foundry and related industries. This course expands the offerings of the elementary course M.&M.E. 33 or 131, and is primarily for those students interested in foundry engineering. Prerequisite: M.&M.E. 33 or 131. Mr. Heine.

140. Heat Treatment of Iron and Steel. II; 3 cr. A study of the heat treatment of carbon and low-alloy steels. Commercial heat treatment. Prerequisites: Chemistry 2b; Physics 52; M.&M.E. 128 or M.&M.E. 8. Mr. Mack.

147. Alloy Structures. II; 3 cr. Lectures and laboratory practice illustrating the application of fundamental principles to alloy systems. Ternary alloys, metastable systems. Prerequisites: M.&M.E. 128, 134, 140. Mr. Rosenthal.

148. Metallurgical X-ray and Spectrographic Studies. II; 3 cr. or more. The application of X-ray equipment and methods to the identification of materials and the study of lattice patterns using diffraction, back-reflection and powder cameras. The use of radiographic equipment for the inspection of castings. Spectrographic analysis of metals and alloys. Mr. Barker.

150. Metallurgical Seminar. II; 2 cr. Required of all seniors in metallurgical engineering. Mr. Mack.

151. The Future of the Mineral Industry. II; 3 cr. The study of distribution and control of the world's mineral resources. Subsidies and tariffs, governmental regulations, taxation, relationships between mineral industry and national security. Prerequisite: Senior standing. Mr. Shorey.

180. Advanced Independent Study. I, II; *cr. See page 408. Staff.

200. Graduate Thesis Research. I, II; 2 to 5 cr. Staff.

203. Advanced Studies in Mining Methods. I; 3 cr. Analyses of recently developed methods of prospecting, development and exploitation of mineral deposits. Prerequisites: Graduate standing and M.&M.E. 102, 103 or their equivalent. Mr. Shorey.

204. Mineral Economics. II; 3 cr. A study of domestic and foreign sources of minerals. The impact of foreign and domestic regulations on imports and exports. Exploitation and conservation of domestic mineral deposits, tariffs and subsidies. Prerequisites: Graduate standing and M.&M.E. 104, 151. Mr. Shorey.

205. Advanced Mine Engineering. I; 3 cr. Advanced studies of various types of haulage, hoisting and ventilating systems in mining engineering. Air conditioning of mines and tunnels. Prerequisites: M.&M.E. 105, 106 or their equivalent and graduate standing. Mr. Shorey.

210. Advanced Mineral Dressing. I, II; 2–5 cr. Application of the flotation process to the treatment of metallic and nonmetallic ores; or detailed laboratory research to discover a method of treating a selected ore. The particular application of principles covered in outline by M.&M.E. 107. Mr. Shorey.

225. Metallurgical Laboratory. I, II; 2–5 cr. Detailed research problems covering selected metallurgical processes. The particular application of one or more of the metallurgical principles outlined by courses 131, 133, 147. Staff.

230. Advanced Physical Chemistry of the Metals. I, II; 3 cr. An advanced treatment of the principles of physical metallurgy, and the direct application of these principles to metallurgical practice. Staff.

233. Heat Treatment of Steels. I, II; 3 cr. Fundamental principles of transformations, heat transfer and mechanical properties applied to metallurgical design. Staff.

240. Laboratory Research in Nonferrous Metallurgy. I, II; 2–5 cr. An advanced study of methods of reduction of the metals covered in outline by courses 125, 129. Investigation of processes, selection of equipment, plant design. Economics of smelting. Individual problems. Staff.

245. Phase Rule. I, II; 3 cr. Application of the phase rule to metallurgical reactions. Staff.

246. Thermodynamical Studies. I, II; 3 cr. The treatment of recent developments in metallurgical practice from the thermodynamic viewpoint. Staff.

247. Advanced Nonferrous Metallurgy. I, II; 3 cr. The application of recent fundamental developments in the field of nonferrous alloys. Special emphasis is placed upon the choice of alloys for specific industrial applications. Staff.

249. Advanced Foundry Metallurgy. I, II; 3 cr. This course covers advanced develop-

ments in various phases of the foundry industry. The application of scientific and engineering principles to the solution of metal refining and metal casting problems is stressed. Staff.

280. ADVANCED INDEPENDENT STUDY. I, II; *cr. See page 408. Staff.

UN-NUMBERED COURSES

ANNUAL FOUNDRY CONFERENCE. The Department of Mining and Metallurgical Engineering co-operates annually with the Wisconsin Chapter of the American Foundrymen's Society in holding a two-day conference. These meetings attract between 400 and 500 foundrymen from Wisconsin and surrounding states.

PROFESSIONAL PROBLEMS COURSE

PROFESSIONAL PROBLEMS I. 1 cr. Designed to provide information concerning the responsibilities of engineers to society, to colleagues and to the profession; interviewing procedures and effective use of placement services; examinations and registration procedures for certification as Professional Engineer; opportunities, divisions of work and requirements for engineers in many fields of endeavor. Mr. Goehring.

SCHOOL OF HOME ECONOMICS

FRANCES ZUILL, *Associate Dean*

FACULTY

ALLEN, HELEN LOUISE, *M.A.*, Professor of Home Economics (Related Art)

BEACH, KATHRYN RICE, *M.S.*, Assistant Professor of Home Economics (Home Management and Family Living)

BECKWITH, CORNELIA LOUISE, *M.A.*, Assistant Professor of Home Economics (Related Art)

COOPER, MARGARET MOORE, *Ph.D.*, Associate Professor of Home Economics (Clothing and Textiles)

COWLES, MAY LOUISE, *Ph.D.*, Professor of Home Economics (Home Management and Family Living)

CRAMER, HELEN MAXINE, *M.A.*, Assistant Professor of Home Economics (Home Management and Family Living)

DALRYMPLE, JULIA, *Ph.D.*, Associate Professor of Home Economics Education

DAVIS, RUTH FLORENCE, *M.S.*, Assistant Professor of Home Economics (Related Art)

DAWE, HELEN CLEVELAND, *Ph.D.*, Professor of Home Economics (Chairman, Home Management and Family Living)

DENNETT, LINNEA C., *M.S.*, Associate Professor of Home Economics (Foods and Nutrition)

DONALDSON, BEATRICE, *Ph.D.*, Associate Professor of Home Economics (Foods and Nutrition)

GUTMAN, JUDITH, *B.A.*, Instructor in Home Economics (Home Management and Family Living)

GROSKOPF, GRACE LOUISE, *M.S.*, Assistant Professor of Home Economics (Clothing and Textiles)

HANNING, FLORA MAY, *Ph.D.*, Professor of Home Economics (Foods and Nutrition)

HARRELL, INEZ, *M.S.*, Instructor in Home Economics (Foods and Nutrition)

HENDERSON, RUTH ADELE, *M.A.*, Professor of Home Economics Education

HOESLY, OLGA MARIE, *M.A.*, Assistant Professor of Home Economics (Foods and Nutrition)

HOFFMAN, GERTRUDE MAGDALINE, *M.S.*, Assistant Professor of Home Economics (Related Art)

HUNT, VIOLA MAY, *M.S.*, Associate Professor of Home Economics (Home Management and Family Living)

HUSSEMANN, DOROTHY LILLIAN, *Ph.D.*, Professor of Home Economics (Chairman, Foods and Nutrition)

IZZO, DOROTHY DOWLING, *B.S.*, Instructor in Home Economics (Foods and Nutrition)

JONES, MRS. NELLIE KEDZIE, *M.S., LL.D.*, Emeritus Professor of Home Economics

JORDRE, EMMA MABEL, *M.S.*, Assistant Professor of Home Economics (Acting Chairman, Clothing and Textiles)

JUAIRE, MARION ABBIE, *M.S.*, Professor of Home Economics (Clothing and Textiles)

JUDY, SHARON LEE, *M.S.*, Instructor in Home Economics (Related Art)

JUTTON, DOROTHY REED, *M.S.*, Assistant Professor of Home Economics (Foods and Nutrition)

KELLY, ALICE, *M.S.*, Assistant Professor of Home Economics (Related Art)

LEINDORFF, AGNES OLSON, *M.S.*, Associate Professor of Home Economics (Chairman, Related Art)

MANNING, HAZEL, *M.S.*, Emeritus Professor of Home Economics (Clothing and Textiles)

MAXFIELD, SUSAN ERNISSE, *M.S.*, Assistant Professor of Home Economics (Home Management and Family Living)

MCCORDIC, MARGARET PIPER, *M.S.*, Associate Professor of Home Economics (Home Management and Family Living)

MCDIVITT, MAXINE ESTELLE, *Ph.D.*, Associate Professor of Home Economics (Foods and Nutrition)

MELOCHE, GLADYS LOUISE, *M.S.*, Professor of Home Economics (Clothing and Textiles)

MENDENHALL, DOROTHY REED, *M.D.*, Emeritus Lecturer in Home Economics (Home Management and Family Living)
MORTIMER, IVA RANKIN, *Ph.D.*, Associate Professor of Home Economics (Foods and Nutrition)
MYRLAND, RUTH HENRIETTA, *B.A.*, Assistant Professor of Home Economics, Assistant to the Associate Dean
PALMER, LORA BELINDA, *M.A.*, Lecturer in Home Economics (Foods and Nutrition) Assistant Director, Wisconsin Union
PARSONS, HELEN TRACY, *Ph.D.*, Professor of Home Economics (Foods and Nutrition)
PASCHALL, HAZEL BROWNE, *M.A.*, Associate Professor of Home Economics (Clothing and Textiles)
PATTON, STELLA TROUT, *M.S.*, Emeritus Assistant Professor of Home Economics (Foods and Nutrition)
PEARSON, HELEN, *M.A.*, Associate Professor of Home Economics (Clothing and Textiles)
POLLOCK, JOSEPHINE H., *M.A.*, Professor of Home Economics (Assistant State Leader of Home Extension)
REYNOLDS, MAY STATLER, *Ph.D.*, Professor of Home Economics (Foods and Nutrition)
SIGGELKOW, LOIS MILDRED, *M.S.*, Teacher of Home Economics, University High School
STILLMAN, GLADYS SARAH, *M.S.*, Associate Professor of Home Economics (Foods and Nutrition)
THORNTON, MADELINE JOSEPHINE, *M.D.*, Associate Professor of Obstetrics and Gynecology, Lecturer in Home Economics (Home Management and Family Living)
VANDENBERGH, MATHILDA ELSIE, *M.S.*, Assistant Professor of Home Economics (Related Art)
YOUNG, LOUISE ARAMINTA, *M.S.*, Associate Professor of Home Economics (Home Management and Family Living)
ZUILL, FRANCES LOUISE, *M.A.*, Professor of Home Economics; Associate Dean, College of Agriculture for Home Economics

FACILITIES FOR INSTRUCTION

The School of Home Economics is located in the Home Economics Building on Linden Drive midway between Bascom Hall and Agricultural Hall. Laboratories, class and lecture rooms, and offices are provided here for related art, textiles and clothing, foods and nutrition, institution management and research. A new wing, now under construction, will be ready for occupancy in the spring of 1953.

Adjacent to the Home Economics Building is the Home Management House completely equipped with modern furnishings and appliances. The house is planned so that successive groups of eight senior girls living in the house for limited periods of time may acquire practical experience in all phases of home management including successful group living, income division, account keeping, management of time and energy, use of labor-saving devices, marketing, preparing and serving food, and entertaining.

The University Nursery School, located on the west end of Linden Drive (Temporary 17) opposite Babcock Hall, serves as a laboratory where junior students in nutrition and dietetics gain experience in child nutrition and where all senior students in home economics study and observe the behavior and guidance of young children. Child development majors have an opportunity to serve as student teachers in the nursery school.

The practice in institution management is provided in the Home Economics Building and in the cafeterias in the University Hospital and the Memorial Union. This is supplemented by trips to inspect and study food problems in hospitals, hotels, restaurants and wholesale houses. Graduate work may be carried on in co-operation with the Division of Residence Halls where the student does intensive work for at least a semester.

ORGANIZATION OF THE SCHOOL

The School of Home Economics is organized into four departments: Clothing and Textiles, Foods and Nutrition, Home Management and Family Living, and Related Art. These departments are concerned with both the general and professional education of young women. At the undergraduate level the primary objectives are education for personal

development and family living, effective citizenship, and training for a professional career. Home Economics is a broad field. The principal areas of study within the field are family relations, family economics, home management, child development, textiles and clothing, foods and nutrition, and related art. The types of professional work growing out of home economics are sufficiently varied so that young women can find positions adapted to their interests and abilities.

To insure a well-rounded education for all home economics students the curricula have been designed to include English, social sciences, psychology, physical and biological sciences and a liberal choice of electives from other schools and colleges within the University.

A common core of home economics subjects which are valuable in the preparation for home and family life is required in all majors. Not only are curricula planned for those whose major interest is in homemaking, but also for:

1. Undergraduates who wish to prepare for teaching home economics in secondary and vocational schools and for the extension service.

2. Undergraduates who desire to make a study of home economics in preparation for professional careers in hospital dietetics or institution management or for business positions.

3. Undergraduates who wish to prepare for vocations that combine home economics with journalism, nursing, recreation or bacteriology.

4. Undergraduates who wish to prepare for research or graduate work in the various phases of home economics.

MAJORS IN HOME ECONOMICS

In addition to the core requirements for all students the curriculum for each major includes courses planned to meet the specific needs of the different vocations. A major in home economics may not have less than 26 nor more than 48 credits in home economics courses. The courses in home economics education are not counted as home economics.

By the beginning of the junior year a student must choose a major from one of the following:

1. Major in home economics and education
2. General professional major
3. Major in foods and nutrition
4. Major in clothing and textiles
5. Major in related art
6. Major in home economics and journalism
7. Major in child development
8. Combined major in home economics and nursing (five years)
9. Major in applied bacteriology
10. Nonprofessional major in home economics
11. Major in community leadership in recreation and home economics.

ADMISSION

Requirements for admission will be found in the General Information bulletin. Special note should be taken of the mathematics requirement for the School of Home Economics.

Admission with Advanced Standing. Students from accredited colleges and universities who have pursued college courses equivalent to those of the University of Wisconsin with grades of at least a *C* and who have been granted honorable dismissal may be admitted to this school subject to current policy on nonresident students.

Advanced Standing Credit. A student given partial credit in a required course taken at another institution may substitute electives to make up the deficiency with the approval of the adviser.

Applications for Admission. All freshmen should send applications for admission to the University Admissions Office, Bascom Hall. Advanced standing students should send appli-

cations to the Office of the Associate Dean, 119 Home Economics Building, together with official transcripts of college records.

STUDENT ADVISERS

Each student is assigned an adviser from the home economics faculty when she enters the University. Usually the same faculty member serves as the adviser during the freshman and sophomore years. A student must choose a major at the beginning of the junior year at which time she may be assigned a new adviser in the field of her specialization. The adviser will assist the student in planning her program of work and will counsel with the student on problems relating to her college life.

HOUSING

Women students live in the following types of houses: University Residence Halls, privately operated and University approved dormitories and houses, sororities, private home rooms, co-operative houses, parents' homes and apartments.

Undergraduate women who do not live in University owned and operated Residence Halls or with parents, guardians, or near relatives are required to live in approved dormitories, rooming houses or sorority houses. Lists of approved houses are available at the Housing Bureau upon request.

PART-TIME STUDENT EMPLOYMENT

The University Student Employment Bureau is maintained to assist men and women students who are partly or wholly self-supporting during their attendance at the University. More than half of the students must depend upon themselves for part or all of their resources.

A student should not expect to secure a definite job before she arrives in Madison to stay. The employer usually requires a personal interview.

GENERAL INFORMATION

For information regarding living costs, tuition and fees, student life, student personnel services, student health service, a student should consult the General Information bulletin.

REQUIREMENTS FOR GRADUATION

General Requirements. The degree of Bachelor of Science (Home Economics) or Bachelor of Science (Home Economics and Education) is conferred upon those who complete a major in Home Economics. A total of at least 124 credits and 124 grade-points is required for graduation. An average of one grade-point per credit must be earned during the two semesters of the senior year in order to be recommended for a degree. All students including seniors must carry at least 12 credits and not more than 17 credits each semester, unless given permission by the Executive Committee to do otherwise. A student requesting more than a 17-credit program should have earned a 2.0 average on a normal load the preceding semester.

Residence Requirements. At least 30 credits and 30 grade-points must be earned in residence at Madison to be recommended for a degree. The work of the senior year must be done in residence. Permission of the Executive Committee must be secured in advance if a student desires to take any portion of her senior year at another institution. In special cases the Executive Committee may permit a senior to take not to exceed 6 credits by correspondence to complete the requirements for her degree.

Classification. A student in home economics must have at least 25 credits and 25 grade-points to be classified as a sophomore, at least 58 credits and 58 grade-points as a junior, and at least 88 credits and 88 grade-points as a senior.

Mathematical Preparation. Mathematical preparation is required for students in home economics. Students who do not present one unit of algebra and one unit of plane geometry may be admitted to home economics, but since the University does not offer residence courses in elementary mathematics the deficiency must be removed by passing an entrance examination, or by completing the required units in mathematics at an accredited school, or by taking correspondence courses through the University Extension Division. This must be done before the beginning of the junior year.

English Attainment. A student will be absolved from taking a full year of freshman English if successful in passing the exemption examination in English. (See Letters and Science bulletin.) Students earning a grade of *A* in English 1a are excused from further work in freshman English. Students who do not pass the placement test must make up the deficiency. (See Letters and Science bulletin.) Foreign students should note requirements in English proficiency.

History Requirement. Home economics students may complete the history requirement either by a year course in American history chosen from the following: History 4, 112, 113, 117, 121, 122 or by a three-credit course in American history and a semester course in Political Science 7, or Political Science 165, or Economics 1a, or a course in American history numbered above 100. Prior to the beginning of her junior year a student may absolve the requirement by passing an attainment examination.

Physical Education. Two years of physical education are required of all women students.

Language Requirements. Certain foreign language requirements must be met by students who major in applied bacteriology, by those who take the nonprofessional major including the major in community leadership in recreation and home economics, and the general professional major without education. There are no language requirements in the clothing and textile major, the foods and nutrition major, the related art major, the home economics journalism major, the combined major in home economics and nursing, the child development major, or for those students who are registered in home economics and education.

A total of 16 credits in a single foreign language must be earned in those majors which require foreign language, except for students who enter with 4 high-school units in one language or a total of 5 units in two languages. Students entering with 2 or more units of a foreign language may fulfill the language requirements by completing 8 credits of second-year college language. (See Placement Tests in Letters and Science bulletin.) Students who desire to change to a different language or who enter with less than 2 units are required to take 16 credits in one foreign language, 8 of which are counted as electives. Students who choose majors in home economics in which foreign language is required are given an opportunity to take the intermediate attainment test which, if passed, will absolve the student from further language requirements.

Freshman Orientation. Home Economics 1 is required of all students entering as freshmen and may be elected for credit by first-semester sophomores.

Home Economics Attainment Examinations. A student who desires to take an attainment examination in a required course in home economics to prove her mastery of the subject and thus absolve the requirement in the course may do so by providing evidence that she is prepared to take such an examination. This examination must be taken during the first two weeks of the semester. Success in passing such an examination entitles the student to take an advanced course but does not reduce the total number of credits required for graduation. A placement test is required in Home Economics 5, Introduction to clothing study, and students are placed in sections according to their ability.

Regulations in regard to placement and attainment examinations in academic subjects will be found on page 40 of this catalog.

Course Restrictions and Regulations. (1) Freshman and sophomore students are not permitted to take courses numbered 100 or above offered in the College of Agriculture. (2) Students in home economics are permitted to elect courses numbered 100 or above outside the College of Agriculture if the prerequisites are fulfilled; undergraduates may not take courses

numbered 200 or above. (3) Undergraduates below the rank of senior are not permitted to carry special problems. (4) Undergraduates may not receive credit for more than two semesters of seminar in a single department. (5) Only 4 credits in courses numbered 180 may be counted toward the Bachelor of Science degree in home economics and the Bachelor of Science degree in home economics and education except by special action of the Executive Committee.

Sociology 60. Students who are required to take Home Economics 109 may not take Sociology 60.

Home Management. Students who are required to take Home Economics 112, Home management, must make a reservation for residence with the instructor in charge in their junior year. The reservation must be confirmed during the registration period of the senior year. Priority for residence is given to those senior students who will graduate in June by carrying no more than the normal program load.

Thesis Requirement. Candidates for a degree are given the privilege of presenting a thesis. A thesis must represent original work on some subject which has been arranged with the student's major professor. Students with good scholastic records are encouraged to take advantage of the opportunity to write a thesis. If a thesis (Home Economics 100) is elected, a total of 4 credits must be taken.

Change of Schedule. Any change in the student's schedule, however small or seemingly insignificant, must be requested by the student and approved by the adviser on the proper forms and presented to the associate dean's office. The Executive Committee then acts upon the request. Any course dropped without permission of the Executive Committee will be recorded as a "fail," and must be removed in the same manner as any other failure.

Examinations. Each course terminates in a two-hour written final examination at the close of the semester; these final examinations are regularly scheduled and the time may not be changed without authorization of the associate dean for home economics.

Senior Summary. Students beginning their first semester of work in the senior year are given their senior summaries at the associate dean's office before they make out their study schedules so that they may check their past work and be certain that all the requirements for graduation will be satisfied during the senior year.

Senior-Graduate. Seniors who are within 6 credits of having completed all the requirements for graduation and who have the minimum required grade-point average of 1.75 may be admitted to the Graduate School and earn residence credit to apply toward an advanced degree at the same time they are completing their requirements for the bachelor's degree.

Point Credit Ratio and Grades. To remain in good scholastic standing, a student is expected to maintain a minimum average of *C* (1.0) in all the subjects she is taking. Grade-point averages are calculated on the basis of 3 grade-points per credit of *A*, 2 grade-points per credit of *B*, 1 grade-point per credit of *C*, and no grade-points for *D* or below.

Failure. Unless she is excused from doing so by the Executive Committee, any student who receives a grade of "fail," indicated by *F*, must remove the failure by repeating the course and securing a passing grade as soon as the subject is again offered during the period the student is in residence. A course that has been failed takes precedence over other courses in being fitted into the student's study schedule when it is next offered. A failure cannot be removed by correspondence study or by repeating the subject at another college.

Conditions. A student who receives a grade of "condition," indicated by *E*, may convert it to a passing grade by passing a special examination during the next semester she is in residence at the University; otherwise the grade will lapse into a failure which must be removed as specified above.

Incompletes. A student who receives an "incomplete," shown as *INC*, must complete the subject not later than the close of the semester in which it is again offered during the student's residence at the University. If not so completed, the grade for the subject will lapse into a failure unless the time for completion has been extended by the Executive Committee.

HONORS IN SCHOLARSHIP

SOPHOMORE HONORS AND SOPHOMORE HIGH HONORS are awarded on the basis of a minimum of two full years of work, not less than 60 credits, completed in residence or at the Extension Centers. A student who earns, during these two years, 135 grade-points plus one and one-half grade-points for each credit above 60, will be awarded Sophomore Honors. A student earning 165 grade-points, plus two grade-points for each credit above 60, during these two years, will be awarded Sophomore High Honors.

SENIOR HONORS AND SENIOR HIGH HONORS are awarded on the basis of a minimum of two full years of work, not less than 60 credits, completed in residence, for the second half of the four-year course. The remaining prerequisites for Honors and High Honors for seniors are the same as for respective honors for sophomores as explained above.

SCHOLARSHIPS, FELLOWSHIPS AND LOAN FUNDS

Undergraduate students should consult the bulletin issued by the University Committee on Loans and Scholarships for a list of scholarships, fellowships and loan funds. Many of these funds are available for students in all colleges while others are limited to specific groups. Attention is directed especially to the funds established for students in home economics, such as the Abby Marlatt Memorial award, the Bess Tyrrell Burns award, the Borden home economics scholarship, the Catherine Oertel scholarships, the Christine Margaretha Steenbock fellowship, the Dorothy Roberts Memorial fellowship, the Kroger Company scholarships, the Marie Ovitz Memorial scholarship, the Mary Lesh Baldwin scholarship, the Peter Young fund, the Phi Omega Pi scholarships, the Sears-Roebuck Foundation scholarship, the Hazel Manning loan fund, and the Nellie Crawford scholarship loan fund.

Graduate students in home economics should consult the bulletin of the Graduate School for detailed information relative to scholarships, fellowships and assistantships.

HOME ECONOMICS ORGANIZATIONS

The Euthenics Club is open to all students in home economics and is affiliated with the College Club department of the American Home Economics Association and the Wisconsin Home Economics Association.

A chapter of the national honor society, Omicron Nu, is maintained by faculty and student members. Junior, senior and graduate students with high scholastic records are eligible for election.

A chapter of the national professional home economics sorority, Phi Upsilon Omicron, has an active membership among senior, junior and sophomore students. Students are elected on the basis of scholarship, leadership and personal characteristics.

CURRICULA

HOME ECONOMICS AND EDUCATION

This major is planned primarily for students who are preparing for teaching in secondary or vocational schools.

For the teaching major in home economics a total of 124 credits and 124 grade-points is required for the degree of Bachelor of Science (Home Economics and Education), including a minimum of 18 to 20 credits in education. Students qualifying for this degree will be entitled to receive the University Teachers' Certificate upon recommendation of the School of Home Economics. See the following pages for specific regulations.

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5#—General chemistry	5–3	Biochemistry 3††	4
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Elective	4–5
Sociology 1—Introductory sociology##	3	Physical Education	0
Elective	0–3		
Physical Education	0		
	15–16		14–15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 7—Housing	2
Home Econ. 8—House planning and furnishing	3	Home Econ. 11—Applied dress design	3
Physiology 1—Elements of physiology	4	Bact. 1—General survey	4
American history	3	Psychology 1—Introduction to psychology	4
Speech** or elective	3	Elective	2
Physical Education	0	Physical Education	0
	16		16

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 50—Textile chemistry	3
Home Econ. 6—Nutrition and dietetics	4	Home Econ. 20—Costume design	2
Economics 1a—General economics	4	Home Econ. 110—Family economics	3
Education 73*—The child: his nature and his needs	3	Education 74*—The school and society	3
Electives	2	Education 75*—The nature and direction of learning	5
	16		16

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Education (methods in academic minors)*	2
Education 52*†—Teaching of home economics	5	Electives	11–12
Electives	6–7		
	15–16		15–16

* Required for the University Teachers' Certificate and the Bachelor of Science degree in Home Economics and Education.

** Speech 1, 2, 3, 6, 7, 105, 110, or certification by the Speech Examination Committee. (See School of Education bulletin for details.)

†† Students minoring in chemistry must take Chemistry 1, 10 credits. If this minor is selected, Chemistry 1b should be taken in the freshman year and be followed by Biochemistry 3.

*† Candidates for the University Teachers' Certificate who take Education 156 for 4 credits to qualify for vocational schools will take Education 52 for 3 credits only.

Students who have had one unit of high-school chemistry must take Chemistry 5.

Sociology 2 may be substituted for Sociology 1.

TEACHING HOME ECONOMICS IN SECONDARY SCHOOLS AND VOCATIONAL SCHOOLS

Students who are planning to teach home economics and to qualify for the University Teachers' Certificate must also register in the School of Education by the beginning of the junior year. In order to register in the School of Education as a candidate for the University Teachers' Certificate students must have a grade-point average of 1.3 for the first two years of college work. Compliance with the regulations in regard to proficiency in speech is required. (See bulletin of the School of Education.)

At least one academic minor must be included. A minor in chemistry for home economics students includes Chemistry 1, 10 credits; Biochemistry 1 or 3, 4 credits; Textile Chemistry (Home Economics 50), 3 credits; Education 97, 2 credits. A minor in general science includes chemistry, 5 credits; biology, 5 credits; physics, 5 credits; Education 97, 2 credits. If this minor is selected, Physics 61 or 65 should be taken in the sophomore year. Other academic minors are described in the School of Education bulletin.

Students who choose either a minor in general science or in chemistry must include Geography 128, Conservation of natural resources, in order to be certified to teach science.

Home economics students with a major in foods and nutrition or in clothing and textiles should include a minor in another phase of home economics.

(1) A teaching minor in foods and nutrition. A minimum of 20 credits in home economics including Home Economics 3, 4 and 6.

(2) A teaching minor in textiles and clothing. A minimum of 20 credits in home economics including Home Economics 2, 5, 11, and 97.

(3) A teaching minor in related art. A minimum of 20 credits in home economics including Home Economics 2, 8, 18, 20, and 194.

Education 75 may be taken only by students registered for a B.S. degree in home economics and education. Credits in Education 75 are not counted toward the graduation requirements for the B.S. degree in home economics except for majors in foods and nutrition who are planning to meet the requirements of the American Dietetic Association who may take Education 75 for 3 credits.

Students preparing to teach are expected to have practical experience in homemaking activities. Plans for obtaining this experience in vacation periods should be made before the senior year.

CERTIFICATION FOR VOCATIONAL SCHOOLS. In order to be certified to the State Board of Vocational Education as an instructor in vocational homemaking a student must complete the requirements for the major in home economics and education and the University Teachers' Certificate and in addition the required courses in vocational education. All candidates must be recommended for teaching by the School of Home Economics.

Students who wish to qualify for teaching in a city vocational school are required to take courses in vocational guidance (Education 181 or 184), part-time education (Education 157), and the teaching of homemaking in schools of vocational and adult education (Education 156). After three years of experience, the teacher must take an advanced course in problems in teaching home economics in vocational programs.

HOME ECONOMICS EXTENSION SERVICE. A student preparing for extension work in home economics may follow the general plan for the major in home economics and education for rural vocational high schools taking in addition such electives as rural sociology, agricultural journalism, agricultural economics, extension work in home economics and agriculture, adult programs in home economics, and horticulture.

GENERAL PROFESSIONAL MAJOR

This major may be taken for general education or may be directed toward positions as home economists in business, and other professional work which requires general training in foods and nutrition, clothing and textiles, related art, family economics, home management and other phases of home economics as basic preparation.

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5***—General chemistry	5–3	Biochemistry 3	4
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Foreign language*	4
Foreign language*	4	Sociology 1—Introductory sociology**	3
Physical Education	0	Physical Education	0
	14–16		17

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 11—Applied dress design	3
Home Econ. 8—House planning and furnishing	3	Bact. 1—General survey	4
Physiology 1—Elements of physiology	4	Psychology 1—Introduction to psychology	4
American history	3	Electives	5
Electives	3	Physical Education	0
Physical Education	0		
	16		16

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 50—Textile chemistry	3
Home Econ. 6—Nutrition and dietetics	4	Home Econ. 20—Costume design	2
Home Econ. 7—Housing	2	Home Econ. 110—Family economics	3
Economics 1a—General economics	4	Electives	7–8
Electives	2–3		
	15–16		15–16

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Electives	13–14
Electives	11–12		
	15–16		15–16

* See page 11.
** Sociology 2 may be substituted for Sociology 1.
*** Students who have had 1 unit of high-school chemistry must take Chemistry 5.

HOME ECONOMICS IN BUSINESS. Students interested in the commercial field should include such courses as Home Economics 114, 126, 135, 141, 145, 151, and additional courses in psychology, commerce, economics and journalism to prepare for positions as home economists in food, clothing and textile industries and equipment companies.

MAJOR IN FOODS AND NUTRITION

There are three curricula in the major in foods and nutrition. These are planned to meet the demands for trained dietitians; for institution managers in university commons, tearooms and school cafeterias; for nutritionists in public health services and social welfare organizations; and for home economists in food industries. This major also provides basic training for research workers in foods and nutrition.

HOSPITAL DIETETICS

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5*—General chemistry	5–3	Chemistry 1b—General chemistry	5
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Electives	4
Electives	4–6	Physical Education	0
Physical Education	0		
	16		15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 7—Housing	2
Psychology 1—Introduction to psychology	4	Bacteriology 1—General survey	4
Chemistry 120-121**—Organic chemistry	5	American History	3
Physiology 1—Elements of physiology	4	Electives	6
Physical Education	0	Physical Education	0
	16		15

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 6—Nutrition and dietetics	4
Economics 1a—General economics	4	Home Econ. 110—Family economics	3
Biochemistry 1	4	Home Econ. 22**—Marketing and large quantity cookery	2
Electives	5	Education 75**—The nature and direction of learning	3
		Electives	3
	16		15

SENIOR YEAR

	Credits		Credits
Home Econ. 109—Humanics	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Home Econ. 133**—Practice in institution management	3
Home Econ. 125—Diet therapy	3	Electives	10
Home Econ. 122**—Organization and administration of institutions	3		
Electives	6		
	16		15

* Students who have had 1 unit of high-school chemistry must take Chemistry 5.
** Required by the American Dietetic Association for admission as student dietitians in approved hospitals but not required for the B.S. degree.

INSTITUTION MANAGEMENT

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5*—General chemistry	5–3	Chemistry 1b—General chemistry	5
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Electives	4
Electives	4	Physical Education	0
Physical Education	0		
	14–16		15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 7—Housing	2
Psychology 1—Introduction to psychology	4	Bacteriology 1—General survey	4
Chemistry 120-121**—Organic chemistry	5	American History	3
Physiology 1—Elements of physiology	4	Electives	6
Physical Education	0	Physical Education	0
	16		15

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 6—Nutrition and dietetics	4
Economics 1a—General economics	4	Home Econ. 22—Marketing and large quantity cookery	2
Biochemistry 1	4	Home Econ. 110—Family economics	3
Electives	5	Education 75**—The nature and direction of learning	3
		Electives	3
	16		15

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Home Econ. 133—Practice in institution management	3
Home Econ. 122—Organization and administration of institutions	3	Additional nutrition**	2
Electives	9	Electives	8
	16		15

* Students who have had 1 unit of high-school chemistry must take Chemistry 5.
** Required by the American Dietetic Association for students preparing to take graduate training courses in administration.

EXPERIMENTAL FOODS

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5*—General chemistry	5–3	Chemistry 1b—General chemistry	5
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Electives	4
Electives	4	Physical Education	0
Physical Education	0		
	14–16		15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 7—Housing, or Home Econ. 8—House planning and furnishing	2–3
Bacteriology 1—General survey	4	Home Econ. 4—Problems of food supply	3
Speech 1—Fundamentals of speech, or Speech 7—Public speaking	2–3	Chemistry 120-121—Organic chemistry	5
Physiology 1—Elements of physiology	4	Psychology 1—Introduction to psychology	4
American History	3	Physical Education	0
Physical Education	0		
	16–17		15

JUNIOR YEAR

Home Econ. 119—Development of the young child in home and nursery school	2	Home Econ. 6—Nutrition and dietetics	4
Biochemistry 1	4	Home Econ. 110—Family economics	3
Physics 65**	3	Physics 65 or 61**	3–5
Economics 1a—General economics	4	Animal Husbandry 50 or 105	1–2
Electives	2–3	Electives	3–4
	15–16		15–16

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 145—Experimental food study	2
Home Econ. 135—Comparative studies in foods	3	Home Econ. 126—Adult programs in home economics	2
Home Econ. 112—Home management	2	Related professional or technical courses (See below)	5–6
Related professional or technical courses (See below)	6	Electives	6–7
Electives	2–3		
	15–16		15–16

* Students who have had 1 unit of high-school chemistry must take Chemistry 5.
** Physics 61 offered second semester only.

A further requirement for an experimental foods major is acceptable experience in foods work which logically should be undertaken at the end of the junior year. This requirement is to be absolved by summer-time or part-time work in food service either in a dormitory, hospital, or other acceptable situation where there is trained supervision. In each case, the plan for this assignment must be approved before its initiation and a final written report accepted by a committee appointed by the Associate Dean of Home Economics.

Related professional or technical courses are: Bacteriology 125; Agricultural Journalism 112; Biochemistry 105; Chemistry 11 or 12, 146, 147; Commerce 15; Dairy and Food Industry 124; Education 155; English 2a, 2b; Home Economics 100, 133, 180, 194; Journalism 10, 105a, 105b, 123; Speech 110, 115.

MAJOR IN CLOTHING AND TEXTILES

The curriculum in textiles and clothing is planned primarily to meet the needs of students who are interested in positions in business firms dealing with retailing problems. Courses in journalism and commerce are advised as electives. With additional training in chemistry students may prepare for positions in textile testing laboratories. Students in this major who plan to teach must include the required courses in education and also a minor in foods.

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5*—General chemistry	5–3	Chemistry 1b—General chemistry, or Biochemistry 3**	5–4
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Electives	4
Electives	4	Physical Education	0
Physical Education	0		
	14–16		14–15

SOPHOMORE YEAR

	Credits		Credits
Home Econ. 3—Introduction to food study	3	Home Econ. 8—House planning and furnishing	3
Physiology 1—Elements of physiology	4	Home Econ. 50—Textile chemistry	3
Sociology 1—Introduction to sociology***	3	Bacteriology 1—General survey	4
American History	3	Electives	5
Electives	3	Physical Education	0
Physical Education	0		
	16		15

JUNIOR YEAR

Home Econ. 7—Housing	2	Home Econ. 11—Applied dress design	3
Psychology 1—Introduction to psychology	4	Home Econ. 20—Costume design†	2
Economics 1a—General economics	4	Home Econ. 110—Family economics	3
Electives	6	Electives	7
	16		15

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 97†—Advanced applied dress design	2
Home Econ. 112—Home management	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 140—Clothing economics	2	Electives	12
Electives	10		
	16		16

* Students who have had 1 unit of high-school chemistry must take Chemistry 5.
** Textile majors who take organic chemistry should take Biochemistry 1 first semester of junior year.
*** Sociology 2 may be substituted for Sociology 1.
† Students preparing for positions in textile chemistry may substitute Chemistry 120 and 121 for Home Economics 20 and 97.

MAJOR IN RELATED ART

The related art major gives preliminary training for commercial positions as advisers in home furnishing departments, as costume designers and as interior designers. Students preparing for costume designing should elect courses in clothing, art history and art education; and those preparing for work in interior design and house furnishing should elect Home Economics 114, The technique of interior design, 2 credits, as well as courses in art history and art education. All students in this major should complete 6 credits in art education including mechanical drawing and 4 credits in art history.

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5*—General chemistry	5–3	Chemistry 1b—General chemistry, or Biochemistry 3	5–4
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Electives	5
Sociology 1—Introductory sociology**	3	Physical Education	0
Electives	0–3		
Physical Education	0		
	15–16		15–16

SOPHOMORE YEAR

Physical or Biological Science	4–5	Home Econ. 8—House planning and furnishing	3
Physiology 1—Elements of physiology	4	Home Econ. 50—Textile chemistry	3
Home Econ. 3—Introduction to food study	3	Psychology 1—Introduction to psychology	4
Home Econ. 20—Costume design	2	Electives	6–7
American History	3	Physical Education	0
Physical Education	0		
	16–17		16–17

JUNIOR YEAR

	Credits		Credits
Home Econ. 7—Housing	2	Home Econ. 18—Interior design	2
Home Econ. 95—Weaving	2	Home Econ. 94—Decorative textiles	3
Economics 1a—General economics	4	Home Econ. 110—Family economics	3
Electives	8	Home Econ. 117—Survey of nutrition principles	2
		Electives	5
	16		15

SENIOR YEAR

	Credits		Credits
Home Econ. 109—Humanics	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Electives	13
Electives	11		
	15		15

* Students who have had 1 unit of high-school chemistry must take Chemistry 5.
** Sociology 2 may be substituted for Sociology 1.

MAJOR IN HOME ECONOMICS JOURNALISM

A major in home economics journalism is arranged for those who wish to prepare for positions in journalism that are concerned with the special interests of women.

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5*—General chemistry	5–3	Biochemistry 3	4
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Electives	5
Sociology 1—Introduction to sociology**	3	Physical Education	0
Electives	0–2		
Physical Education	0		
	15		15

SOPHOMORE YEAR

	Credits		Credits
Agr. Journ. 8—Home economics news writing	3	Home Econ. 50—Textile chemistry	3
Home Econ. 3—Introduction to food study	3	Home Econ. 20—Costume design	2
Physiology 1—Elements of physiology	4	Bacteriology 1—General survey	4
American History	3	Psychology 1—Introduction to psychology	4
Electives	3	Electives	3
Physical Education	0	Physical Education	0
	16		16

JUNIOR YEAR

	Credits		Credits
Journalism 2a—Newspaper reporting	3	Agr. Journ. 112—Advanced home economics writing	2–3
Home Econ. 4—Problems of food supply	3	Home Econ. 7—Housing	2
Home Econ. 6—Nutrition and dietetics***	4	Home Econ. 8—House planning and furnishing	3
Economics 1a—General economics	4	Home Econ. 110—Family economics	3
Electives	2	Electives	5–6
	16		16

SENIOR YEAR

	Credits		Credits
Journalism 3—Newspaper editing	4	Home Econ. 109—Humanics	2
Journalism 4—Newspaper typography†	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Agr. Journ. 103—Publicity media and methods	2
Home Econ. 140—Clothing economics	2	Electives	9
Electives	5		
	15		15

* Students who have had 1 unit of high-school chemistry must take Chemistry 5.
** Sociology 2 may be substituted for Sociology 1.
*** May substitute Home Economics 117.
† Students may enroll in Journalism 4 prior to or concurrently with Journalism 3.

MAJOR IN CHILD DEVELOPMENT

Students in child development majoring in home economics may prepare for positions in the group care of young children such as in nursery schools or other types of child care centers, for work in child nutrition, or in other related phases of home economics depending upon the student's special interest. In addition to the core curriculum outlined below majors in child development must take Home Economics 1, Orientation, in the freshman year. Since a minimum of 26 credits in home economics is required for a degree of Bachelor of Science in Home Economics, child development majors must complete at least 14 credits in home economics in addition to Home Economics 1 and those listed in the core curriculum. Among the courses suggested are Home Economics 2, 3, 5, 109, 110, and 112.

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Zoology 1—Animal biology	5	Science elective*	4–5
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Home Econ. 1—Orientation	1	Sociology 1—Introduction to sociology	3
Electives	6	Electives	5–6
Physical Education	0	Physical Education	0
	15		16

SOPHOMORE YEAR

Zoology 6—Heredity	3	Psychology 1—Introduction to psychology	4
American History	3	English 2a—Intermediate composition or literature course	3
Electives	5	American History or Economics 1a	3–4
Physical Education	0	Electives	5–6
Physiology 1—Elements of physiology	4	Physical Education	0
	15		16

JUNIOR YEAR

Education 119—Human development, or Psychology 147—Child psychology	3	Education 120—Human development (Adolescence), or Psychology 148 (Psychology of adolescence)	3
Education 125—The exceptional child	3	Home Econ. 119—Development of the young child in home and nursery school	2
Education 170—School and community health problems	3	Home Econ. 117—Survey of nutrition principles	3
Sociology 139a—Introduction to social psychology	3	Electives	7
Electives	4		
	16		15

SENIOR YEAR

Education 112, Sociology 132, or Psychology 130—Statistics	3	Social Work 162—Child welfare***	3
Psychology 25—Experimental psychology, or Psychology 154—Physiological psychology	3–4	Education 130—Diagnosis of behavior and scholarship difficulties, or Psychology 141—Psych. testing	3
Home Econ. 179**—Field work	3	Home Econ. 179**—Field work	3
Electives	6	Electives	6–7
	15–16		15–16

* Since Chemistry 1a is a prerequisite for Home Economics 3 it is advisable for students to select Chemistry 1a.
** First semester's work must precede that of second semester.
*** Social Work 145 is a prerequisite or may be taken concurrently.

COMBINED MAJOR IN HOME ECONOMICS AND NURSING

The combined course in home economics and nursing leads to the degree of Bachelor of Science (Home Economics) and to the Certificate of Graduate Nurse. The following specific requirements must be satisfactorily met:

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a or 5*—General chemistry	5–3	Chemistry 1b—General chemistry	5
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Science Elective	4
Sociology 2—Introduction to social problems	3	Physical Education	0
Electives	0–2		
Physical Education	0		
	15		15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Biochemistry 3	4
Economics 1a—General economics	4	Microbiology 4—Bacteriology for nurses	3
Physiology 4**—Physiology for nurses	4	Psychology 1—Introduction to psychology	4
American History	3	English or Speech	3
Electives	2	Electives	2
Physical Education	0	Physical Education	0
	16		16

JUNIOR YEAR

Nursing 1a	5	Nursing 1b	5
Home Econ. 4—Problems of food supply	3	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 110—Family economics	3	Home Econ. 6†—Nutrition and dietetics	4
Electives	5	Home Econ. Electives	2
		Electives	3
	16		16

* Students who have had 1 unit of high-school chemistry must take Chemistry 5.
** If Physiology 1 is taken, Physiology 4 must be taken later for 1 cr.
† May substitute Home Economics 117.

A total of 127 credits and 127 grade-points is required for graduation. This includes 94 required by the School of Home Economics and 32 earned during the twenty-seven months of resident professional instruction in nursing.

The resident professional instruction includes 27 months of ward practice and four semesters of nursing courses amounting to 32 credits as follows:

Nursing 2, 3, 4, 5, 10, 11, 12, 13, 14, 15	25 credits
Psychology 105	3 credits
Electives	4 credits

MAJOR IN APPLIED BACTERIOLOGY

After their sophomore year students may take advanced courses in bacteriology which will prepare them for graduate work in bacteriology or for a limited number of positions in the field of bacteriology. A master's degree will usually be prerequisite for the bacteriological positions open to women in commercial and public health laboratories. Students who wish to specialize in bacteriology should consult the Department of Bacteriology or Medical Microbiology.

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Foreign language*	4	Foreign language*	4
Chemistry 1a or 5**—General chemistry	5–3	Chemistry 1b—General chemistry	5
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Physical Education	0
Physical Education	0		
	14–16		15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 50—Textile chemistry	3
Physics 65***	3	Physics 65***	3
Biochemistry 1	4	Bacteriology 1—General survey	4
Economics 1a—General economics	4	Electives	5
Electives	2	Physical Education	0
Physical Education	0		
	16		15

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 6—Nutrition and dietetics	4
Home Econ. 7—Housing	2	Home Econ. 110—Family economics	3
American History	3	Psychology 1—Introduction to psychology	4
Physiology 1—Elements of physiology	4	Electives	5
Electives	4		
	16		16

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Electives	13
Electives	11		
	15		15

* See page 11.
** Students who have had 1 unit of high-school chemistry must take Chemistry 5.
*** Physics 61, 5 cr., may be substituted.

In this major 15 credits in bacteriology must be elected from the following:

First Semester	Credits	Second Semester	Credits
Bacteriology 100—Thesis	2	Bacteriology 100—Thesis	2
Bacteriology 123—Soil bacteriology	4	Bacteriology 121—Dairy bacteriology	4
Bacteriology 125—Food bacteriology	4	Bacteriology 128—Infection and immunity, or Microbiology 104—Immunology	4
Bacteriology 131—Proseminar	1	Bacteriology 131—Proseminar	1
Med. Microbiology 102—Medical microbiology	5	Bacteriology 129—Presentation of bacteriological reports	2
Bacteriology 120—Advanced general	3		
Bacteriology 127—Industrial microbiology	4		

NONPROFESSIONAL MAJOR IN HOME ECONOMICS

This curriculum is planned for students who wish to major in home economics as a part of a general education for marriage and homemaking. It allows a liberal choice of electives and is less technical in nature than the curricula that are designed to train for the various professions in the field of home economics.

Not more than 22 credits in home economics may be elected. Early in the sophomore

year a student should plan a logical sequence of courses with her adviser. This is not a teaching major.

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Foreign language*	4	Foreign language*	4
Chemistry 1a or 5**—General chemistry	5–3	Chemistry 1b—General chemistry, or	
Home Econ. 1—Orientation	1	Biochemistry 3	5–4
Home Econ. 2—Introduction to related art	3	Home Econ. 5—Introduction to clothing study	3
Physical Education	0	Physical Education	0
	14–16		14–15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 50—Textile chemistry	3
Bacteriology 1 or Physiology 1	4	—or— Biochemistry 3, or	
English 30, 32, 33, or 40—Literature	3	Physics 61 or 65	4–6
Sociology 1—Introduction to sociology***	3	Electives	7
Electives	3	Physical Education	0
Physical Education	0		
	16		14–16

JUNIOR YEAR

Home Econ. 7—Housing	2	Home Econ. 110—Family economics	3
Economics 1a—General economics	4	Psychology 1—Introduction to psychology	4
American History	3	Electives	9
Electives	6		
	15		16

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Electives	14
Electives†	12		
	16		16

* See page 448.
** Students who have had 1 unit of high-school chemistry must take Chemistry 5.
*** Sociology 2 may be substituted for Sociology 1.
† Two of these credits must be in home economics to meet the minimum requirements for a major in home economics.

MAJOR IN COMMUNITY LEADERSHIP IN RECREATION AND HOME ECONOMICS

A student may complete the requirements for a major in community leadership in recreation and the nonprofessional course in home economics by arranging her courses according to the following plan:

SUGGESTED SEQUENCE

FRESHMAN YEAR

First Semester	Credits		
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Foreign language*	4	Foreign language*	4
Chemistry 1a or 5**—General chemistry	5–3	Chemistry 1b—General chemistry, or	
Home Econ. 1—Orientation	1	Biochemistry 3	5–4
Home Econ. 2—Introduction to related art	3	Home Econ. 5—Introduction to clothing study	3
Physical Education	0	Physical Education	0
	16		14–15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Rural Sociology 27—Rural organization	2
Physiology 1, Bacteriology 1, Physics 61 or 65	4–6	American History	3
English 30, 32, 33, or 40—Literature	3	Psychology 1—Introduction to psychology	4
Sociology 1 or 2	3	Home Econ. 7—Housing	2
Education 14—Introduction to recreation	2	Recreation resource course	3
Physical Education	0	Physical Education 16†—First aid and safety	1–2
		Physical Education	0
	15–17		14–15

JUNIOR YEAR

Home Econ. 117—Survey of nutrition principles	3	Education 169—Health education for teachers	3
Economics 1a—General economics	4	Home Econ. 110—Family economics	3
Recreation resource course	3	Psychology 105—Human adjustment	3
Education 73—The child, his nature and his needs	3	Recreation resource courses	5
Rural Sociology 25—Rural life	3	Home Econ. Elective	2
	16		16

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Rural Sociology 127—Community organization	2
Education 113—Group leadership	3	Education 113—Group leadership	3
Social Science Electives	3	Education 114—Recreation planning	3
Recreation resource course	3	Recreation resource courses	6
Agr. Ed. 155 or Educ. 155—Adult education	3		
	16		16

* See page 448.
** Students who have had 1 unit of high-school chemistry must take Chemistry 5.
† A first aid certificate may be substituted.

MINORS IN HOME ECONOMICS FOR STUDENTS IN ACADEMIC FIELDS

A minor for students who plan to teach home economics in combination with their academic major in small high schools of Wisconsin must include 20 credits in Home Economics 2, 3, 5, 7, 8, 50, 109 or 119, 117, or equivalent, and Education 52 (2 cr.).

ELECTION OF HOME ECONOMICS COURSES BY LETTERS AND SCIENCE STUDENTS

Letters and Science students who have checked at the office of the dean their compliance with regulations a, b, c, and d of Section 17 of the Letters and Science bulletin, governing the election of studies outside of the College of Letters and Science, will be given permission under the Twenty-Credits Rule, if they have the prerequisites, to elect courses from the following: Home Economics 2, 3, 6, 7, 8, 18, 20, 50, 109, 110, 116, 117, 119, and 127. Students will not be permitted to elect both Home Economics 2 and Art Education 50. Special permission to take other courses in home economics must be obtained from the dean.

GRADUATE WORK IN HOME ECONOMICS

Students who wish to enroll in the Graduate School for graduate study in home economics leading to a master of science or a doctor of philosophy degree should consult the bulletin of the Graduate School for detailed information. Graduate students may prepare for research work in certain phases of home economics, extend their professional education in a special phase of home economics, and prepare for teaching in institutions of higher learning.

Write to the Associate Dean of the School of Home Economics for information in regard to individual problems or for detailed plans for the requirements for the doctor of philosophy degree.

SUMMER SESSION

Courses in home economics are offered during the eight-week summer session. Detailed information concerning the summer session is given in the Summer Session bulletin. For information in regard to courses offered only in the summer session and not included in this bulletin, write to Associate Dean Frances Zuill, School of Home Economics.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—Course continues throughout the year; I—given during the first semester; II—given during the second semester; I and II—repeat each semester; cr—credits, i.e. hours of credit per semester; *—credits to be arranged.

Course Restrictions. (1) Students in home economics are permitted to elect courses numbered 100 or above outside the College of Agriculture if the prerequisites are fulfilled; undergraduates may not take courses numbered 200 or above. (2) Undergraduates below the rank of senior are not permitted to take Home Economics 180. (3) Undergraduates may not receive credit for more than two semesters of seminar in a single department. (4) Only four credits in courses numbered 180 may be counted toward the Bachelor of Science degree in Home Economics and the Bachelor of Science degree in Home Economics and Education except by special action of the Executive Committee.

FOODS AND NUTRITION

Professors Hanning, Hussemann, *chairman*, Parsons, Reynolds; Associate Professors Donaldson, McDivitt, Mortimer; Assistant Professors Burns, Hoesly, Jutton.

3. Introduction to Food Study. I, II; 3 cr. Lectures and discussions give emphasis to scientific basis for food selection and food preparation practices. Laboratory work illustrates principles of food preparation. Prerequisite: Chemistry 1a or 5. Miss Hussemann, Miss Hoesly, Miss McDivitt.

4. Problems of Food Supply. I, II; 3 cr. Economic approach to food study. Includes problems of food preservation, food buying, and meal planning and preparation. Prerequisites: Home Economics 3 and bacteriology. Mrs. Mortimer, Miss Hoesly.

6. Nutrition and Dietetics. I, II; 4 cr. Principles of nutrition and their application to feeding the family. Laboratory work includes the study of an adequate diet for individual and family needs, and the use of laboratory animals. Prerequisites: Home Economics 3, Physiology 1 and Biochemistry 1 or 3. Mrs. Reynolds, Miss Jutton.

100. Thesis. Yr; 4 cr. Prerequisites: Senior standing and consent of instructor. Miss Hussemann and staff.

117. Survey of Nutrition Principles. I, II; 2–3 cr. Requirements of human nutrition and problems of feeding the family. Effect of food processing on nutritive values. Laboratory practice in dietary planning. Prerequisite: Junior standing. Not open to students in majors requiring Home Economics 6. Miss McDivitt.

125. Diet Therapy. I, II; 3 cr. Basic material for hospital dietetics or teaching nutrition. Abnormalities of metabolism, use of therapeutic diets and adaptations in normal nutrition. Prerequisites: Biochemistry 1 and Home Economics 6. Miss Parsons, Miss Jutton.

127. Problems in Human Nutrition. I; 2 cr. Correlation of nutritional status of populations and individuals with food intakes as determined by surveys and controlled studies; recommended allowances. Miss Parsons.

135. Comparative Studies in Foods. I; 3 cr. Physical and chemical basis of food preparation and processing. Group experiments illustrating results of variations in ingredients and manipulative practices. Prerequisites: Home Economics 3 and one course in organic chemistry or biochemistry. Miss Hanning.

145. Experimental Food Study. II; 2 cr. Readings and reports of the scientific literature in experimental foods. Development of an individual laboratory problem. Prerequisite: Home Economics 135 or consent of instructor. Miss Hussemann.

147. Child Nutrition. II; 2 cr. Nutrition problems in maternal and child feeding. Open to seniors and graduate students. Prerequisites: An elementary course in nutrition and consent of instructor. Mrs. Reynolds.

180. Special Problems in Foods and Nutrition. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. Research in Foods and Nutrition. I, II; *cr. Prerequisites: Graduate standing and consent of instructor. Miss Hanning, Miss Hussemann, Mrs. Mortimer, Miss Parsons, Mrs. Reynolds, Miss McDivitt.

235. Seminar in Experimental Foods. Yr; 1 cr. Prerequisite: Home Economics 135 or consent of instructor. Miss Hanning, Miss McDivitt.

245. Research Methods in Experimental Foods. II; 2–4 cr. Lectures and a series of laboratory projects demonstrating objective and subjective methods. Prerequisites: Home Economics 135 and consent of instructor. Miss Hussemann.

255. Histology and Chemistry of Foods as Related to Quality. II; 2 cr. Lectures and reading on the flavor and color constituents, histological structure and colloidal behavior of foods. Prerequisites: Home Economics 135 and consent of instructor. Miss Hanning.

280. Seminar in Nutrition. Yr; 1 cr. Prerequisite: Consent of instructor. Miss Parsons, Mrs. Reynolds.

INSTITUTION MANAGEMENT

22. Marketing and Large Quantity Cookery. I, II; 2 cr. Study of food purchasing and preparation for large quantity food service. Field trips. Prerequisite: Home Economics 4 or concurrent registration. Miss Donaldson, Miss Jutton.

122. Organization and Administration of Institutions. I; 3 cr. A study of organization for institutions; personnel and business administration. Planning and equipment of food units. Prerequisites: Food major and senior standing. Miss Donaldson.

133. Practice in Institution Management. I, II; 3–4 cr. Study of organization and operation of dining services. Institution food service practice including experience in University Hospital and Memorial Union. Field trips. Prerequisites: Home Economics 6 and 22 or concurrent registration. Miss Donaldson, Miss Jutton.

180. Special Problems in Institution Management. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Miss Donaldson.

222. Laboratory and Research Work. I, II; 2–4 cr. Detailed study of accounting and organization and labor problems as an intern in the University Commons. Miss Donaldson, Mr. Burns.

HOME MANAGEMENT AND FAMILY LIVING

Professors Cowles, Dawe, *chairman*, Zuill; Assistant Professors Beach, Cramer, Maxfield; Lecturers Pollock, Thornton; Instructors Adams, Gutman, Izzo.

1. Orientation in Home Economics. I; 1 cr. Series of lectures to acquaint freshmen with the home economics program and opportunities in the field; problems in personal adjustment. Includes weekly conference with adviser. Required of all home economics freshmen; may be elected for credit by first-semester sophomores. Miss Zuill.

7. Housing. I, II; 2 cr. Housing standards and conditions; home ownership, financing, house design from consumer viewpoint; government housing. Prerequisite: Home Economics 2. Miss Cowles.

72. Home Nursing. I, II; 1 cr. A two-hour laboratory course in first aid and home nursing. Miss Adams.

100. Thesis. Yr; 4 cr. Students with good scholastic records are given the privilege of doing an original piece of work for a thesis. Prerequisites: Senior standing and consent of instructor. Miss Dawe and staff.

109. Humanics. I, II; 2 cr. A study of the family in contemporary society. Prenatal and natal care; family relationships; and the interaction of the family with social agencies and the community. Prerequisite: Senior standing. Mrs. Beach, Miss Cramer, Dr. Thornton.

110. Family Economics. I, II; 3 cr. Family's income; income distribution; earning homemakers; standards of living; market devices; spending influenced by income, family size; budgeting; scientific management in household; consumer buying problems. Prerequisites: Economics 1a and junior standing. Miss Cowles, Mrs. Beach.

112. Home Management. I, II; 2 cr. Considers personal development of the individuals and their group relationships in the house. Provides experience in various phases of scientific management applied to the home. Each student will pay $3.25 to cover part of the cost of food during residence in Home Management House. Prerequisite: Home Economics 110. Miss Cramer.

119. Development of the Young Child in the Home and the Nursery School. I, II; 2 cr. Emphasis on principles and problems of guidance. Observation at the nursery school. Prerequisites: Psychology 1 and junior standing. Miss Dawe, Miss Maxfield.

179. Field Work in Home Economics. Yr; 3 cr. Prerequisite: Senior or graduate standing. Miss Maxfield.

180. Special Problems in Housing and Family Economics. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

199. Advanced Study of the Young Child. 2 or 3 cr. Study of research literature and current theories pertaining to the care and development of preschool children. Opportunity for students to pursue areas of individual interest. Prerequisites: Senior or graduate standing and consent of instructor. Miss Dawe.

200. Research in Family Economics or Child Development. I, II; *cr. Prerequisites: Graduate standing and consent of instructor. Miss Cowles, Miss Dawe.

220. Consumer Problems. II; 2 cr. Consumer in economic system; effects of income and market characteristics on consumption; evaluation of consumer movement. Prerequisite: Economics 1a. Miss Cowles.

223. Seminar in Housing Problems. I; 2 cr. Analysis of housing problems; economics of home ownership; government developments in housing. Prerequisites: Economics 1a and an elementary course in housing. Miss Cowles.

CLOTHING AND TEXTILES

Professor Juaire; Associate Professors Cooper, Paschall; Assistant Professors Groskopf, Jordre, *acting chairman*.

5. Introduction to Clothing Study. I, II; 3 cr. Study of textile fibers, the identification and selection of fabrics. Basic clothing construction. Placement tests given. Class sectioned according to ability and experience. Miss Jordre, Mrs. Groskopf.

11. Applied Dress Design. I, II; 3 cr. Application of art principles to the selection and construction of costumes suitable for each individual. Prerequisite: Home Economics 5. Miss Juaire, Miss Jordre.

15. Problems in Textiles and Clothing for Occupational Therapy. I, II; 2 cr. A service course for occupational therapists only, emphasizing designs, materials, and technical

skills commonly used in the construction of various types of articles in curative workshops. Mrs. Groskopf.

50. Textile Chemistry. I, II; 3 cr. Microscopic, physical, and chemical study of the fibers and fabrics. Prerequisite: Chemistry 1b or Biochemistry 1 or 3, Home Economics 5 or consent of instructor. Miss Cooper, Mrs. Groskopf.

97. Advanced Applied Dress Design. I, II; 2 cr. Use of original designs in the draping of costumes. Independent work; students required to complete problems outside. Prerequisites: Home Economics 11 and senior standing. Mrs. Paschall.

100. Thesis. Yr; 4 cr. Prerequisites: Senior standing and consent of instructor. Staff.

104. History of Costume. I; 2 cr. A study of the development of costume from ancient times to the 18th century; the influence of social and economic conditions upon costume. Prerequisite: Senior standing. Miss Juaire.

106. Seminar in American Costume. II; 2 cr. A study of the history of American costume from the Revolution to the present. Prerequisite: Senior standing. Miss Juaire.

140. Clothing Economics. I; 2 cr. Consumer problems in textiles and clothing; standardization, labeling, selling devices, factors affecting price; style. Problems in textile and clothing industry as they affect the buyer. Prerequisite: Economics 1a. Mrs. Paschall.

141. Textiles in Merchandising. II; 3 cr. Present problems in merchandising of textile fabrics and ready-to-wear clothing; retail distribution methods; personnel training. Prerequisites: Economics 1a and senior standing. Mrs. Paschall.

151. Advanced Textile Chemistry. I; 2 cr. Laboratory study of chemical processes in the manufacture of some man-made fibers, qualitative and quantitative analysis of fabrics, methods and theories of dyeing textiles. Prerequisites: Chemistry 120, 3 cr.; and 121, 2 cr.; Home Economics 50 and senior standing. Miss Cooper.

180. Special Problems in Textiles and Clothing. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

200. Research in Textiles and Clothing. I, II; *cr. Prerequisites: Graduate standing and consent of instructor. Staff.

250. Seminar in Textiles. II; 2 cr. Survey of recent developments in textile chemistry; chemistry of man-made fibers including manufacture, identification, dyeing, study of the newer finishes for textiles. Prerequisite: Home Economics 50 or consent of instructor. Miss Cooper.

RELATED ART

Professor Allen; Associate Professor Leindorff, *chairman;* Assistant Professors Beckwith, Davis, Vandenbergh; Instructor Judy.

2. Introduction to Related Art. I, II; 3 cr. Basic course in color and design as found dation for courses in related art. Lectures, discussions; laboratory work. Mrs. Davis, Miss Judy, Miss Vandenbergh.

8. House Planning and Furnishing. I, II; 3 cr. Study of space relationships and furnishings for family living. Laboratory includes analysis, criticism, and drawing of house plans. Prerequisites: Course in design and sophomore standing. Mrs. Leindorff, Miss Vandenbergh.

18. Interior Design. I, II; 2 cr. Problems in color, scale, and texture considering different cost levels in furniture, textiles and accessories. Lectures and laboratory. Prerequisite: Home Economics 2 or a course in design. Miss Vandenbergh, Miss Judy.

20. Costume Design. I, II; 2 cr. Application of line, color and style to dress. Original designing; informal sketching of the figure, costume and accessories; wardrobe planning. Prerequisites: A course in design and sophomore standing. Miss Beckwith.

28. Home Architecture. I, II; 3 cr. This course undertakes to develop an appreciation of the problems of architectural design both with respect to exterior and interior space planning. Prerequisite: Sophomore standing. Not open to students who take Home Economics 8. Mrs. Leindorff.

85. Weaving for Occupational Therapy. I, II; 3 cr. Designing and planning for various types of weaving; chain and sectional warping; practice in the use of hospital type looms; techniques for weaving without a loom. Open only to students in occupational therapy or recreation. Miss Allen.

94. Decorative Textiles. II; 3 cr. Application of design to textiles. A study of traditional textile arts and modern developments. Lecture and laboratory. Prerequisites: Course in design and sophomore standing. Occupational therapy majors take course for 2 cr. Miss Allen.

95. Weaving. I, II; 2 cr. History of hand loomed fabrics. Designing of textiles and their execution on the hand loom. Lectures and laboratory. Prerequisite: Course in design. Miss Allen.

100. Thesis. Yr; 4 cr. Prerequisites: Senior standing and consent of instructor. Staff.

114. The Technique of Interior Design. II; 2 cr. Problems of selection and costs in interior design. Shop practice and field trips. Prerequisites: Senior standing, Home Economics 18 and Home Economics 115 or 116. Mrs. Leindorff.

115. Traditional Interiors. I; 2 cr. Furniture, textiles and accessories. Prerequisite: Junior standing. Miss Allen.

116. Contemporary Interiors. II; 2 cr. Colonial to contemporary interiors. Prerequisite: Junior standing. Mrs. Davis.

121. Advanced Costume Design. II; 2 cr. Problems to develop originality and techniques in costume design and illustration. Prerequisite: Course in costume design or consent of instructor. Miss Beckwith.

180. Special Problems in Related Art. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

194. Advanced Studies in Related Art. I; 2 cr. Display techniques, use of design in all fields of home economics. Prerequisite: Home Economics 2 or an equivalent course in design. Mrs. Davis.

200. Research in Related Art. Yr; *cr. Staff.

216. Seminar in Related Art. II; 2 cr. Prerequisites: Graduate standing and consent of instructor. Miss Allen, Mrs. Leindorff.

COURSES IN HOME ECONOMICS EDUCATION

52. (Education) Teaching of Home Economics. I, II; 3 or 5 cr. Study of problems of home economics teacher, including lesson plans, courses of study, equipment, reference and illustrative material. Observation and practice are afforded. Prerequisites: Senior standing, professional teaching major and Education 75. Open also to seniors minoring in home economics. Miss Henderson, Mrs. Siggelkow.

75. (Education) Nature and Direction of Learning. II; 3 cr. For majors in hospital dietetics. Miss Dalrymple.

101. Extension Work in Agriculture and Home Economics. I; 3 cr. Relationships and legal status of the various services for agriculture and home economics. Methods of organization and instruction used with adults and boys and girls. Mr. Jorgensen.

126. Adult Programs in Home Economics. II; 2 cr. Organization and administration of home economics work for adults in urban and rural centers. Planning of demonstrations,

exhibits, radio programs and popular publications. Prerequisite: Consent of instructor. Miss Pollock.

156. (EDUCATION) THE TEACHING OF HOMEMAKING IN SCHOOLS OF VOCATIONAL AND ADULT EDUCATION. Yr; 4 cr. (lect. 2 cr. I; off-campus teaching 2 cr. II). For teaching in George-Barden and city vocational schools. Building homemaking curricula for rural and urban centers; organization of adult homemaking programs; methods and materials. Prerequisites: Senior standing and Education 75. Miss Dalrymple.

180. SPECIAL PROBLEMS IN HOME ECONOMICS EDUCATION. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Miss Dalrymple, Miss Henderson, Miss Zuill.

288. (EDUCATION) SEMINAR IN HOME ECONOMICS EDUCATION. II; 2 cr. Recent studies and research in home economics education. Changing philosophy in home economics; curriculum planning: evaluation studies; individual problems. Prerequisites: Graduate standing and experience in teaching. Miss Dalrymple, Miss Zuill.

ADDITIONAL OFFERINGS

Additional elective courses are offered in the summer session, a description of which may be found in the Graduate School bulletin and the Summer Session bulletin. See courses HOME ECONOMICS 103, Recent food studies; 111, Seminar in clothing and textiles; 113, Studies in home management; 118, Home furnishings; 120, Current problems in family economics; 137, Community leadership in nutrition; 150, Textiles in home furnishings; 161, Recent developments in textiles; 177, Modern viewpoints in foods and nutrition; 195, Studies in decorative textiles; 197, Advanced applied costume design; EDUCATION 154, Problems in home economics in vocational programs, and 188, Curriculum studies in home economics education.

LAW SCHOOL

FACULTY

FRED, EDWIN BROUN, *D.Sc., LL.D.*, President of the University
RUNDELL, OLIVER SAMUEL, *LL.B.*, Dean and Professor of Law
AUERBACH, CARL A., *B.A., LL.B.*, Associate Professor of Law
BEUSCHER, JACOB HENRY, *A.B., LL.B., J.S.D.*, Professor of Law
BOESEL, FRANK TILDEN, *Ph.B., LL.B.*, Emeritus Lecturer in Law
BRODIE, ABNER, *LL.B.*, Assistant Professor of Law
BROWN, RAY ANDREWS, *A.B., LL.B., S.J.D.*, Professor of Law
BUNN, CHARLES, *A.B., LL.B.*, Professor of Law
CAMPBELL, RICHARD VALENTINE, *A.B., LL.B., J.S.D.*, Professor of Law
DODGE, EMILY POMEROY, *B.A., M.A., LL.B.*, Assistant Librarian and Instructor in Legal Bibliography and Legal Writing
EFFLAND, RICHARD WAYNE, *B.A., LL.B., LL.M.*, Associate Professor of Law
FEINSINGER, NATHAN PAUL, *A.B., J.D.*, Professor of Law
HALL, HOWARD LEWIS, *A.B., LL.B.*, Professor of Law
HURST, JAMES WILLARD, *A.B., LL.B.*, Professor of Law
KARLEN, DELMAR, *B.A., LL.B.*, Associate Professor of Law
MANN, J. KEITH, *B.S., LL.B.*, Assistant Professor of Law
MAYDA, JAROSLAV, *J.U.D.*, Assistant Professor of Law
MERMIN, SAMUEL, *B.A., LL.B.*, Lecturer
PAGE, WILLIAM HERBERT, *A.B., LL.B., LL.M., S.J.D.*, Jackson Professor of Law
PICK, EDWIN CHARLES, *Ph.B., LL.B.*, Lecturer
REMINGTON, FRANK JOHN, *B.S., LL.B.*, Assistant Professor of Law
RICE, WILLIAM GORHAM, JR., *M.A., LL.B., S.J.D.*, Professor of Law
ROSS, HUGH ALAN, *B.S., LL.B.*, Instructor
RUNGE, CARLISLE PIEHL, *Ph.B., LL.B.*, Assistant Professor of Law
STEDMAN, JOHN CLOES, *A.B., LL.B., LL.M.*, Professor of Law
YOUNG, GEORGE HOOPER, *B.A., LL.B.*, Associate Professor of Law

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BAERTSCHY, VERNA ELIZABETH, *Ph.B.*, Librarian
DAVIDSON, NELLIE, Administrative Assistant

Participating faculty members from other departments

BAKKEN, HENRY HARRISON, *B.A., M.A.*, Associate Professor of Agricultural Economics
BRANDEIS, ELIZABETH (MRS. P. A. RAUSHENBUSH), *B.A., M.A., Ph.D.*, Lecturer (Assistant Professor) in Economics
EARLEY, JAMES STANIFORTH, *B.A., M.A., Ph.D.*, Professor of Economics
FLEMING, ROBBEN WRIGHT, *B.A., LL.B.*, Director of Industrial Relations Center
GIBSON, JOHN CURRIE, *B.A., C.P.A.*, Professor of Accounting
GILL, HOWARD B., *B.A., M.B.A.*, Lecturer in Sociology
GROVES, HAROLD MARTIN, *Ph.B., M.A., Ph.D.*, Professor of Economics
PERLMAN, SELIG, *B.A., Ph.D.*, Professor of Economics
SCHUCK, HARRY MICHAEL, *LL.B., M.A.*, Associate Professor of Commerce
TRIPP, L. REED, *B.A., Ph.D.*, Associate Professor of Economics
WITTE, EDWIN EMIL, *B.A., Ph.D.*, Professor of Economics

THE LAW SCHOOL

The Law School, since its establishment in 1868, has kept in advance of the legal requirements for admission to the bar in this state and adjoining states. It was one of the first western schools to establish a three-year course. It was the first state law school in the United States and, with one exception, the first school west of the Alleghenies to require for admission to the school two years of college study by candidates for the law degree. Beginning in 1929 this requirement was raised to three years, and beginning in 1938 applicants were required to maintain a certain average in their three years' work, as more fully described below.

The Law School is the only law school which requires its candidates for degrees to serve an apprenticeship in a law office. This requirement is due to the conviction that the young lawyer should try his powers under the direction of an experienced practitioner before being entrusted with the full responsibilities of a member of the bar. For those who are not in a position to serve an apprenticeship, or who wish to study law for purposes other than practice, alternative requirements of additional study are laid down, as described below under the rules relating to graduation.

ADMISSION

I. Candidates for the Degree

1. Residents and University of Wisconsin students. Candidates for the degree of Bachelor of Laws who are residents of the state of Wisconsin or who are students in or graduates of the University of Wisconsin are required to have completed satisfactorily, before their admission to the Law School, three full years of college work equivalent to the first three years of either of the General Courses (B.A. or B.S.) in the College of Letters and Science (see Letters and Science bulletin), or the first three years of the course in the School of Commerce leading to the degree of Bachelor of Business Administration, of this University. (As to students in engineering, see below under heading: Combined Course: Engineering and Law.) The requirement of three years of college work may be satisfied by work done either in the University of Wisconsin or in any college or university officially recognized by the University of Wisconsin. An applicant for admssion to the Law School from a college or university other than the University of Wisconsin should have a transcript of his credits sent, for evaluation, to the Office of Admissions, Bascom Hall, University of Wisconsin.

In addition applicants for admission must have either:

(a) A grade-point average of at least 1.3 or, in the case of a student entering the Law School from another institution, its equivalent (war veterans are exempted from this additional requirement until September 1, 1952, when it will become 1.5 in the case of all students); or

(b) A bachelor's degree, with a grade-point average of at least 1.0 (or, in the case of a student entering the Law School from another institution, its equivalent).

For the information of students desiring to enter the Law School from institutions other than the University of Wisconsin, a 1.3 grade-point average in the University represents grades in the proportion of three B's to every seven C's.

2. Nonresidents. Candidates for the degree of Bachelor of Laws who are neither residents of the state of Wisconsin nor students in or graduates of the University of Wisconsin are required to have as a condition of admission to the Law School a 1.5 grade-point average where otherwise they would be required to have but a 1.3 grade-point average. (The differ-

ence in entrance requirements between residents and nonresidents is a consequence of the shortage of space facilities in the postwar years. As this shortage became less acute the differences in entrance requirements were reduced and, under present regulations, will completely disappear by September 1, 1952.)

II. Special Students

Applicants for admission who are not candidates for a law degree may be admitted as special students provided they have had college work or have passed an examination showing the possession of educational experience equivalent, in either case, to the first two years of a general course in the College of Letters and Science at this University. Such students are subject to all the regulations and requirements of the school excepting those pertaining to graduation, and they are entitled to all the instructional facilities afforded other students. An opportunity is thus given to prepare for bar examinations in this and other states. In Wisconsin, under the rules of the supreme court, special students with only two years of pre-law preparation must take four years of law in order to be eligible to take the bar examination. A four-year law course for such students can be arranged. A special student who, after entering the Law School, chooses to complete the pre-law studies required of candidates for a law degree, *may not count toward that degree any law credits earned prior to the completion of such studies.* Applicants for admission as special law students whose pre-law work has not been taken in this University should send a transcript of their credits to the Office of Admissions (see paragraph 1 above).

III. Advanced Standing

Applicants who are qualified to enter the Law School as candidates for a degree, and who have satisfactorily completed one year or more of resident work in a law school of good standing having a three year course, will be given equivalent rank in this school upon presenting properly authenticated certificates of such work. The right is reserved to give credit only if the student's work in the school is satisfactory; and, in the case of students whose last year only, or whose last year and one-third, is spent in this Law School, a weighted average of at least 80 in all of his work at this school will be required for graduation. All persons who intend to apply for advanced standing under the above rule should, at least two weeks before the opening of the particular session which they desire to attend, forward a transcript of their law credits to the Dean of the Law School, and a transcript of their pre-law credits to the Office of Admissions (see paragraph 1 above).

COMBINED COURSE: LETTERS AND SCIENCE, AND LAW

As described in detail in the Letters and Science bulletin, students of that college who have completed the requirements of the first three years of one of the general courses and are scholastically eligible to enter the Law School may, in their senior year, elect subjects in the Law School and credit this work to the extent of 30 credits toward both the arts and the law degrees.

COMBINED COURSE: COMMERCE AND LAW

Students in the School of Commerce, who qualify for admission to the Law School in their senior year, may elect law subjects and apply them to the extent of 30 credits toward both the business administration and the law degrees.

Students registered in the Law School who are carrying a minimum of six credits in that school are permitted to elect as a part of their law studies and to apply toward the degree of Bachelor of Laws in lieu of accounting courses offered in the Law School, a total of not to exceed five credits from among the following courses offered in the School of Commerce:

Commerce 183, Income Tax and Consolidation, 2 cr.
Commerce 184, Auditing, 3 cr.
Commerce 186, Systems, 2 cr.
Commerce 187, Governmental Accounting, 2 cr.

COMBINED COURSE: ENGINEERING AND LAW

Students in their senior year in the College of Engineering are permitted to elect Law courses and apply the credits earned to both a law degree and an engineering degree. Engineering students who do this may qualify for the degree of Bachelor of Science in Engineering and for the degree of Bachelor of Laws (not including the apprenticeship requirement) in a total of six and one-half years. For the details of this plan students should consult the catalog of the Engineering School.

The Law School offers a course in Patent Law. This course should be of particular interest to students with engineering training.

PRE-LEGAL STUDIES

The faculty believes that a student who has a particular bent should major in the department of his choice, whatever that is. For students who know that they desire ultimately to study and practice law, but are not conscious of any other definite aptitude or desire, the faculty recommends a broad training in the principal social sciences; and to that end the faculty particularly recommends in the case of students in the College of Letters and Science at Wisconsin, the Major in American Institutions (for which see the Letters and Science bulletin).

Among particular courses, the faculty recommends to all pre-law students a course in English Constitutional History.

STUDIES OUTSIDE THE LAW SCHOOL

Students in the Law School may pursue, without additional fees, and with the consent of the Dean of the Law School, studies in other departments of the University.

FEES AND EXPENSES

See section entitled Student Expense, page 13.

REQUIREMENTS FOR GRADUATION

The degree of Bachelor of Laws will be conferred upon all candidates who are at least 21 years of age, who are of good character, who, in the judgment of the faculty, possess satisfactory legal attainments, and who have complied with the following conditions:

(1) Completion of courses totaling at least 80 credits with a weighted average of 77.

(2) Residence of at least three years in law schools of good standing, the last year at least being in this school. A minimum of 10 law credits, or a minimum of 12 credits of which at least 7 must be law credits, must be earned in a semester to count that semester as a full half-year of residence in the Law School. Where less than these minimum credits are earned in a semester, partial residence will be allowed depending upon the amount of work taken.

(3) Apprenticeship of not less than six months in a law office, except as provided below. This apprenticeship, which need not be completed all at one time, may be served within or without Wisconsin, but only at a time when the candidate is not in attendance at the University, and only after he shall have received credit for not less than twenty semester hours in this or another law school. Each apprentice must comply with the following regulations: (a) At the beginning of the clerkship, he must file a certificate by his preceptor stating the date on which the clerkship begins; (b) a like certificate showing the date of completion of the clerkship must be filed at the completion of the period; and (c) a monthly report signed by the student and endorsed by the preceptor, showing the kind and amount of work assigned to the student during the period of the report must be filed.

The apprenticeship requirement may be absolved by spending in residence a period equivalent to a summer session in addition to the six semesters residence required of all

(2) the summer course in Legal Problems. For those who take the eight additional credits the weighted average of 77 on all the academic work offered for a degree applies and, except in so far as exempted for special reasons, such as schedule difficulties, by the Dean, the subjects of Evidence and two of the following three: Pleading and Pre-Trial Practice, Trials and Appeals, and Jurisdiction of Courts are required. The course in Evidence, unless waived, is required of all who take the summer course in Legal Problems.

ADMISSION TO THE BAR

The statutes of the State provide in effect that any resident graduate of the Law School shall be admitted to practice in all the courts of this State by the Supreme Court upon the presentation of his diploma, and may be admitted when the Supreme Court is not in session by an order signed by one of the Justices thereof and filed with the clerk of said court. (R.S., Wis., sec. 256.28.)

Under this statute and a rule of the federal court it is customary for the graduating class, on motion of the Dean of the Law School, to be admitted to the Supreme Court of the State and to the district court of the United States (Western district) immediately upon graduation. This admits them to the bar of any court of record of the state of Wisconsin.

REQUIREMENTS FOR GRADUATE DEGREES

MASTER'S DEGREE

Candidates for the degree of Master of Laws (LL.M.) must have completed the requirements for a certificate in law at the University of Wisconsin Law School, or the equivalent thereof at another law school which is a member of the Association of American Law Schools. They will spend an additional year of residence at this Law School and during that year complete a program consisting of a minimum of 26 credits with a weighted average of 80 or better.

THE S.J.D. DEGREE

Administration of all work for the degree of Doctor of Juridical Science (S.J.D.) is vested in a Graduate Committee of the Law Faculty. The following statement sets minimum requirements for the degree; these requirements may be adjusted to the needs of individual cases in the discretion of the committee:

Applicants for admission as candidates for the S.J.D. degree must satisfy the following requirements: (a) eligibility for admission to the Law School; (b) graduation from a law school which is a member of the Association of American Law Schools, or receipt of a certificate in law from the University of Wisconsin Law School; (c) promising work in law school, which normally should place the candidate in the upper ten per cent of his class. The number of candidates admitted will normally be limited to five in any given year.

Candidates for the S.J.D. degree must spend at least a year in residence in the Law School and during that year, or such extended time as may be granted by the committee, must satisfy the following requirements: (a) completion in a satisfactory manner of such course work as is specified by the committee; (b) performance of legal service in departments and commissions of the state government on a rotating basis, pursuant to a schedule approved by the committee, or, either alternatively or in addition to such service, the accomplishment of a research project approved by the committee; (c) submission of the outline of a thesis together with proof of substantial progress toward its completion.

The writing of a thesis will be a major part of the work done for the degree. The final drafts of the thesis must be approved by a committee of the law faculty and the candidate must, after the submission of the thesis as a prerequisite preceding the degree, pass an oral examination in the field of the thesis, unless the examination is waived by the committee

for special reasons. The degree will not be granted earlier than the end of the first semester following the year in residence.

GRADUATE MINORS IN LAW

In accordance with the regulations of the Graduate School and the rules of the department or departments concerned, work in the Law School may be offered as a minor toward a degree in the Graduate School.

SUMMER SESSION

The Law School offers a ten-week summer session during which credit for one-third of a year of residence can be obtained.

COURSES OF INSTRUCTION

FIRST YEAR

CONTRACTS. 6 cr. (Casebook to be announced.) (a) Mutual assent, consideration, illegal and void contracts. (b) Performance, etc., of conditions and covenants, breach, impossibility, other forms of discharge, joint obligations, assignments, contracts to render performance to third person, statute of frauds, contracts under seal.

CRIMINAL LAW. 4 cr. (Casebook to be announced.) The criminal law viewed as a means for the prevention or control of crime; the concepts utilized for the definition of criminal behavior and for prescribing the treatment of criminals and potential criminals, with particular attention to homicide, theft, inchoate crimes, and criminal responsibility.

INTRODUCTION TO PROCEDURE. 2 cr. Karlen, *Primer of Procedure* (Campus Publishing Company). Step by step analysis of a simple law suit and historical background of present judicial system.

LAW IN SOCIETY. 3 cr. Planographed readings, cases and statutes (College Typing Co.). The nature, sources and development of law; the structure and functions of courts and other agencies; the interests served by law and the conflicts which mark the growth and administration of law; and the relation of law to other social sciences and other agencies of social control. The course is woven about an illustrative study of the law of industrial accidents.

LEGAL BIBLIOGRAPHY AND LEGAL WRITING. 2 cr. Price, Miles O., *A Practical Manual of Standard Legal Citations* (Oceana Publications, 1950). This course, required of all first-year students, has a two-fold aim: (1) to acquaint students with law books, and their use, and (2) to provide all entering students with experience in analyzing law problems as lawyers do, doing research on them, then organizing the material into written memoranda and briefs. The course includes some objective exercises in the use of law books, and two lectures a week for the first few weeks; this is followed by personal conferences with students on their written projects, with fewer lectures during this period; then a final examination.

PERSONAL PROPERTY. 2 cr. Brown, *A Short Selection of Cases on Personal Property* (College Typing Co.). Original acquisition, findings, gifts, bailments, liens, pledges, fixtures.

REAL PROPERTY. 3 cr. Brown, *Cases and Materials on Real Property* (Callaghan & Co.). Historical introduction, estates in land—fee simple, fee tail, life estates, terms for years and other non-freehold estates, future estates and interests, co-tenancies.

TORTS (a). 2 cr. Campbell, *Cases on Torts,* Volume I (College Typing Co.). Intentional harms to persons and property; invasion of interests in reputation, privacy and freedom from perversion of judicial process.

TORTS (b). 4 cr. Campbell, *Cases on Torts,* Volume II (College Typing Co.). Unintentional harms to persons and property.

PROGRAM ADVICE FOR THE SECOND AND THIRD YEARS

The following is intended, not as a requirement, but as an aid to law students in planning their programs after the first year.

Courses marked "Third Year," and seminars, should be postponed to that year. Courses

marked "Second Year" are normally taken in that year, but may be taken in either year as called for by program needs.

I. Certain subjects are important in the work of every lawyer, whether in private practice, in business, or in government. Of these, the following four are recommended to all students:

Second Year:
Constitutional Law
Restitution

Third Year:
Conflict of Laws
Taxation

II. *Groups of subjects.* Most of the other work of the school falls into major groups listed below. Students should distribute their choice of courses so as to include within their total program a substantial selection from each group. The groups are as follows (each group should be read to include any related seminar):

Group 1. Property and Estates

Second Year:
Sales of Land
Servitudes
Trusts
Wills

Third Year:
Future Interests
Mortgages

Group 2. The Organization and Conduct of Business

Second Year:
Accounting Principles 108a
Business Organizations
Creditors' Rights
Sales of Chattels

Third Year:
Accounting Principles 108b (income tax)
Bills and Notes and Banking
Corporations
Suretyship

Group 3. Public Law, Legal History, and the Philosophy of Law

Second Year:
Legislation
Municipal Corporations
History of Law

Third Year:
Administrative Law
International Law
Jurisprudence

Group 4. Court Procedure

Second Year:
Pleading and Pre-Trial Practice
Trials and Appeals

Third Year:
Evidence
Jurisdiction of Courts

Group 5. Other Important Specialties

Second Year:
Automobile Accidents
Domestic Relations
Insurance
Labor Law

Third Year:
Patent Law
Public Utilities
Trade Regulation

III. *Argument of Cases and Trial Court.* It is recommended that at least one semester of work be taken by all students, and more when practicable.

IV. *Requirements for graduation* are not enlarged, reduced, waived, or in any way affected by this notice. The recommendations made are intended only to give students the judgment of the faculty as to how they may best administer such freedom as they have available.

SECOND AND THIRD YEARS

ACCOUNTING PRINCIPLES 108 (a). 3 cr. (3 hours a week.) Graham & Katz, *Accounting in Law Practice* (Callaghan & Co.). An introductory course in accounting with particular reference to financial statements, estate and corporate accounting.

ACCOUNTING PRINCIPLES 108 (b). 2 cr. (2 hours a week.) Prentice-Hall, *Federal Tax Course.* A specialized course in income taxation, open only to those who have taken 108 (a) or some equivalent course.

ADMINISTRATIVE LAW. 4 cr. (Casebook to be announced.) The function and procedure of administrative boards and commissions; judicial relief from their decisions and orders.

AUTOMOBILE ACCIDENTS. 3 cr. Campbell, *Cases on Liability and Compensation for Automobile Accidents* (College Typing Co.). Liability and compensation for automobile accidents. Wisconsin law is stressed.

BILLS AND NOTES, AND BANKING. 4 cr. Steffen, *Cases on Commercial and Investment Paper* (Foundation Press). The general principles governing bills of exchange, promissory notes, checks and other commercial paper, and the interpretation of the Uniform Negotiable Instruments Law; rules relating to deposit and collection of commercial paper.

BUSINESS ORGANIZATIONS I. 4 cr. Mathews, *Cases and Materials on Agency and Partnership* (1940) (Callaghan & Co.). Elements of the law of agency and partnership.

CONFLICT OF LAWS. 3 cr. Cheatham, Dowling, Goodrich and Griswold, *Cases on Conflict of Laws* (3rd edition) (Foundation Press). The general principles of jurisdiction, and the rules applied by courts in recognizing and enforcing rights acquired under the law of a sister state or of a foreign country.

COMPARATIVE LAW. 3 cr. (Casebook to be announced.) Aims, methods and value of the comparative method. The course is conceived as integrative, building upon the previously acquired technical skill. Emphasis is on the search for common legal values and the interrelation between law and society on the international level.

CONSTITUTIONAL LAW. 4 cr. Dodd, *Cases on Constitutional Law* (West Publishing Co.). Separation of powers, the federal system, civil rights, due process, etc.

CORPORATIONS. 4 cr. Berle & Warren, *Business Organizations* (Foundation Press 1948). An introduction to the law of private business corporations.

CREDITORS' RIGHTS. 3 cr. Hanna and MacLachlan, *Cases on Creditors' Rights with Bankruptcy Act Supplement* (4th ed., Vol. I) (Foundation Press). Judgments, executions. attachments, garnishments, assignments for the benefit of creditors, and bankruptcy.

DAMAGES. 2 cr. McCormick, *Cases on Damages* (Foundation Press). Measurements of compensatory damages, exemplary damages, costs of litigation, procedural aspects.

DOMESTIC RELATIONS. 2 cr. Jacob, *Cases and Materials on Domestic Relations* (2nd ed.) and 1947 Supplement (Foundation Press). The law relating to the family, with special reference to promises to marry, husband and wife, parent and child, infancy, and marriage and divorce.

EVIDENCE. 3 cr. (Casebook to be announced.) The general nature of a trial of an issue of fact, of evidence, and of the legal rules of evidence, and a particular study of judicial notice, burden of proof and presumptions, problems of remoteness and of undue prejudice, the examination of witnesses, illegally obtained evidence, opinion, hearsay, the parol evidence rule and interpretation, and the functions of judge and jury.

FUTURE INTERESTS. 4 cr. Leach, *Cases on Future Interests* (2nd ed.) (Foundation Press). Future interests in real and personal property, powers, the rule against perpetuities, and restraint of alienation, with special reference to doctrines peculiar to the law of real property in Wisconsin.

HISTORY OF ANGLO-AMERICAN LAW. 2 cr. A brief study of the history of law in England, with special reference to its development by the King's courts and by the court of the Chancellor; the reception of English law in the English colonies; and its development in the United States.

HISTORY OF LAW. 3 cr. Hurst, *The Principal Agencies of Law in the United States* (Law School Book Mart) and Hacker, *The Shaping of the American Tradition*. Examination of the relation of law to some main currents in political, social and economic thought in the United States; appraisal of the social function of constitution-making processes, the legislature, the courts, the bar, and the executive branch in United States society.

IMPERFECT COMPETITION AND THE LAW (Seminar). 2 cr. (Casebook to be announced.) Joint seminar with the Department of Economics, open to graduate students in that department and to third-year law students. An attempt to assess the economic theory of imperfect competition, the facts concerning concentration and control in American industry, and the principal cases under the Federal Anti-Trust Laws.

INSURANCE. 3 cr. Patterson, *Cases and Materials on the Law of Insurance* (2nd ed) (West Publishing Co.). The general rules of insurance law with special reference to fire and life insurance, including the provisions of the Wisconsin Standard Fire Insurance Policy.

INTERNATIONAL LAW. 4 cr. (Casebook to be announced.) Selected problems, with cases and other illustrative materials. Emphasis on the new legal, political, socio-economic and organizational concepts of the contemporary international and world law.

JURISDICTION OF COURTS. 3 cr. Karlen, *Jurisdiction of Courts* (Law School Book Mart). The power of courts, Federal and State, to render valid judgments. Related subjects, such as venue and provisional remedies, are also considered.

JURISPRUDENCE. 3 cr. Fuller, *The Problems of Jurisprudence* and Hall, *Readings in Jurisprudence* (Foundation Press). The philosophies of law, an analysis of the nature of law and its basic concepts, law as a science and its relation to social science, the judicial and legislative processes.

LABOR LAW I (Union-Management Relations). 3 cr. Labor Law, Cases and Materials, compiled by a group of teachers of Labor Law, Professor Robert E. Mathews, University of Ohio Law School, Editor in Charge. Collective bargaining and arbitration, strikes, picketing, boycotts, injunctions; the National Labor Relations Act and analogous state acts.

LABOR LAW II (Rights of Individual Workers). 3 cr. Labor Law, Cases and Materials, compiled by a group of teachers of Labor Law, Professor Robert E. Mathews, University of Ohio Law School, Editor in Charge. Statutes and decisions dealing with rights of individual workers in relation to unions and employers, including Workmen's Compensation, Fair Labor Standards, Unemployment Compensation and Social Security.

LANDLORD-TENANT PROBLEMS. 2 cr. (Casebook to be announced.) A study of modern problems arising from landlord-tenant relations, both urban and rural, such as condition of the premises, statutory regulations, examination of standard lease forms, and drafting of leases. Primary emphasis will be placed on the leasehold, but some review will be made of tenancies at will and periodic tenancies. Individual research reports will be required of each student on assigned problems, in addition to case reading.

LAND USE SEMINAR. 2 cr. Legal problems and devices arising out of and relating to the regulation, planning and control of the use of land. Law approached from the point of view of *use* rather than *ownership* of land.

LEGAL-ECONOMIC ASPECTS OF COOPERATIVES (Seminar). 2 cr. Joint seminar with the Department of Agricultural Economics, open to graduate students in that department and to third-year law students. An attempt to understand the cooperative form of business enterprise, both in the marketing of agricultural products and in other situations.

LEGAL TECHNIQUES. 2 cr. Volz, Baldwin, Pick and DeWitt, *Wisconsin Practice Methods* (West Publishing Co.). Not recommended for students having less than 50 credits or planning to take the summer session course in Legal Problems. No credit given to those who *have taken* the course in Legal Problems. Includes instruction and practical work in drafting options, deeds, mortgages, land contracts, wills, leases, bills of sale and chattel mortgages; examining abstracts; clearing title defects; closing a real estate deal; probating estates; terminating joint tenancies; termination of tenancies and unlawful detainer; filing mechanics liens; and the procedure in divorce, workmen's compensation, attachment, garnishment and Public Service Commission matters.

LEGISLATION. 3 cr. Planographed cases (College Typing Co.). The use of statutes and legislative materials in litigation and decision; problems of the lawyer in the drafting and interpretation of statutes, in representation of the client before legislative bodies, and in the presentation and argument of statutory authorities to a court.

MORTGAGES. 4 cr. Osborne, *Cases on Property Security* (West Publishing Co.). Legal and equitable mortgages of real and personal property.

MUNICIPAL CORPORATIONS. 4 cr. Tooke and McIntire, *Cases on Municipal Corporations* (Foundation Press). The general nature and rights and liabilities of public corporations (counties, cities and towns).

PATENT LAW. 2 cr. (Casebook to be announced.) The substantive and procedural law of patents; the nature and the scope of the patent right.

PLEADING AND PRE-TRIAL PRACTICE. 3 cr. (Casebook to be announced.) A study of pleading and related processes, preliminary to the trial of issues of fact.

PUBLIC UTILITIES. 3 cr. Smith, Dowling & Hale, *Cases on Public Utilities* (1936) West and Auerbach, *Mimeographed Materials on Public Utilities* (Law School Book Mart). The public utility status and the right and duties incident thereto; valuation; state and federal regulation; the holding company.

RESTITUTION. 3 cr. Durfee and Dawson, *Cases on Remedies,* Vol. II, *Restitution* (Dennis & Co.). Relief at law and in equity for misrepresentation, mistake and duress.

SALES OF CHATTELS. 3 cr. Bogert, *Cases on Sales* (2nd ed. 1947) (Foundation Press). Contracts resulting in the transfer of title to personal property and the special rights and remedies of buyer and seller.

SALES OF LAND. 4 cr. Beuscher, *Materials on Sales of Land* (College Typing Co.) and Casner and Leach, *Cases and Text on Property* (Little, Brown & Co.). Binding the purchase of land; minimum contractual requirements; financing the purchase through the executory land contract; completion of the purchase through appraisal of title, execution and delivery of the deed of conveyance.

SEMINAR IN COLLECTIVE BARGAINING. Year course, two credits per semester. An analysis and appraisal of basic problems of collective bargaining, and modern developments. Emphasis is placed on correlating the factual approach with legal and economic theory. Emphasis on war-time controls over collective bargaining. Open to law students and graduate students who have had the course in Labor Law or its equivalent. Admission by consent of one of the seminar instructional staff.

SEMINAR IN TORTS (AIR LAW). 2 cr.

SEMINAR ON THE LAW PROTECTING CIVIL LIBERTIES AND RIGHTS. 2 cr. A survey of the current state of the law protecting the civil liberties and rights of the people, emphasizing the problems in this field which have been made acute by the increasing tension in the relations between nations and attempting to evaluate the proposed solutions.

SERVITUDES. 3 cr. Rundell, *Cases and Materials on Rights in Land* (Callaghan & Co.). Rights incidental to possession, profits, easements, licenses, covenants running with the land, rents.

SUMMER WORK IN LEGAL PROBLEMS. Alternative to office apprenticeship. Volz, Baldwin, Pick and DeWitt, *Wisconsin Practice Methods* (West Publishing Co.). Open only to students with 50 or more credits. Includes instruction and practical work in drafting options, offers to purchase, deeds, mortgages, land contracts, wills, leases, bills of sale and chattel mortgages; examining abstracts; clearing title defects; checking records in county offices; estate planning; probating estates; adoption; guardianship; name change; foreclosing mortgages; filing and foreclosing mechanics liens; justice court practice; attachment; garnishment; replevin; termination of tenancies and unlawful detainer; criminal procedure; bankruptcy; law office management; divorce; preparation of estate and income tax returns; and practice before administrative agencies in workmen's compensation and other matters. Judges, governmental officials and practicing attorneys act as guest lecturers. Trials and hearings are conducted before actual judges and examiners of the various governmental agencies.

SURETYSHIP. 2 cr. Simpson, *Cases and Materials on the Law of Suretyship* (West 1942). Rights and obligations among principal debtor, his creditor, and his surety.

TAXATION. 4 cr. Magill and Maguire, *Cases on Taxation* (4th ed.) (Foundation Press) and *Commerce Clearing House Code and Regulations, Internal Revenue Code and Federal Regulations,* particular loose-leaf service to be announced. The general principles of property, inheritance and income taxation.

TRADE REGULATION. 4 cr. Oppenheim, *Cases on Trade Regulation: Unfair Competition* (West Publishing Co.). The law concerning methods of competition in business, with considerable reference to the responsibilities of administrative agencies in the field. Trade-marks, unfair competition, price maintenance, price discrimination.

TRIALS AND APPEALS. 3 cr. Karlen, *Trials and Appeals* (Law School Book Mart). Practice and procedure in state and federal courts, from the beginning of trial through appeal.

TRUSTS. 4 cr. Scott, *Cases on Trusts* (3rd ed.) (Scott, Harvard Univ.). A consideration of the essential nature and incidents of the trust relationship, the methods of creating trusts, classification of trusts, and the rights and obligations of the trustee and beneficiary with reference to each other and to third persons. Resulting and constructive trusts.

WILLS. 3 cr. Mecham and Atkinson, *Cases on Wills and Administration* (3rd ed.) (Foundation Press). Testate and intestate succession, including descent, advancements, property rights of the surviving spouse, escheat; wills, devises and legacies, lapse, ademption, abatement, probate and contest of wills; and the administration of estates and decedents.

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SAMUEL A. FREITAG, M.D.
GEORGE E. GUTMANN, M.D.
THOMAS O. NUZUM, M.D.
THOMAS W. NUZUM, M.D.
ERLAND R. OTTERHOLT, M.D.
ORRIN V. OVERTON, M.D.
AUBREY H. PEMBER, M.D.
JOHN F. PEMBER, *M.D.*
J. RICHARD SCHRODER, M.D.
HERBERT M. SNODGRASS, M.D.
STEWART F. RICHARDS, D.D.S.

LA CROSSE

A

GUNNAR GUNDERSEN, M.D. ..... *Preceptor in Charge*

Associate Preceptors

VICTOR J. BRUDER, M.D.
EDWARD S. CARLSSON, M.D.
MAY EILEEN DAVIES, M.D.
PAUL C. GATTERDAM, M.D.
KENNETH GHORMLEY, M.D.
ALF H. GUNDERSEN, M.D.
SIGURD B. GUNDERSEN, M.D.
THOROLF E. GUNDERSEN, M.D.
JOHN C. HARMAN, M.D.
HENRY W. M. HARRIS, M.D.
CHRISTIAN F. MIDELFORT, M.D.
EDWARD L. PERRY, M.D.
ROBERT W. RAMLOW, M.D.
GEORGE B. RIDOUT, M.D.
MARGARET A. SCHAEFER, M.D.
B. W. SITTERSON, M.D.
MARTIN SIVERTSON, M.D.

B

MATTHEW A. MCGARTY, M.D. ..... *Preceptor in Charge*

Associate Preceptors

J. J. AHLFS, M.D. (Caledonia, Minn.)
PAUL DEITZ, M.D.
RAYMOND HIRSCH, M.D. (Viroqua)
PETER V. HULICH, *M.D.*
A. A. SKEMP, M.D.
DEAN S. SMITH, M.D.
ROBERT STARR, M.D. (Viroqua)

LADYSMITH

WOODRUFF SMITH, M.D. ..... *Preceptor in Charge*

Associate Preceptors

L. M. LUNDMARK, M.D.
J. E. MURPHY, M.D.
HOWARD F. PAGEL, M.D.
M. L. WHALEN, M.D. (Bruce, Wis.)

MADISON

CITY HEALTH DEPARTMENT

CARL N. NEUPERT, M.D. ..... *Preceptor in Charge*
CHARLES K. KINCAID, M.D. — JAMES M. WILKIE, M.D.

WISCONSIN STATE BOARD OF HEALTH

EDWIN HALL JORRIS, M.D. — ARTHUR R. ZINTEK, M.D.

MADISON GENERAL HOSPITAL

N. A. HILL, M.D. ..... *Preceptor in Charge*

METHODIST HOSPITAL

ROBERT A. STRAUGHN, M.D. ..... *Preceptor in Charge*

ST. MARY'S HOSPITAL

ROBIN ALLIN, M.D. ..... *Preceptor in Charge*

MENDOTA STATE HOSPITAL

WALTER J. URBEN, M.D. ..... *Preceptor in Charge*

MARSHFIELD

K. H. DOEGE, M.D. ..... *Preceptor in Charge*

Associate Preceptors

R. S. BALDWIN, M.D.
F. A. BOECKMAN, M.D.
J. L. BURNS, M.D.
G. S. CUSTER, M.D.
P. F. DOEGE, M.D.
S. EPSTEIN, M.D.
F. J. GOUZE, M.D.
N. J. HELLAND, M.D.
C. L. HOLMES, M.D.
R. F. LEWIS, M.D.
G. L. MCCORMICK, M.D.
R. W. MASON, M.D.
J. B. MIALE, M.D.
R. P. POTTER, M.D.
R. J. ROWE, M.D.
J. J. SUITS, M.D.
T. J. RICE, M.D.
C. A. VEDDER, M.D.
J. S. VEDDER, M.D.
J. M. WICKHAM, M.D.

MILWAUKEE SOUTH VIEW ISOLATION HOSPITAL

MAX J. FOX, M.D. ..... *Preceptor in Charge*

MONROE

LESLIE G. KINDSCHI, M.D. ..... *Preceptor in Charge*

Associate Preceptors

GEORGE R. BARRY, M.D.
NATHAN E. BEAR, M.D.
OTTO S. BLUM, M.D.
BEN H. BRUNKOW, M.D.
EUGENE E. ECKSTAM
WAYNE J. FENCIL, M.D.
W. B. GNAGI, M.D.
FRED W. KUNDERT, M.D.
DWAIN E. MINGS, M.D.
ERWIN E. PETERS, M.D.
JOHN A. SCHINDLER, M.D.
PAUL W. SNOWDEN, M.D.
JAMES R. WEIR, M.D.
KEITH B. WITTE, M.D.

RHINELANDER

WARNER S. BUMP, M.D. ..... *Preceptor in Charge*

Associate Preceptors

ROLLIN R. OSBORNE, M.D.
WARREN K. SIMMONS, M.D.
GEORGE R. THUERER, M.D.
MARVIN WRIGHT, M.D.

SHEBOYGAN

PAUL B. MASON, M.D. ..... *Preceptor in Charge*

Associate Preceptors

A. B. C. BOCK, M.D.
FRIEDRICH EIGENBERGER, M.D.
T. J. GUNTHER, M.D.
FREDERICK G. HIDDE, M.D.
W. G. HUIBREGSTE, M.D.
JERRY WM. MCROBERTS, M.D.
F. A. NAUSE, M.D.
EDWARD G. SCHOTT, M.D.
LLOYD M. SIMONSON, M.D.
LESLIE TASCHE, M.D.
CARL J. WEBER, M.D.

WALES

WISCONSIN STATE SANATORIUM

ELLISON WHITE, M.D. ..... *Acting Preceptor in Charge*

WAUSAU

A

WALTER T. BECKER, M.D. ..... *Preceptor in Charge*
JOSEPH F. SMITH, M.D. ..... *Emeritus Preceptor*

Associate Preceptors

JOHN V. FLANNERY, M.D.
RICHARD C. SHANNON, M.D.

B

MERRITT LA COUNT JONES, M.D. ..... *Preceptor in Charge*

Associate Preceptors

JOSEPH M. FREEMAN, M.D.
ROY B. LARSEN, M.D.
ERVIN P. LUDWIG, M.D.
OTIS M. WILSON, M.D.

WINNEBAGO STATE HOSPITAL

JOHN T. PETERSIK, M.D. ..... *Preceptor in Charge*

MEDICAL SCHOOL

ADMISSION

All applicants for admission to the Medical School must have fulfilled the general entrance requirements of the University, either by satisfactory completion of certain prescribed work in some recognized secondary school, including graduation therefrom, or by passing the entrance examinations. See General Information bulletin for details.

Preference will be given to applicants who have graduated from Wisconsin secondary schools.

ADMISSION WITH ADVANCED STANDING

First-year Class: A student wishing to apply for admission to this class should send an official transcript of his college record to the Dean of the Medical School not later than January 1 of the year in which he wishes to matriculate. If the credentials are satisfactory, an application blank will be sent to the candidate for admission, to be filled out and returned to the Dean of the Medical School. All candidates will be notified of the action of the Admissions Committee by July 1.

Second-year Class: Students from other institutions are not encouraged to apply for admission to this class, since vacancies rarely occur.

Third- and Fourth-year Classes: At the present time no applications to these classes are accepted, except from residents of Wisconsin who were assigned to other institutions under military control during the emergency.

MEDICAL SCHOOL CURRICULA

The university curriculum for candidates for the degree of Doctor of Medicine is divisible into three parts: preprofessional, preclinical and clinical. At the University of Wisconsin three years are required for the preprofessional period and two years each for the preclinical and the clinical. In the modern medical course the latter subdivision is no longer arbitrary. Co-ordination and integration are extending.

PREPROFESSIONAL REQUIREMENTS

The preprofessional part of the curriculum comprises college work required prior to matriculation in the Medical School. It may be combined with the preclinical part of the medical course thereby leading either to a Bachelor of Arts or a Bachelor of Science degree. If it extends through four years the Bachelor of Arts or the Bachelor of Science degree is usually received before matriculation in the Medical School.

Choice of Preprofessional Courses. The student who enters the College of Letters and Science with the intention of studying medicine registers in the B.S. or B.A. General Course. During the first two years his college faculty adviser will assist him to select a schedule of studies which will enable him to complete the required college work within the period of time which he desires to devote to preparation for the medical course. The Associate Dean of the School of Medicine is the adviser to all junior preprofessional students. At the beginning of the junior year, properly qualified students are admitted to a major in Medical Science. However, that major can only be completed by students who qualify for admission to the Medical School because the major study consists of a minimum of 25 credits of closely

related medical subjects. It is essential, therefore, for each preprofessional student to consult with the Associate Dean regarding his program for the junior and senior years. It is possible to integrate the preprofessional program with majors in several fields of study if the selection of courses is carefully planned. Undergraduate students who are admitted to the School of Medicine are registered concurrently as seniors in the College of Letters and Science and as freshmen in the School of Medicine.

Ninety college credits (3 years) are required previous to matriculation in the School of Medicine. All of the degree requirements of the B.A. or B.S. General Course, except those of the major (see bulletin of the College of Letters and Science), must be satisfied at the time of matriculation. The preprofessional training must include the following admission requirements of the School of Medicine. In general these subjects form an integral part of the B.S. or B.A. General Course.

1. Chemistry
   a. General (8–10 cr.) including qualitative analysis.
   b. Organic (4–5 cr.) including both aliphatic and aromatic compounds.
   c. Quantitative (3–4 cr.).
2. Physics
   a. General physics (8–10 cr.).
3. Zoology
   a. General zoology (5 cr.).
   b. Vertebrate embryology (3–5 cr.).
4. Mathematics
   a. College mathematics (3–4 cr.).
5. Origin of Greek and Latin Medical Terms (3 cr.). (Required of candidates who have not had two years of high-school Latin or its equivalent.)

If four years are spent in college work, the student has the choice of either broadening his course of study or of taking more advanced work in some special field. If a student expects to transfer to another medical school it is his responsibility to meet the admission requirements of that school.

SEMESTER FEES

	Resident	Nonresident
1st, 2nd and 3rd years	$155.00	$305.00
4th year	110.00	260.00

MEDICAL COURSES

Students are admitted for the complete four-year medical course. Combined with three years of preprofessional work, this course leads to the degree of Bachelor of Science, Medical Science, or Bachelor of Arts, at the conclusion of the first year in the Medical School. All students must obtain the bachelor's degree before advancement to the clinical years. Upon the successful completion of the two years of clinical instruction, the degree, Doctor of Medicine, is granted.

COURSE IN MEDICINE

LEADING TO THE DEGREE OF DOCTOR OF MEDICINE

FIRST YEAR

First Semester	Credits	Second Semester	Credits
Anatomy 110—Histology and organology	5	Anatomy 121—Gross anatomy	5
Anatomy 121—Gross anatomy	6	Anatomy 126—Neural anatomy	4
Physiological Chemistry 104	5	Physiology 105—Medical physiology	9
Psychology 107—Medical psychology	2		
	18		18

SECOND YEAR

Medical Microbiology 102—General survey	5	Medicine 102—Clinical laboratory diagnosis	3
Pathology 101—General and special pathology	8	Medicine 111—Examination of patient	3
Medicine 110—Examination of patient	2	History of Medicine 121—Survey	2
Psycho-pathology 112	2	Pathology 102—Gross pathology	1
		Pharmacology 104	4
		Preventive Medicine 103—Hygiene	2
		Thesis or Elective	3
	17		18

THIRD YEAR

Medicine 301—Third-year medicine	5	Medicine 301—Third-year medicine	4
Medicine 305—Therapeutics	1	Medicine 312—Neuropsychiatry	2
Medicine 310—Pediatrics	1	Surgery 301—Third-year surgery	4
Medicine 315—Dermatology	1	Surgery 311—Rhinology, otolaryngology	1
Surgery 301—Third-year surgery	6	Surgery 315—Orthopedics	1
Surgery 310—Ophthalmology	1	Surgery 325—Urology	1
Surgery 330—Obstetrics and gynecology	1	Surgery 330—Obstetrics and gynecology	2
Preventive Medicine 303	1	Surgery 314—Plastic surgery	1
		Medicine 316—Physical medicine	1
		Surgery 320—Radiography and radiotherapy	1
		Preventive Medicine 303	1
	17		19

FOURTH YEAR

Hygiene 401—Sanitation and public health	1	Surgery 405—Applied radiology	½
Medicine 401—Internal medicine	4	Surgery 401—General surgery	5
Medicine 410—Pediatrics	2	Surgery 410—Ophthalmology	½
Medicine 412—Neuropsychiatry	3	Surgery 411—Rhinology, laryngology, otology	½
Medicine 415—Dermatology	1	Surgery 425—Urology	2
Medicine 420—Medical jurisprudence and ethics	1	Surgery 415—Orthopedic surgery	½
Surgery 406—Obstetrics and gynecology	2	Thesis	3
Medicine 416—Applied physical medicine	1	Associate quarter	12
Preventive Medicine 403	1	Milwaukee quarter	8
	16		32

PRECLINICAL DIVISION

This comprises the work of the first two years of the medical course and embraces basal and intermediate groups of studies.

The work in the preclinical sciences is under the direction of specialists who devote their

whole time to teaching and investigation, and who are keenly interested in medical problems and progress. In each of the departments certain courses are required of all medical students; others are elective. The required courses are designed to insure a broad basis for clinical medicine. The elective courses aid the students to gain depth of insight and special skill in some one branch. The elective courses also offer excellent opportunities to graduates who wish to specialize in some of the medical sciences and to physicians desiring to follow the progress of these sciences to prepare for public health work, or to undertake research.

BASAL GROUP

Ordinarily taken in the first year of a four-year course. Prerequisite for the Intermediate Group.

	Course No.	Semester	Lectures Recitations	Laboratory Hours	Credits
Histology and Histogenesis	Anat. 110	I	32	112	5
Neural Anatomy	Anat. 126	II	32	112	4
Gross Anatomy and Morphogenesis	Anat. 121	yr.	32	384	11
Physiology	Phys. 105	II	96	96	9
Physiological Chemistry	Phys. Chem. 104	I	20	124	5
Medical Psychology	Psych. 107	II	16		2
			228	828	36

INTERMEDIATE GROUP

Ordinarily taken in the second year of a four-year course. Prerequisite for the Clinical Group.

	Course No.	Semester	Lectures Recitations	Laboratory Hours	Credits
Pathology	Path. 101	I	64	192	8
Psycho-pathology	Path. 112	I	16		2
Preventive Medicine	Med. 103	II	24	8	2
Gross Pathology	Path. 102	II		16	1
Medical Microbiology	Micro. 102	I	48	96	5
Pharmacology	Pharm. 104	II	64	48	4
Examination of Patient	Med. 110	I	32	64	2
Clinical Laboratory Diagnosis	Med. 102	II	30	90	3
Examination of Patient	Med. 111	II	16	32	3
Medical History	Med. 121	II	16		2
Electives		II	30		3
			340	546	35

CLINICAL DIVISION

For promotion to the work of this division a student must complete the required preprofessional and preclinical parts of the curriculum, outlined above, with good grades and must have a degree of Bachelor of Arts or Bachelor of Science. Regardless of areas of special proficiency, no student with a grade-point average of less than 1.0 (fair) will be advanced to the succeeding year. The courses of this division are divided into two parts, an introductory clinical group and a preceptorial group.

The introductory clinical group of studies of the third year of the medical course is devoted to a consideration of the broader aspects of clinical medicine and of the major medical specialties and to practical work in care of patients in the wards and outpatient departments of the State of Wisconsin General Hospital. This work is under the general direction of physicians who devote themselves to care of patients, and to teaching and research in the hospital. The teaching is supplemented by that of part-time men in some of the major specialties. Opportunity for advanced work in the medical sciences as well as for training in routine procedures is offered. Undergraduate instruction is pitched to the requirements of general practice and specialized training is reserved for graduate and postgraduate candidates.

The preceptorial group of studies of the fourth year of the medical course is designed to offer individual training in the art of medicine. Each student is assigned as an apprentice to a series of preceptors in medicine, surgery, and the major specialties. The

preceptors are selected on the basis of ability, experience, desire to teach, and clinical facilities available.

INTRODUCTORY CLINICAL GROUP

Ordinarily taken in the third year of a four-year medical course. Prerequisite for Preceptorial Group.

	Course No.	Semester	Lectures Recitations	Laboratory Hours	Credits
MEDICAL DIVISION					
General Medicine	Med. 301				9
a. Lectures		yr.	42		
b. Conferences		yr.	40		
c. Ward work		yr.		70	
d. Clinics		yr.		32	
e. Clinical Pathology Conference	Path. 301	yr.		32	
f. Therapeutic Conference	Med. 305	yr.	32		1
Dermatology	Med. 315				1
a. Lectures		I	16		
b. Clinics		I		16	
c. Ward work		yr.		10	
Pediatrics	Med. 310				1
a. Lectures		I	18		
b. Conferences		I	18		
c. Ward work		yr.		40	
d. Clinics		yr.		16	
Physical Medicine	Phys. Med. 316				1
a. Lectures		II	8		
b. Laboratory		II		8	
Neuropsychiatry	N.P. 312				2
a. Lectures		II	20		
b. Conferences		II	20		
c. Ward work		yr.		40	
d. Clinics		yr.		16	
Preventive Medicine	Prev. Med. 303	yr.			2
a. Lectures		yr.	30		
b. Conferences and Clinics		yr.		10	
SURGICAL DIVISION					
General Surgery	Surg. 301				10
a. Lectures		yr.	32		
b. Conferences		yr.	20		
c. Ward work		yr.		60	
d. Clinics		yr.		48	
e. Surgical Pathology Conference		yr.		32	
f. Experimental Surgery and Anesthesia		I		36	
g. Anesthesia and Resuscitation	Anes. 301	II	16		
Ophthalmology	Surg. 310				1
a. Lectures		I	16		
b. Ward work		yr.		20	
Otolaryngology and Rhinology	Surg. 311				1
a. Lectures		II	16		
Orthopedic	Surg. 315				1
a. Lectures		II	16		
b. Ward work		yr.		20	
c. Fractures		II	8		
Plastic Surgery	Surg. 314				1
a. Lectures		II	9		
Urology	Surg. 325				1
a. Lectures		II	20		
Obstetrics and Gynecology	Ob. and Gyn. 330				3
a. Lectures		yr.	36		
b. Conferences		yr.	36		
c. Demonstrations		yr.		48	
d. Ward work		yr.		40	
Radiology	Rad. 320	II	16		1
a. Lectures					
b. Laboratory		II		16	
			Total		36

The various subjects listed above are given as correlated parts of what constitutes essentially a year's course in the basal elements of clinical medicine.

PRECEPTORIAL GROUP

Regularly taken in the fourth year of a four-year medical course. Required for the degree of Doctor of Medicine.

Instruction based on the preceptor system requires at least 48 weeks for completion. The work of the year is divided into four periods of 12 weeks each. The class is divided

into four sections and each section is assigned for a given period to one of four fields of work and during the year has work in each field. At a given period each of the four sections is working in a different field of work. At the end of each of the first three periods each section is shifted from one field of work to another. Comprehensive examinations are given at the close of the final period. There is no formal didactic work during the year, although there are numerous sectional conferences.

The work of the four fields, known as quarters and designated medical, surgical, associate, and extramural, is arranged in the following manner:

MEDICAL QUARTER: Twelve weeks in internal medicine and the medical specialties: pediatrics, neuropsychiatry, dermatology, and preventive medicine. Eight weeks are spent at the University Hospitals, and one in public health work, state and city. Students are assigned to members of the hospital staff who serve as preceptors. The work of the quarter is as follows:

Medicine	Med 401, full time, 3 weeks, one-half time, 3 weeks	4 cr.
Dermatology	Med. 415, one-half time, 3 weeks	1 cr.
Neuropsychiatry	N.P. 412, full time, 3 weeks	3 cr.
Pediatrics	Med. 410, one-half time, 6 weeks	2 cr.
Physical Medicine	Phys. Med. 416, one-fourth time, 3 weeks	1 cr.
Public Health	Hyg. 401, full time, 1 week	1 cr.
Preventive Medicine	Med. 403, full time, 1 week	1 cr.
	Total	13 cr.

SURGICAL QUARTER: Twelve weeks in general and orthopedic surgery; eye, ear, nose, and throat work; obstetrics and gynecology; urology; and radiology taken at the University Hospitals under preceptors from the faculty. The work is arranged as follows:

General Surgery (incl. Anesthesia)	Surg. 401, full time, 6 weeks	5 cr.
Obstetrics and Gynecology	Ob. and Gyn 406, full time, 2 weeks	2 cr.
Ophthalmology	Surg. 410, one-half time, 1 week	½ cr.
Otolaryngology and Rhinology	Surg. 411, one-half time, 1 week	½ cr.
Orthopedic Surgery	Surg. 415, full time, 1 week	½ cr.
Radiology	Rad. 405, one-seventh time, 12 weeks	½ cr.
Urology	Surg. 425, full time, 2 weeks	2 cr.
	Total	11 cr.

ASSOCIATE QUARTER: A quarter extending through twelve weeks at some teaching center organized for preceptorial work. These centers are selected on the basis of pedagogical, hospital, laboratory, and library facilities. See list of centers and preceptors on pages 10–12. Under the supervision of the preceptor and the associate preceptors, the student assists in history taking, physical examinations, laboratory work, surveys of the literature on special cases, reviews of therapy, and in other ways beneficial to his training. 12 cr.

The chief purpose of this quarter is to acquaint the student with the conditions of medical practice in urban and rural districts. Particular attention is given to the impact of environment upon disease and the sociological factors in medicine.

EXTRAMURAL QUARTER: The chief purpose of this quarter is to acquaint the student with the social problems involved in medical practice in large cities. In Chicago each student spends four weeks on obstetrical service under the auspices of The Maternity Center and the Chicago Lying-In Hospital. A period of two weeks is spent in the study of tuberculosis

at the Wisconsin State Sanatorium at Wales under the supervision of the staff and two weeks at either Mendota or Winnebago, the state hospitals for mental diseases.

In Madison, student groups of two to four spend three weeks observing and participating in the activities of the City Board of Health and those in the field of health of the City Board of Education. The Department of Preventive Medicine, in conjunction with the staff of the City Board of Health, arranges and supervises this work.

In addition to the work of the four quarters outlined above each student must satisfy the following requirements:

(1) Medical students, in residence in Madison during the periods when physical examinations of all students entering the University are made, are assigned duties for one week in connection with these examinations. This work is carried on in the Department of Preventive Medicine and Student Health.

(2) Assigned reading in medical jurisprudence and in medical ethics upon which an examination is given at the end of the year. Med. 420, 1 cr.

(3) An acceptable thesis upon an assigned subject, or a carefully organized report of a patient, personally observed. 3 cr.

(4) At the end of the year each student is given an individual comprehensive oral examination by a special committee composed of members of the clinical and preclinical staff.

DEGREES

Bachelor of Arts. Conferred, on recommendation of the College of Letters and Science, upon students who elect the first year of the medical course during the senior year in that college and fulfill the usual requirements for the degree.

Bachelor of Science (Medical Science). Conferred, on recommendation of the College of Letters and Science, upon students who complete the required premedical and preclinical courses outlined above.

Master of Science. This degree is conferred, on recommendation of the Graduate School, upon college graduates, matriculated in the Medical School, provided they fulfill the following conditions: (1) They must register in the Graduate School as well as in the Medical School. (2) At the time of application they must present evidence of having completed such preliminary work in one of the basal sciences of medicine as will entitle them to take advanced work in this science beyond that required in the regular medical curriculum. (3) During a period of at least one academic year advanced work of this character must be pursued under the direction of an instructor of the department in which the study is taken, and the results must be presented in the form of a thesis. (4) A special oral examination must be passed.

Doctor of Philosophy. Conferred, on recommendation of the Graduate School, upon candidates who exhibit general proficiency and power of original research in some field of knowledge. For the requirements of this degree the bulletin of the Graduate School should be consulted.

Doctor of Medicine. Conferred, on recommendation of the Faculty of the Medical School, upon candidates who complete the Medical School curriculum as outlined on page 15.

GRADUATE AND POSTGRADUATE INSTRUCTION

Extramural postgraduate courses are designed to provide physicians residing in a given locality with practical demonstrations of the newer methods of diagnosing and treating disease. Clinics are held at a hospital conveniently located, illustrated lectures are given,

and opportunity is offered for consultation with specialists. All of these functions are under the supervision and direction of The Co-ordinator of Graduate Medical Education.

Other aids for postgraduate study furnished members of the medical profession in Wisconsin by the University include:

1. Extension Medical Library Service. Books, periodicals, and reprints are sent by mail to physicians in the state and references and bibliographies are prepared upon request.

2. Speakers furnished for medical meetings.

3. Models, charts, photographs, lantern slides, and moving picture films, relating to medicine and hygiene. The Extension Division will make these materials available to physicians preparing papers for presentation before medical societies or for popular education in medicine and hygiene.

4. The State Laboratory of Hygiene (the laboratory of the State Board of Health) and the Wisconsin Psychiatric Institute are located at the University and are closely affiliated with the Medical School. These institutions not only furnish direct laboratory aid to physicians but also do much to extend practical postgraduate instruction.

SCIENTIFIC INVESTIGATION

It is desired that the facilities of the various laboratories of the Medical School be utilized to the greatest advantage in the investigation of the causes and prevention of diseases in both man and animals. The laboratories of the Medical School are open freely to those engaged in such investigations and, so far as possible, aid will be given in carrying out investigations of this character either at the University or elsewhere in the state.

LABORATORY AND HOSPITAL FACILITIES

The teaching of gross anatomy, histology, embryology, and neurology is at present conducted in Science Hall. The teaching of physiology, physiological chemistry, pharmacology, microbiology, pathology, hygiene, and physical therapy is conducted in the Service Memorial Institutes erected in memory of those who served in World War I.

The major portion of the fundamental teaching of the clinical branches is conducted in the University Hospitals, which have a capacity of over 900 beds, with facilities for medicine, surgery, and the major specialties. Included are the Student Infirmary, with a capacity of 125 beds; the Mary Cornelia Bradley Memorial Hospital, with a capacity of 50 beds for children; and the Orthopedic Hospital for Children with a capacity of 125 beds.

During the fourth year of the medical course part of the teaching is done at the University Hospitals and part under the direction of preceptors at various medical centers throughout the state and in Chicago. A large number of public and private institutions co-operate in this work.

The State and Madison Boards of Health co-operate in the practical instruction offered the students in public health work.

DEPARTMENTS OF INSTRUCTION

For a description of the courses in botany, zoology, chemistry, physics, psychology and language, see departmental announcements in the bulletin of the College of Letters and Science. For courses in the School of Nursing, see the special bulletin of that school. Courses in medical technology, X-ray technology, occupational therapy and physical therapy are covered in separate bulletins.

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters.
I—course given during the first semester.
II—course given during the second semester.
I, II—semester course given each semester.
cr—number of credit hours per semester.
*—credits to be arranged.

Courses numbered from 1 to 100 are open for credit to undergraduates only; from 101 to 199 to both undergraduates and graduates; over 200 to graduates only, or very exceptionally to advanced undergraduates; 300–399, third-year medical courses; 400–499, fourth-year medical courses.

HISTORY OF MEDICINE

PROFESSOR ACKERKNECHT, *chairman*.

121. HISTORY OF MEDICINE. II; 2 cr. Lectures. Dr. Ackerknecht.

122. HISTORY AND GEOGRAPHY OF DISEASES. I; 1 cr. Elective open to all medical students and L & S juniors and seniors. Dr. Ackerknecht.

222. SEMINAR IN HISTORY OF MEDICINE. II; 2 cr. Prerequisite: History of Medicine 121 or other evidence of elementary background. Dr. Ackerknecht.

200. ADVANCED WORK AND RESEARCH. Yr; *cr. Dr. Ackerknecht.

ANATOMY

PROFESSORS BAST, MORTENSEN, *chairman*, SULLIVAN; ASSOCIATE PROFESSORS GEIST, MOSSMAN, SETTLAGE; ASSISTANT PROFESSOR MILES; INSTRUCTORS HIBMA, JOACHIM.

The following group of courses, planned for a comprehensive survey of the gross, microscopic and developmental anatomy of mammals, with especial reference to man, is offered. Opportunities are offered for advanced work and research. The laboratory is thoroughly equipped with apparatus, models, books, and materials.

36. HUMAN ANATOMY. I; 4 cr. For students of physical education—women. Lecture and laboratory.

37. HUMAN ANATOMY. I; 6 cr. For students of physical medicine. Lecture and laboratory.

37. HUMAN ANATOMY. II; 6 cr. For students of occupational therapy. Lecture and laboratory.

39. Human Anatomy. II; 4 cr. For students of physical education—men. Lecture and laboratory.

100. Human Anatomy. I; 3 cr. For students in physical medicine—advanced work.

110. Histology and Organology. I; 5 cr. The study of the tissues, followed by a study of the structure of the mammalian organs. Histogenesis and some organogenesis are included. Prerequisites: Junior standing, Zoolgy 1. Drs. Bast, Mossman, and staff.

121. Human Anatomy. I, 6 cr; II, 5 cr. A thorough course in the dissection of the human body and in descriptive human anatomy. Organogenesis is in part included. Prerequisites: Junior standing, Zoology 1. Drs. Sullivan, Mortensen, Mossman, Geist.

122. Applied Anatomy. II; 2–4 cr. This course includes a modified dissection of the entire body. The Department of Surgery takes joint responsibility for the work. Prerequisite: Anatomy 121. Drs. Mortensen, Curreri, Hibma.

126. The Anatomy of the Nervous System. II; 4 cr. Dissection of the human brain and study of the microscopic anatomy of the central nervous system and sense organs. Neurogenesis included. Prerequisite: Anatomy 110. Drs. Geist, Bast, and staff.

200. Research. *cr. The facilities of the department, including supervision by staff members, are open to students and other qualified persons.

MEDICAL MICROBIOLOGY

Professor Seastone, *chairman;* Associate Professor Holford; Assistant Professor Lysenko.

1. Pathogenic Microorganisms. I; 5 cr. Open only to students in the course in Medical Technology. Dr. Holford.

2. Elementary Immunology. II; 3 cr. Open only to students in the course in Medical Technology and Medical Microbiology major. Dr. Holford.

4. Bacteriology and Hygiene. II; 3 cr. Open only to students in the course in Nursing. Staff.

102. Medical Microbiology. I; 5 cr. Prerequisite: Second-year standing in Medical School; or Physiological Chemistry 104 and 1 year biology; or Major in Agricultural Bacteriology. Dr. Seastone and staff.

106. Advanced Medical Microbiology. I, II; *cr. Prerequisites: Medical Microbiology 102 and consent of instructor. Staff.

109. Microbiology Journal Club. Yr; 1 cr. Dr. Seastone and staff.

200. Graduate Research. Yr; *cr. Staff.

204. Immunology. Alternate summer sessions; 4 cr. Prerequisite: Medical Microbiology 102. Dr. Seastone.

207. Virus and Rickettsial Diseases of Man. Alternate summer sessions; 3 cr. Prerequisite: Medical Microbiology 104. Given in alternate years.

208. Microbiology Seminar. Yr; 1 cr. Staff.

HYGIENE

In conjunction with the staffs of the State Laboratory of Hygiene, the Wisconsin Psychiatric Institute, the State Board of Health, and the Boards of Health of the cities of Milwaukee and Madison, courses in hygiene are offered by members of the faculty of the Medical School under the general supervision of Dr. Stovall.

401. Practical Field Work. I, II; 1 cr. Prerequisite: Fourth-year medical standing. Dr. Stovall.

MEDICAL DIVISION

GENERAL MEDICINE

PROFESSORS MEYER, *chairman,* MIDDLETON, PUESTOW; CLINICAL PROFESSOR KURTZ; ASSOCIATE PROFESSORS BENTLEY, CURTIS, GORDON, MUSSER, WALKER, WESTON; ASSISTANT PROFESSORS ALBRIGHT, CREPEA, CRUMPTON, LARSON, SCHILLING, SIMS; ASSOCIATE CLINICAL PROFESSORS CARNS, DAVIS, SHAPIRO, WESTON; ASSISTANT CLINICAL PROFESSORS ALLIN, FOSTER, RICHTSMEIER, WEINSTEIN, WILKIE; INSTRUCTORS BONER, LORENZ, SPRAGUE, WHITMORE.

110. EXAMINATION OF PATIENT. I; 2 cr. Normal physical diagnosis. Prerequisites: Anatomy 110, 121, 126; Physiology 105. Dr. Sims.

111. EXAMINATION OF PATIENT. II; 3 cr. Pathological clinical diagnosis. Prerequisites: One semester each of Pathology 101, Medical Microbiology 102, Medicine 110. Dr. Sims.

200. ADVANCED WORK AND RESEARCH. *cr.

301. THIRD-YEAR MEDICINE. Yr; 9 cr. Lectures, clinics, conferences, and ward work. Prerequisites: Medicine 102, 110, 111. Dr. Meyer and staff.

302. ORAL HYGIENE. II. Included in 301. Dr. Meyer.

305. THERAPEUTICS. I and II; 1 cr. Prerequisites: Medicine 102, 111. Dr. Meyer and staff.

401. FOURTH-YEAR MEDICINE. I or II; 4 cr.

CLINICAL PATHOLOGY

PROFESSORS STOVALL, *sub-chairman,* JAESCHKI; ASSOCIATE PROFESSOR WORLEY; ASSISTANT PROFESSORS JONES, PRICE, THORNGATE; INSTRUCTORS RUPP, THEISEN.

102. CLINICAL LABORATORY. II; 3 cr. Dr. Stovall and staff.

200. RESEARCH. *cr. Dr. Stovall and staff.

DERMATOLOGY

PROFESSOR JOHNSON, *sub-chairman;* ASSOCIATE PROFESSORS MCINTOSH, WAISMAN.

200. ADVANCED WORK AND RESEARCH. * cr. Dr. Johnson and staff.

315. DERMATOLOGY. I; 1 cr. Prerequisites: Medicine 102, 111. Dr. Johnson and staff.

415. FOURTH-YEAR DERMATOLOGY. I, II; 1 cr. Prerequisite: Medicine 315. Dr. Johnson and staff.

MEDICAL JURISPRUDENCE AND MEDICAL ETHICS

420. MEDICAL JURISPRUDENCE AND MEDICAL ETHICS. 1 cr. Assigned reading and examination. Dr. McIntosh.

PEDIATRICS

PROFESSOR GONCE, *sub-chairman;* ASSOCIATE PROFESSORS MCDONOUGH, TENNEY, WAISMAN.

200. RESEARCH. *cr.

310. PEDIATRICS. I; 1 cr. Prerequisites: Medicine 102, 111. Dr. Gonce and staff.

410. Fourth-year Pediatrics. I or II; 2½ cr. Prerequisite: Medicine 310. Dr. Gonce and staff.

PHYSICAL MEDICINE

Professor Bouman, *sub-chairman;* Associate Professor Kohli; Assistant Professor Thompson; Instructors Briggs, Bryce, Osborn.

316. Physical Medicine. II; 1 cr. Dr. Bouman.

416. Applied Physical Medicine. I and II; 1 cr. Prerequisite: Medicine 316. Dr. Bouman and staff.

PREVENTIVE MEDICINE

Professors Brown, *chairman,* Washburne; Associate Professors Bentley, Dickie, Hodgson; Assistant Professors Fitch, Hruza, Rueckert, Stewart; Instructor Fromm; Lecturers Jorris, Lea, Neupert.

1. Preventive Medicine. Health problems for university students. I; 1 cr. Dr. Brown.

103. Preventive Medicine and Hygiene. II; 2 cr. Prerequisites: Second-year standing in the Medical School; Microbiology 102. Dr. Brown and staff.

200. Advanced Work and Research. Yr; *cr.

303. Third-year Preventive Medicine. Yr; 2 cr. Lectures, conferences, and clinics. Prerequisites: Medicine 110, 111; Preventive Medicine 103. Dr. Brown and staff.

403. Fourth-year Preventive Medicine. I, II; 1 cr. Conferences, out-patient work, ward work and field work, in conjunction with the staffs of the State Board of Health, City Board of Health and City Board of Education. Prerequisites: Medicine 301; Surgery 301; Preventive Medicine 303. Dr. Brown and staff.

NEUROPSYCHIATRY

Professors Bleckwenn, *chairman,* Cameron, Kant, Masten, Osborn, Reese; Associate Professors Eugenia Cameron, Roessler; Assistant Professor Glover; Assistant Clinical Professors Fey, Roemer, Suckle; Instructor Peters.

107. Medical Psychology. II; 2 cr. Dr. Fey.

112. Psycho-pathology. I; 2 cr. Dr. Cameron.

200. Research. *cr.

312. Third-year Neuropsychiatry. II; 2 cr. Prerequisites: One semester each of Medicine 301 and Surgery 301. Staff.

412. Fourth-year Neuropsychiatry. I or II; 3 cr. Prerequisite: Neuropsychiatry 312. Staff.

PATHOLOGY

Professor Angevine, *chairman;* Associate Professors Harman, Lalich; Assistant Professors Jones, Van Baaren.

101. Human Pathology. Yr; 8 cr. The principles of human pathology and the essentials of pathological anatomy taught by lecture, laboratory exercises and conference. Prerequi-

sites: Anatomy 110, 121, 126, Physiological Chemistry 104, Medical Physiology 105. Drs. Angevine, Harman, Lalich, Jones, and Van Baaren.

102. Gross Pathology. II; 1 cr. For second-year medical students. Prerequisite: Pathology 101. Dr. Angevine and staff.

200. Advanced Pathology and Research. I, II; *cr. Staff.

301. Clinical Pathology Conferences. Yr. Given as part of Medicine 301. Dr. Angevine and members of medical and surgical staffs.

PHARMACOLOGY AND TOXICOLOGY

Professors Tatum, *chairman,* Shideman; Associate Professor Steinhaus.

101. Toxicology. II; 1 cr. Diagnosis and treatment of poisoning; technique of obtaining autopsy material for medico-legal purposes. Lectures only. Prerequisites: Physiology 105, Physiological Chemistry 104.

104. Pharmacology. II; 5 cr. Lectures, laboratory and conferences on the chemistry, the pharmacological and toxicological action, and the therapeutic uses of the chief medicinal drugs. Practice in prescription writing. Prerequisites: Physiology 105, Physiological Chemistry 104. Dr. Tatum.

120. Journal Club. Yr; 1 cr. A meeting of the Journal Club is held weekly. Advanced students are expected to report from time to time upon current papers dealing with pharmacology and toxicology.

200. Research. The laboratory is available to qualified students.

PHYSIOLOGICAL CHEMISTRY

Professor Cohen, *chairman;* Associate Professors Deutsch, McGilvery; Assistant Professors Gordon, Grisolia.

14. Physiological Chemistry. I; 3 cr. Lectures and demonstrations. Provided for students who have not had organic chemistry. Required of students in physical medicine. Prerequisites: Chemistry 1, Physics 1, Zoology 1.

103. Physiological Chemistry. II; 4 cr. Lectures, conferences and laboratory. Provided for Medical Technology, Medical Bacteriology and undergraduate majors. Prerequisites: Chemistry 1a, 1b, 16, 120a, 121a. Dr. McGilvery and staff

104. Physiological Chemistry. I; 5 cr. Lectures, conferences and laboratory. Required for first-year medical students; open to others as an elective. Prerequisites: Quantitative analysis, organic chemistry, Physics 1, Zoology 1. Drs. Cohen and Deutsch.

115. Biochemical Aspects of Disease. II; 3 cr. Second-year medical students. Dr. Cohen.

120. Journal Club. I and II; 1 cr. Staff.

200. Research. Staff.

222. Seminar in Physiological Chemistry. I and II; 1 cr. Staff.

PHYSIOLOGY

Professors Youmans, *chairman,* Herrin; Charles Sumner Slichter Research Professor Woolsey; Associate Professors Barnard, Morrison, Murphy, Stone; Instructor Larsen.

1. Elements of Human Physiology. I; 4 cr. Lectures, quizzes, demonstrations and labora-

tory giving a general knowledge of the structure and functions of the human body. Especially adapted to teachers. Prerequisite: A course in elementary science. Dr. Stone.

3. PHYSIOLOGY. II; 4 cr. Especially designed for students in pharmacy and agriculture, but open to others. Dr. Herrin and assistants.

4. PHYSIOLOGY. I; 4 cr. Open only to students in the course in nursing. Dr. Herrin.

105. MEDICAL PHYSIOLOGY. II; 9 cr. Lectures, recitations, demonstrations and laboratory. Required of first-year medical students and open to others as an elective. Prerequisites: Anatomy 110, 121 (comparative or human anatomy), 126; Physiological Chemistry 104. Drs. Youmans, Herrin.

115. PHYSIOLOGY. I; 5 cr. Lectures, recitations, demonstrations and laboratory. Required of physical medicine juniors, but open to others. Prerequisites: Anatomy 36 or Zoology 104; Physiological Chemistry 14. Miss Larsen.

116. PHYSIOLOGY OF ACTIVITY. II; 3 cr. Required of physical medicine juniors, but open to others. Prerequisite: Physiology 115. Miss Larsen.

117. PROBLEMS IN PHYSIOLOGY. I; 3 cr. Open only to physical medicine seniors. Prerequisites: Physiology 115 and 116. Miss Larsen.

120. JOURNAL CLUB. Yr; 1 cr. Reports of recent physiological and biochemical literature.

200. ADVANCED PHYSIOLOGY AND RESEARCH. Yr; *cr. Drs. Youmans, Woolsey, Herrin, Morrison, Murphy, Stone, Miss Larsen.

222. SEMINAR IN PHYSIOLOGY, PHARMACOLOGY, AND PHYSIOLOGICAL CHEMISTRY. Yr; 1 cr.

SURGICAL DIVISION

GENERAL SURGERY

PROFESSORS GALE, SCHMIDT, *chairman;* ASSOCIATE PROFESSORS CURRERI, DAVIS, ERICKSON (NEUROSURGERY), LEMMER, MOHS (CHEMOSURGERY); ASSISTANT PROFESSORS LONGLEY (VA), YOUNG (VA); ASSISTANT CLINICAL PROFESSORS JOACHIM, SUCKLE; INSTRUCTORS MENDENHALL, YOUNG; ASSISTANTS L. E. ANTONIUS, L. M. ANTONIUS, WESTOVER.

200. ADVANCED WORK AND RESEARCH. Yr; *cr.

301. THIRD-YEAR SURGERY. I, 6 cr; II, 4 cr. Lectures, conferences, ward work, clinics, surgical pathological conferences, experimental surgery. Prerequisites: Medicine 110, 111. Drs. Schmidt, Erickson, Gale, and staff.

401. FOURTH-YEAR SURGERY. I, II; 3 cr. Prerequisites: Medicine 301, Surgery 301.

ANESTHESIOLOGY

PROFESSOR ORTH, *chairman;* ASSOCIATE PROFESSORS DAVIS, GILLESPIE; ASSISTANT PROFESSOR KILPATRICK; INSTRUCTOR DORNETTE.

200. ADVANCED WORK AND RESEARCH. Yr; *cr.

301. IN CONJUNCTION WITH THIRD-YEAR SURGERY. I, Anesthesia and resuscitation in animals. II, Principles of anesthesiology as applied to man.

401. IN CONJUNCTION WITH FOURTH-YEAR SURGERY. Practical experience in pre-operative, operative and post-operative work.

OPHTHALMOLOGY

PROFESSOR DAVIS, *sub-chairman;* ASSOCIATE PROFESSOR DUEHR; INSTRUCTORS BERGER, DAVIS.

200. ADVANCED WORK AND RESEARCH. Yr; *cr. Dr. Davis and staff.

310. THIRD-YEAR OPHTHALMOLOGY. I; 1 cr. Prerequisites: Medicine 110, 111. Dr. Davis and staff.

410. FOURTH-YEAR OPHTHALMOLOGY. I, II; 1 cr. Prerequisites: Surgery 310, 311.

OTOLARYNGOLOGY AND RHINOLOGY

PROFESSOR W. NESBIT, *sub-chairman;* ASSISTANT CLINICAL PROFESSORS BRINDLEY, TABORSKY; INSTRUCTORS BENNETT, M. NESBIT, WATZKE.

200. ADVANCED WORK AND RESEARCH. Yr; *cr. Dr. Nesbit and staff.

311. THIRD-YEAR OTOLARYNGOLOGY AND RHINOLOGY. II; 1 cr. Prerequisites: Medicine 110, 111. Dr. Nesbit.

411. FOURTH-YEAR OTOLARYNGOLOGY AND RHINOLOGY. I, II; 1 cr. Prerequisites: Surgery 310, 311.

ORTHOPEDIC SURGERY

PROFESSOR BURNS, *sub-chairman;* ASSOCIATE PROFESSORS SCHUMM, WIRKA; ASSISTANT CLINICAL PROFESSOR ROGERS; INSTRUCTOR OKAGAKI.

200. ADVANCED WORK AND RESEARCH. Yr; *cr.

315. THIRD-YEAR ORTHOPEDICS. II; 1 cr. Prerequisites: Medicine 301, I; Surgery 301, I

415. FOURTH-YEAR ORTHOPEDICS. I, II; 1 cr. Prerequisite: Orthopedics 315.

MAXILLO-FACIAL AND PLASTIC SURGERY

ASSOCIATE PROFESSOR SLAUGHTER, *sub-chairman;* ASSISTANT PROFESSOR BERNARD; CLINICAL ASSISTANTS PLATER, THUROW.

200. ADVANCED WORK AND RESEARCH. Yr; *cr.

314. PLASTIC SURGERY. II; 1 cr. Prerequisites: Medicine 301, I; Surgery 301, I.

UROLOGY

PROFESSOR WEAR, *sub-chairman;* ASSISTANT CLINICAL PROFESSOR KUNDERT; INSTRUCTOR KOLMAN.

200. ADVANCED WORK AND RESEARCH. Yr; *cr.

325. THIRD-YEAR UROLOGY. II; 1 cr. Prerequisites: Medicine 301, I; Surgery 301, I.

425. FOURTH-YEAR UROLOGY. I and II; 2 cr. Prerequisite: Urology 325.

OBSTETRICS AND GYNECOLOGY

PROFESSORS CAMPBELL, HARRIS, *chairman;* ASSOCIATE PROFESSOR THORNTON; ASSOCIATE CLINICAL PROFESSOR HARPER.

200. ADVANCED WORK AND RESEARCH. *cr.

330. Orstetrics and Gynecology. I. 1 cr; II. 1 cr. Prerequisites: Medicine 301, I; Surgery 301, I. Dr. Harris and staff.

406. Fourth-year Obstetrics and Gynecology. I; 2 cr. Prerequisite: Obstetrics and Gynecology 330. This course is supplemented by four weeks of clinical instruction in Chicago through the courtesy of the Directors of the Chicago Lying-In Hospital, The Maternity Center, Dr. W. J. Dieckmann and Dr. Beatrice E. Tucker.

RADIOLOGY

Professors Paul, Pohle, *chairman*.

200. Graduate Work and Research. Yr; *cr. Dr. Pohle.

222. Seminar in Radiology. Yr; 1 cr. Dr. Pohle and staff.

320. Radiography and Radiotherapy. II; 1 cr. Lectures and demonstrations to third-year students. Prerequisites: Medicine 301, I; Surgery 301, I. Drs. Pohle, Paul.

405. Applied Radiology. I, II; 1 cr. Interpretation and roentgenograms, and clinics in X-ray and radium therapy. Prerequisite: Surgery 320. Drs. Pohle, Paul.

ONCOLOGY

Professors Potter, Rusch, *director;* Associate Professors Heidelberger, LePage, Miller; Assistant Professors Boutwell, Miller, Mueller; Postdoctoral Fellows Barton, Hadler, Hurlbert, Nygaard. Reif, Schmitz, Siekevitz, Tyner.

The Division of Oncology was established in 1940 as a unit of the Medical School, with the function of conducting research on cancer. It is housed in the McArdle Memorial Laboratory, a building which was constructed through the generous bequest of the late Mr. Michael McArdle, supplemented by Federal funds. Its work is supported by the Jonathan Bowman Fund, the Alexander and Margaret Stewart Fund, the American Cancer Society, the U. S. Public Health Service, and others.

The five floors of well-equipped laboratories provide excellent facilities for cancer research.

A hospital wing for cancer patients and clinical laboratories adjoining the McArdle Memorial Laboratory has recently been opened and provides a close association with clinical cancer research. A training program at the graduate and postdoctoral level has been established for those interested in entering upon careers in cancer research.

111. Experimental Oncology. II; 2 cr. Lectures, with brief discussions on carcinogenesis, factors affecting tumor induction, the relation of hormone balance to tumor development, intermediary metabolism of tumors and experimental approaches to tumor chemotherapy. The course is open to students in the graduate and medical schools who have had a course in biochemistry. Staff.

120. Journal Club. Yr; 1 cr. Staff.

200. Cancer Research. *cr. Staff.

SCHOLARSHIPS AND AWARDS

The Wisconsin Alumni Research Foundation has provided four research fellowships open to those who have completed the first two years of medicine. These fellowships will pay $900 to $1,100 and require enrollment in the Graduate School. The purpose of the fellowships is to offer opportunity to a limited number of medical students to spend one year in some scientific department on purely research work. There is no desire to dissuade these

students from securing an M.D. degree. It is believed, however, that they will ultimately profit by having a greater breadth of view and by having had experience in research techniques. The fellows may choose their field of work which may be in any one of the preclinical departments, or in a field closely associated with medicine, such as nutrition or cancer work. The selection will be made by the Graduate Fellowship Committee after conference with the Medical School.

ANATOMY PRIZE. The Alpha Psi Chapter of the Phi Delta Epsilon Fraternity has established an annual prize of $25.00 to be awarded at the beginning of the second year to the student who is judged by the staff of the Department of Anatomy to have done the best work in gross anatomy during the first year of the course.

THE BORDEN AWARD. An annual award of $500, designated "The Borden Undergraduate Research Award in Medicine," was made available by the Borden Company Foundation in 1945. This award is presented to a member of the graduating class in the Medical School who, during any year while so enrolled, has carried out the most meritorious undergraduate research.

THE WILLIAM J. BLECKWENN, JR. MEMORIAL AWARD. This award is made annually to the senior medical student with the greatest clinical promise.

JOHNSON SCHOLARSHIP FOR CANCER RESEARCH. This scholarship is made possible by the Johnson Foundation of Racine. It will be awarded annually to a junior or senior student. Its purpose is to stimulate the interest of undergraduate students in cancer research and to acquaint them with the various possible avenues of training. The award of $250 will be made on the basis of scholarship and special interest. Training in either chemistry or biology is essential. Apply to Dr. H. P. Rusch, 301 McArdle Memorial Laboratory.

THE WALTER J. MEEK AWARD. Established in September, 1948, by graduate students who had worked under Dr. Meek. A prize of $100 is awarded annually at the Medical School Field Day to the student who has done the best research work the previous year.

WILLIAM DAVISON STOVALL SCHOLARSHIP FOR CANCER RESEARCH. This scholarship has been established by the Wisconsin Division of the American Cancer Society and will be awarded annually to a junior or senior student. Its purpose is to stimulate the interest of undergraduate students in cancer research and to acquaint them with the various possible avenues of training. The award of $250 will be made on the basis of scholarship and special interest. Training in either chemistry or biology is essential. Apply to Dr. H. P. Rusch, 301 McArdle Memorial Laboratory.

STUDENT LOANS

The State Legislature, the Regents, and many friends of the University have made funds available to be used to assist medical students of good character and limited financial means.

In general, loans are granted for educational purposes and borrowers are expected to repay loans in accordance with the terms of specific funds. In cases of unforeseen circumstances the borrower may seek approval of alternative arrangements of repayment. Interest, when charged, is at variable but nominal rates.

Students should obtain loan application forms, information, and assistance in making loans by calling at the office of the Dean of the Medical School.

LECTURESHIPS

WILLIAM SNOW MILLER LECTURESHIP. The Alpha Pi Chapter of the Phi Beta Pi Fraternity has established an annual lectureship in honor of Professor William Snow Miller.

THE HELMHOLZ LECTURESHIP. In 1941 the four children of Mr. and Mrs. August Helmholz established an annual lectureship to be known as The A. C. Helmholz Lectureship.

ARTHUR S. LOEVENHART LECTURESHIP. The Phi Delta Epsilon Fraternity has established an annual lectureship in honor of Dr. Arthur S. Loevenhart.

THE GUNDERSEN LECTURESHIP. Established in 1946 by the Adolf Gundersen Medical Foundation, this plan is designed to bring distinguished contributors to medical science to the campus for lectures and conferences.

SPECIAL RESEARCH FUNDS

Provisions are made by the State Legislature for special research in the fields of cancer and arthritis. Grants and gifts have made possible special studies in many fields in the Medical School. U. S. Public Health Service has supported research especially in cancer and cardiovascular disease. The Bess G. Heath Fund provides an annual amount for research which is utilized in many fields of medicine. Similar support of medical research has been made possible by bequests from the Torger Thompson, George W. Jenkins and the Mary C. Brittingham Trust Funds.

COURSE IN MEDICAL TECHNOLOGY

A four-year course leading to the degree of Bachelor of Science (Medical Technology) has been established in the College of Letters and Science, and is administered by the Medical School. For entrance to this course a student must satisfy the general admission requirements of the University. This curriculum is intended for those students who desire to prepare for technical work in laboratories of clinical diagnosis located in hospitals, private clinics or elsewhere.

For additional information concerning the course, consult the Letters and Science bulletin or see Dr. O. A. Mortensen, Associate Dean of the Medical School, Service Memorial Institutes, Madison 6, Wisconsin.

COURSE IN X-RAY TECHNOLOGY

The Department of Radiology offers a 12-month course for those who wish to become X-ray technicians. Requirements for admission to this course are high-school graduation, one year of college including a course in physics, preferably electricity, admission to the University in the usual way, and the minimum age of 19. The course consists of lectures, assigned reading and practical training. The course does not carry university credit but students receive a certificate after satisfactory completion of the work. Detailed information may be secured from Dr. E. A. Pohle, who is adviser for all students in X-ray technology. Those interested may write him in care of the University Hospitals, 1300 University Ave., Madison 6, Wisconsin.

COURSE IN PHYSICAL MEDICINE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (PHYSICAL MEDICINE)

A four-year course leading to the degree of Bachelor of Science in the College of Letters and Science and a certificate in Physical Medicine in the Medical School has been established. A detailed outline of the curriculum of this course is given in the Letters and Science bulletin.

Inquiries concerning this course should be directed to Dr. H. D. Bouman, Department of Physical Medicine, Service Memorial Institutes, Madison 6, Wisconsin.

COURSE IN OCCUPATIONAL THERAPY

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (OCCUPATIONAL THERAPY)

A four-year course, leading to the degree of Bachelor of Science (Occupational Therapy), is offered in the School of Education. For entrance to this course a student must satisfy the general admission requirements of the University. The course is under the joint control of the Schools of Education and Medicine, and the physician in charge of the Division of Physical Medicine is director of this course.

A detailed outline of the curriculum of this course is given in the Occupational Therapy bulletin. For additional information concerning the course, inquiry should be made to Miss Caroline Thompson, Temporary Building 14, University of Wisconsin, Madison 6, Wisconsin.

SCHOOL OF NURSING

MARGERY J. MACLACHLAN, *Director and Associate Dean*

FACULTY

CAREY, GLADYS KATHRYN, *B.S., R.N.*, Instructor and Supervisor of Nursing
COOPER, MRS. SIGNE SKOTT, *B.S., R.N.*, Assistant Professor of Nursing
CRUMP, MARGARET CLARA, *M.A., R.N.*, Assistant Professor and Supervisor of Nursing
DICKIE, RUTH S., *M.S.*, Assistant Professor of Dietetics and Chief Dietitian
DUNN, MARION JEANETTE, *B.S., R.N.*, Instructor and Supervisor of Nursing
EMANUEL, MARGARET RUTH, *M.A., R.N.*, Associate Professor of Nursing
FLETCHER, LILA BELLE, *R.N.*, Associate Professor of Nursing and Superintendent of Nurses
GUNDERSON, MRS. ARLEEN SELMER, *B.S., R.N.*, Instructor in Nursing
JENNY, MARTHA RACHEL, *M.S., R.N.*, Associate Professor of Public Health Nursing
KACHELSKI, M. AUDREY, *B.S., R.N.*, Instructor in Nursing
MACLACHLAN, MARGERY J., *B.S., R.N.*, Director of the School of Nursing, Professor of Nursing
OLSON, MRS. ALICE CURTIS, *B.S., R.N.*, Instructor in Nursing
ORMSON, LORRAINE MINERVA, *B.S., R.N.*, Instructor and Supervisor of Nursing
PAQUIN, MARJORIE CAPELL, *B.S., R.N.*, Instructor and Supervisor of Nursing
SCHMIDT, CORNELIA EVELYN, *M.S., R.N.*, Instructor and Supervisor of Nursing
SCHOEN, EUGENIA AILEEN, *B.A., R.N.*, Instructor and Supervisor of Nursing
STEWART, MARGRET, *B.S., R.N.*, Instructor and Supervisor of Nursing
WATSON, SHIRLEY RAE, *B.S., R.N.*, Assistant Professor and Supervisor of Nursing
ZIEGEL, ERNA EMMA, *B.S., R.N.*, Instructor and Supervisor of Nursing

ASSOCIATE FACULTY

DR. J. W. BROWN and associate members of the Department of Preventive Medicine
DR. PAUL F. CLARK and associate members of the Department of Medical Microbiology
DR. J. A. E. EYSTER and associate members of the Department of Physiology
DR. O. O. MEYER and associate members of the medical staff of the hospital
DR. E. R. SCHMIDT and associate members of the surgical staff of the hospital
DR. A. L. TATUM and associate members of the Department of Pharmacology and Toxicology of the Medical School

ASSOCIATE TEACHING STAFF

CLARA RUE, Associate Director, Visiting Nurse Association, Milwaukee
JANET JENNINGS, Director, Bureau of Public Health Nursing, State Board of Health
ANN KIRCHNER, The Chicago Lying-In Hospital and Dispensary

PUBLIC HEALTH ADVISORY COMMITTEE

WILLIAM S. MIDDLETON, M.D., *Chairman*

MARTHA JENNY
MRS. MELVIN R. LAIRD
MARGERY MACLACHLAN
MABEL MARKEE
IONE ROWLEY
CLARA RUE
WILLIAM D. STOVALL, *M.D.*
RUTH TE LINDE

SCHOOL OF NURSING

PHILOSOPHY AND AIMS

The faculty of the School of Nursing believes that students should be guided in those learning experiences which will help them to become participating citizens in a democratic society as well as competent, contributing members of their profession.

The aim of the basic professional curriculum is to develop in the student attitudes, skills, understandings and appreciations which will enable her to function effectively as a nurse in meeting the total health needs of the patient. The professional education of the student is enriched by a background of study in the College of Letters and Science, and the entire curriculum is planned with the object of aiding her to develop as a well-rounded person in accordance with her individual capacities and interests.

HISTORY AND ORGANIZATION

The University of Wisconsin School of Nursing was organized in 1924 in association with the Medical School and the State of Wisconsin General Hospital.

Ever since the organization of the School, nursing students have taken their preclinical academic work in the same classes with other students at the University. The first curriculum, which led to the Certificate of Graduate Nurse, required one semester of academic work and 32 months of resident clinical instruction. In 1934 the preclinical requirement was changed from one semester to two. By 1940 the background of general education had increased to two academic years and the resident clinical requirement was 29 months. In 1939 the School of Nursing inaugurated a program which led to a Bachelor of Science degree with a major in Public Health Nursing. In 1946 another curriculum was begun which led to a Bachelor of Science degree with a major in Ward Management and Ward Teaching.

At the present time, the School of Nursing has two curricula: *Curriculum A,* the Basic Professional course which prepares the student for the Certificate of Graduate Nurse and the degree of Bachelor of Science (Nursing) and *Curriculum B,* for graduate professional nurses, which leads to the degree of Bachelor of Science (Nursing) with a major in either Public Health Nursing or Ward Management and Ward Teaching.

The Co-ordinating Committee of the School of Nursing is composed of the Dean of the Medical School, the Superintendent of the University Hospitals, the Superintendent of Nurses, and the Director of the School. The Director has charge of immediate administration.

Clinical education for nursing students is given in the university hospitals which are located on the University of Wisconsin campus. Training in Obstetric Nursing is provided by an affiliation with the Chicago Lying-In Hospital. Graduate nurse students who major in Public Health Nursing receive a part of their experience through affiliation with the Milwaukee Visiting Nurses Association and an official Public Health Nursing Agency.

The Nurses' Dormitory for undergraduate students is located one-half block from the hospitals and is a part of the group of medical buildings on the campus.

The School of Nursing is accredited by the Wisconsin State Department of Nurses and the National Nursing Accrediting Service. It is an active member of the Association of Collegiate Schools of Nursing.

FACILITIES

During her last year in the preclinical period and her 29 months clinical (or residence) period in the School of Nursing, the student receives instruction and supervision in the care of the sick at the university hospitals. The central unit (Wisconsin General Hospital) was built in 1924 as a memorial to the soldiers of the First World War and, in keeping with

other departments of the University, serves the people of the state of Wisconsin both directly and indirectly. Patients from all counties of the State are admitted here by referral of their local doctors. When additions now under construction are completed, the bed capacity will be nine hundred.

The primary purpose of the hospitals is the promotion of health and the care of the sick: but they also provide laboratory experience for students in medicine, nursing, laboratory technology, occupational therapy and medical social work. The nursing student receives her clinical experience here, with the exception of thirteen weeks affiliation in obstetric nursing at Chicago Lying-In Hospital.

The hospitals, with the Service Memorial Institutes (which house laboratories and classrooms of the Medical School) and McArdle Memorial Laboratory (the cancer and cardiac research centers), are located on the campus of the University, and cover approximately two square blocks.

The Medical Library in the Service Memorial Institutes serves medical students, nursing students and others on the medical team. A small reading room in the Nurses' Dormitory provides periodicals and some source material. All libraries on the campus are available to nursing students.

A complete student medical center is maintained on the campus under the direction of the Department of Preventive Medicine and Student Health. Services include a complete physical examination upon entrance, periodic chest x-rays, immunization against infectious diseases, and medical attention ranging from guidance for emotional problems to bedside care in the Student Infirmary for acute illness.

With certain exceptions, these health services are provided to the student without additional charge, aside from the semester fee.

(See General Information bulletin.)

ADMISSION

For admission to the School of Nursing, a student must satisfy the general requirements for admission to the University as given in the General Information bulletin. Application for admission should be made to the Office of Admissions, 166 Bascom Hall.

EXPENSE

During the preclinical instruction period nursing students provide their own room and board and pay the regular University fees and tuition.

During the period of clinical instruction, students live in the Nurses' Dormitory. Scholarships are awarded for all students in residence to cover general fees, room, board and laundry of uniforms. The student buys her own uniforms and textbooks.

(See General Information bulletin for a discussion of student expense, loan funds, scholarships, etc.)

STUDENT ACTIVITIES

One of the greatest advantages of being a student in a collegiate school of nursing is that in addition to membership in the local and State Student Nurse Association, it offers an opportunity to enjoy the privileges of all university activities.

Every university student is governed by the Wisconsin Student Association, but women students are governed directly by the Women's Self-Government Association where curfew hours and general disciplinary problems are concerned. Each women's dormitory elects its own student council and appoints to the Women's Self-Government Association a representative who is responsible for upholding its rules in her dormitory. This system helps to teach students both the privileges and responsibilities of a democratic way of life.

The student religious centers on the campus offer opportunity for worship and church work in the denomination of the student's choice.

When a student registers at the University she is issued a fee card which makes her a

member of the Student Union and entitles her to student rates on season tickets to athletic and cultural programs. The fee card also serves as a free admission ticket to many university functions.

Besides enjoying the academic benefits of a university, nursing students, like any others, may become class officers and may join sororities or clubs as a part of their extracurricular program. Athletic tournaments in bowling, basketball and volleyball, university proms, publications, and homecoming contests are just a few of the activities in which students in the School of Nursing participate. Christmas and spring formals are always big occasions on the social calendar. Less important, but equally popular, are the coffee hours held after football games. At the open houses, which each dormitory holds in the fall, nursing students have another opportunity to meet students from all other organized campus houses.

The student in the School of Nursing seeks a profession as she pursues a well-rounded academic curriculum; but at the same time she may enjoy the extracurricular activities open to all university students. Though the academic calendar is full and varied, it allows time for extracurricular work and play for any student who is interested in taking advantage of the many activities which the University affords. Activities, services, and general regulations of the University are outlined in the Student Handbook, which the student receives at registration time.

CURRICULA LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (NURSING)

REQUIREMENTS FOR GRADUATION

The School of Nursing offers two programs (curriculums A and B below) which combine general education with professional nursing education, and which lead to the degree of Bachelor of Science (Nursing). This degree is conferred by the College of Letters and Science and requires a minimum of 127 credits and 127 grade-points.

The requirement in United States History and Institutions applies to all degrees conferred in the College of Letters and Science and must be met by all students who receive degrees in June, 1954 or thereafter. The student may satisfy this requirement in one of three ways:

1. By passing, by the beginning of the junior year, an attainment examination in United States History based on college level work.

2. By completing satisfactorily, in college, a continuous year course in United States History. A year course is here understood to be one so listed in the Announcement of Courses (i.e., History 4, 12–112, 113, 117, 120, 121, 122); or two semester courses which, as to content, are in chronological sequence (i.e., any two *consecutively numbered* semester couses chosen from the following: History 101, 102, 103, 104, 105, 106, 107, 108, 109).

3. By completing a semester course in United States History to be chosen from: History 101, 102, 103, 104, 105, 106, 107, 108, 109, 111; or by *completing either semester* of one of the following year courses: History 112, 113, 117, 120, 121, 122. In addition to the semester of history, the student must take any one of the following semester courses: Economics 1a; English 140; Integrated Liberal Studies 23; Philosophy 139; or Political Science 7, 110, 112a, 112b, 165, 166, or 171.

CURRICULUM A is for students in the Basic Professional Program; that is, students who do not enter as registered professional nurses. On completing the clinical period of instruction in this program, the student receives the Certificate of Graduate Nurse, which qualifies her to take the State licensing examination to become a registered professional nurse. In order to qualify for the degree Bachelor of Science (Nursing), the student continues her study in one of two areas: Public Health Nursing or Ward Management and Ward Teaching.

A. Curriculum for Students in the Basic Professional Program

English 1a and 1b or exemption	6 credits
English 30, 32, 33, or 40	6 credits
Foreign language (may be fulfilled by high-school language)	8 credits
Science	17–19 credits
To include:	
Chemistry 5 or 1a	
Biochemistry 3	
Physiology 4	
Microbiology 4	
Science elective (3 credits—Zoology or Physics recommended)	
†Social Studies	16 credits
To include:	
History (continuous year course)	
Sociology 1 or 2	
Psychology 1	
Psychology 105	
Letters and Science electives	5–15 credits
Nursing	37 credits
Major—in Public Health Nursing or Ward Management and Ward Teaching	30–31 credits
Total	127–138 credits

Here is a typical curriculum, including both required and elective subjects, which a student nurse might follow:

A TYPICAL CURRICULUM

FIRST YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
English 1a	3	English 1b	3
History	3	History	3
Foreign Language	4-0	Foreign Language	4-0
Sociology 1 or 2	3-0	Biochemistry 3	4
Chemistry 5 or 1a	3-5	Electives	0-7
Electives	0-4		
	16-15		15-17

SECOND YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
English	3	English	3
Psychology 1	4	Microbiology 4	3
Physiology 4	4	Dietetics 1	2
Nursing 1a	5	Nursing 1b	5
		Electives	3
	16		16

THE CLINICAL PART OF THE PROGRAM BEGINS HERE. EXPERIENCE IN THE WARDS OF THE HOSPITAL AND CLASS WORK TOTAL 40 HOURS PER WEEK.

THIRD YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
Nursing 2	3	Nursing 10	3
Nursing 3	3	Nursing 11	2
Nursing 4	3	Nursing 12	2
Electives	2-3	Psychology 105	3
	11-12		10

† The student must meet the United States History and Institutions requirement before the end of the senior year.

FOURTH YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
Nursing 13	3	Nursing 15	2
Nursing 14	2	(Affiliation in Obstetrics at Chicago Lying-In Hospital and Dispensary)	
	5		

FIFTH YEAR

First Semester		
Course	*Credits*	
Nursing 5	2	The Certificate in Nursing is given at this time. The student may continue in her major study for the degree of Bachelor of Science (Nursing).
Electives	4	
	6	

PUBLIC HEALTH NURSING MAJOR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
Nursing 30	3	Nursing 41	3
Nursing 31	3	Nursing 42	3
Nursing 40	3	Nursing 43	3
Social Work 145	3	Nursing 45	8
Education 120 or 123	2-3		
	14-15		17

WARD MANAGEMENT AND WARD TEACHING MAJOR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
Nursing 20a	3	Nursing 20b	3
Nursing 30	3	Nursing 21	3
Nursing 31	3	Social Studies and Education	9
Social Studies and Education	6		
	15		15

See bulletin of the School of Home Economics for combined course in Home Economics and Nursing.

CURRICULUM B is for students who enter as registered professional nurses. They may earn the degree Bachelor of Science (Nursing) with a major in Public Health Nursing or Ward Management and Ward Teaching. The School of Nursing will evaluate the professional education of the students and will make recommendations regarding elections in the science group listed below. A total of as much as 37 credits may be granted for completion of the basic program on the basis of its equivalency to that of the University of Wisconsin School of Nursing.

Students entering without equivalent undergraduate work or relatively recent experience in the major clinical areas may be required to take special study in the area of deficiency.

B. CURRICULUM FOR STUDENTS IN THE REGISTERED PROFESSIONAL NURSE PROGRAM

English 1a and 1b or exemption		6 credits
English 30, 32, 33 or 40		6 credits
Foreign language (may be fulfilled by high-school language)		8 credits
Science (to include at least two fields)		12 credits
†Social Studies		20 credits
To include:		
Psychology 1	4 credits	
Psychology 105	3 credits	
Sociology 1 or 2	3 credits	
History (a continuous year course)	6 credits	
Electives	8–16 credits	
Nursing		37 credits
Major—in Public Health Nursing or Ward Management and Ward Teaching		30–31 credits
Total		127–128 credits

† The student must meet the United States History and Institutions requirement before the end of the senior year.

MAJOR IN PUBLIC HEALTH NURSING

The program in public health nursing is accredited by the National Nursing Accrediting Service. Its purpose is to prepare qualified graduate nurses for health service in the community, and to develop in them a wide interest in social and professional problems. They are trained to evaluate the health needs of individuals and families, and to give the nursing care and health guidance that will help meet those needs.

The major in Public Health Nursing is made up of 30–31 credits:

Nursing 30, 31, 40, 41, 42, 43, 45	25 credits
Social Studies and Education	5–6 credits
(to include either Education120 (2 cr.) or Education 123 (3 cr.))	
Total	30–31 credits

Here is a typical curriculum, including both requirements and suggested electives, which a student majoring in public health nursing might follow:

A TYPICAL CURRICULUM

FIRST YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
English 1a	3	English 1b	3
History	3	History	3
Sociology 1 or 2	3	Biochemistry 3	4
Foreign Language	4-0	Foreign Language	4-0
Chemistry 5 or 1a	3	Elective	2
	16		16

SECOND YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
English	3	English	3
Psychology	4	Science Elective	3
Science Elective	3	Elective	5
Economics	4	Public Health Nursing 40	3
Social Studies Elective	3	Public Health Nursing 30	3
	17		17

THIRD YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
Public Health Nursing 31	3	Public Health Nursing 45 (Field Work)	8
Public Health Nursing 42	2		
Social Work 145	3		
Education 120 (3 cr.) or 123 (2–3 cr.)	2-3		
Public Health Nursing 41	3		
Public Health Nursing 43	3		
	16-17		

MAJOR IN WARD MANAGEMENT AND WARD TEACHING

This program is designed to prepare nurses for the position of head nurse or assistant clinical instructor.

The major in Ward Management and Ward Teaching is made up of 30 credits:

Nursing 20, 21, 30, 31	15 credits
Social Studies and Education	15 credits
(Education limited to 6 credits)	
Total	**30 credits**

A typical curriculum, including both required subjects and suggested electives is:

A TYPICAL CURRICULUM

FIRST YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
English 1a	3	English 1b	3
History	3	History	3
Foreign Language	4	Foreign Language	4
Sociology 1 or 2	3-0	Sociology 1 or 2	0-3
Science	3-5	Science	5-3
	16-15		15-16

SECOND YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
English	3	English	3-3
Psychology 1	4	Psychology 105	3-3
Science	4	Social Studies	7-4
Electives	4	Electives	2-4
	15		15-14

THIRD YEAR

First Semester		Second Semester	
Course	*Credits*	*Course*	*Credits*
Nursing 20a	3	Nursing 20b	3
Nursing 30	3	Nursing 21	3
Social Studies	9	Nursing 31	3
		Social Studies or Education	6
	15		15

These requirements for the major in Public Health Nursing or Ward Management and Ward Teaching are in addition to the 37 credits of required nursing courses *or* equivalent credit transferred from previous training.

NURSING TRAINING WITH A MAJOR IN LETTERS AND SCIENCE OR HOME ECONOMICS

Students who are interested in combining the study of nursing with a major in the College of Letters and Science may do so by taking the Bachelor of Arts or Bachelor of Science (General Course) degree and electing those courses in nursing which lead to the Certificate of Graduate Nurse. See the bulletin of the College of Letters and Science for details.

Students who wish to combine the study of nursing with the degree of Bachelor of Science (Home Economics) should consult the bulletin of the School of Home Economics.

DESCRIPTION OF COURSES

Abbreviations:

Yr—a continuous course extending through two semesters
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
I or II—semester course given either in the first or second semester
cr—number of credit hours per semester

NURSING

1. Introduction to Nursing. Yr; 5 cr. Provides basic experiences to help the student understand her role as a nurse in society, in the hospital, and other health agencies.

2. Medical Nursing. I; 3 cr. Causes, symptoms, treatment, and prevention of medical conditions. Emotional, socio-economic, nutritional and rehabilitative aspects of nursing care.

3. Pharmacology. I; 3 cr. Nature, action, therapeutic uses, dosage range, toxicology, and administration of the most commonly used drugs. The nurse's responsibility in the administration of medicines.

4. Surgical Nursing. I; 4 cr. Fundamentals of surgical nursing; social and economic aspects of disease; observing, reporting and recording signs and symptoms; the nurse's role in diagnosis, treatment, and rehabilitation of the surgical patient.

5. The Nursing Profession. I, II; 2 cr. Historical background of nursing, current trends in nursing; choosing and adjusting to a field of work; professional problems and organizations.

10. Child Care. II; 3 cr. Principles of child care; care of children with medical and surgical illnesses—problems directly related to hospitalization, home care, and community programs.

11. Orthopedic Nursing. II; 2 cr. Fundamentals, principles, and attitudes in the care of people with orthopedic disabilities.

12. Eye, Ear, Nose and Throat Nursing. II; 2 cr. Anatomy and physiology; diagnosis, treatment and nursing care in the more common diseases; types of surgery. Sight saving and prevention of blindness; psychological and economic problems of blindness and deafness.

13. Neuropsychiatric Nursing. I; 3 cr. A survey of mental illness and diseases of the nervous system, including pathology, symptomatology, treatment, preventive aspects, and the physical and mental approaches to nursing care.

14. Communicable Disease Nursing. I; 2 cr. Etiology of infectious diseases; general principles of recognition and control. Methods and techniques of disinfection applied to the more common diseases. Preventive factors, family and community aspects of infectious diseases.

15. Obstetric Nursing. I, II; 2 cr. Principles of normal and abnormal aspects of pregnancy, labor, delivery, and puerperium with nursing care of mother and new-born.

20. Ward Management. Yr; 3 cr. Aims and objectives of ward management; techniques of ward supervision. Methods of teaching and planning the clinical experience in the ward unit.

21. Ward Teaching. II; 3 cr. Supervised practice as an assistant head nurse on a ward in the Wisconsin General Hospital.

30. Preventive Medicine and Community Health. I or II; 3 cr. The public health movement; communicable disease control and sanitation; maternal and child health; the use of vital statistics; organization and function of local, state and national health departments.

31. MENTAL HYGIENE. I or II; 3 cr. The function of the nurse in the field of mental health; family and community factors which influence emotional adjustment. The etiology, symptomatology, treatment and prevention of mental disease.

40. PRINCIPLES OF PUBLIC HEALTH NURSING. I or II; 3 cr. The scope and principles of public health nursing; nursing care to the family (with emphasis on interviewing and teaching); professional relationships, health program planning, the case load, citizen participation. Open only to graduate nurses.

41. PUBLIC HEALTH NURSING SERVICES. I or II; 3 cr. A study of needs and programs for family health service in the major health areas: communicable disease (including tuberculosis), rheumatic fever, orthopedic conditions, cancer and other long-term illnesses. Prerequisite: Nursing 40 or consent of instructor.

42. MATERNAL AND CHILD HEALTH. I or II; 2 cr. Emotional, physical, and social aspects of nursing care to the expectant mother, the infant, and the growing child. Trends in school health and the role of the nurse in the school.

43. TEACHING IN PUBLIC HEALTH NURSING. I or II; 2 cr. Health teaching in family, community and class groups. Demonstration and practice in teaching home nursing and parents' classes. Prerequisite: Nursing 40.

45. FIELD WORK. I or II; 8 cr. Supervised experience in selected urban and rural public health nursing fields. Prerequisites: Nursing 40 and laboratory fee to field agency.

SCHOOL OF PHARMACY

ARTHUR H. UHL, DEAN

FACULTY

BUSSE, LOUIS WILLIAM, *Ph.D.*, Professor of Pharmacy

FOYE, WILLIAM OWEN, *Ph.D.*, Assistant Professor of Pharmaceutical Chemistry

GREEN, MELVIN W., *Ph.D.*, Associate Professor of Pharmaceutical Chemistry

HIGUCHI, TAKERU, *Ph.D.*, Associate Professor of Pharmacy

PARKS, LLOYD MCCLAIN, *Ph.D.*, Professor of Pharmaceutical Chemistry

SONNEDECKER, GLENN A., *Ph.D.*, Assistant Professor of History of Pharmacy

STEINHAUS, JOHN E., *Ph.D., M.D.*, Associate Professor of Pharmacology

SWINTOSKY, JOSEPH V., *Ph.D.*, Assistant Professor of Pharmacognosy

UHL, ARTHUR HOYT, *Ph.D.*, Dean of the School of Pharmacy; Professor of Pharmacy

URDANG, GEORGE, *Ph.D.*, Professor of History of Pharmacy (Emeritus)

WESTING, J. HOWARD, *Ph.D.*, Professor of Marketing

WURSTER, DALE ERWIN, *Ph.D.*, Assistant Professor of Pharmacy

Two representatives each from the four divisions to be appointed annually by the Executive Committee of Divisions.

SCHOOL OF PHARMACY

GENERAL STATEMENT

The Course in Pharmacy is an integral part of the University and is governed by the same general policy that characterizes that institution. The object of the course is to furnish a thoroughly scientific foundation for the pursuit of the profession of pharmacy in all its branches; to prepare students not only to operate drug stores but to fit them as well for other lines of pharmaceutical activity—to become hospital pharmacists, pharmacognosists, pharmacists in the Army or Navy, to take up pharmaceutical manufacturing, to engage in pharmaceutical research, or to enter the government service. The elements of the fundamental natural sciences, botany, chemistry, and physics, must be studied and their principles understood before their applications to pharmacy can naturally be considered. For this reason students in pharmacy are required to pursue general elementary courses in these fundamental sciences where they have the advantage of close association with students in other departments of the University.

AMERICAN COUNCIL ON PHARMACEUTICAL EDUCATION

The American Council on Pharmaceutical Education is sponsored by the American Pharmaceutical Association, the National Association of Boards of Pharmacy, and the American Association of Colleges of Pharmacy. The purpose of this Council is to advance the standards of pharmaceutical education and to maintain a list of acceptable colleges of pharmacy. The School of Pharmacy is a class "A" accredited school of pharmacy.

AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

The University is a member of the American Association of Colleges of Pharmacy, the object of which is to promote the interests of and to standardize pharmaceutical education. Many states by law or by ruling of the State Board of Pharmacy recognize only those schools which hold membership in this organization.

STUDENT EXPENSE

For information regarding living costs, tuition and fees, and student employment, consult the General Information bulletin.

SELF-SUPPORT

The University Student Employment Bureau is maintained to assist men and women students who are partly or wholly self-supporting during their attendance at the University. More than half of the students at the University of Wisconsin must depend upon themselves for part or all of their resources.

A student should not expect to secure a definite job before he arrives in Madison to stay. The employer usually requires a personal interview. He often wants help on very short notice so that it is necessary to send a student who is in Madison and ready for immediate employment. The number of applicants is usually far greater than the number of available jobs.

REQUIREMENTS FOR ADMISSION

Students who are candidates for the degree of Bachelor of Science (Pharmacy) will enter the School of Pharmacy at the beginning of the sophomore year after completing one year of work in the College of Letters and Science. Sophomores must make application to the Dean of the School of Pharmacy for official transfer as soon as the requirements for the freshman year have been fulfilled.

The specific requirements for admission to the School of Pharmacy which should be met by the end of the freshman year are:

1. English ..... 6 credits
2. Chemistry ..... 10 credits
3. Mathematics or Foreign Language ..... 8 credits
4. Zoology ..... 3 credits
5. Botany ..... 3 credits

Applicants for admission to the School of Pharmacy must present a minimum grade-point average for all of their collegiate work of 1.3. Pre-pharmacy students in the University of Wisconsin who fail to attain a minimum grade-point average of 1.3 at the end of their first year of pre-pharmacy work may continue their registration in the school or college of their original registration provided that they have met the minimum requirements of that school or college. No student may be registered as a pre-pharmacy student for more than four semesters. Such students will not be allowed to carry courses in the Department of Pharmacy in their second year of pre-pharmacy work.

STUDENTS TRANSFERRING TO THE UNIVERSITY OF WISCONSIN

Students whose freshman year is spent in some other college outside the University of Wisconsin should follow a sequence similar to that outlined above if graduation from the School of Pharmacy is contemplated. Students with advanced standing from other institutions and transfers from other courses in the University must meet all the requirements of this School. Substantial equivalents will be accepted for required courses, but no requirements will be waived.

Applicants for admission to the School of Pharmacy from other colleges or universities should send a transcript of their credits, for evaluation, to the Office of Admissions, Bascom Hall, University of Wisconsin, Madison 6, Wisconsin.

GRADUATE STUDY

Like the sister profession, medicine, pharmacy is in need not only of the general practitioner, but also of the specialist. Graduates who wish to prepare themselves as analytical, food, or sanitary chemists in manufacturing concerns will find the department offers excellent opportunities for specialized study and research. Extensive research facilities are provided, and the graduate courses in pharmacy, pharmaceutical and plant chemistry, pharmacognosy, pharmacology and history of pharmacy make up an important part of the offerings of the department. The degrees of Master of Science and Doctor of Philosophy are conferred upon candidates who have successfully met the requirements of the respective courses. For information regarding graduate study Fellowships, Graduate and Research Assistantships write A. H. Uhl, Dean of the School of Pharmacy, 353 Chemistry Building, Madison 6, Wisconsin.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACY

A total of not less than 128 credits and 128 grade-points is required for the degree of Bachelor of Science in Pharmacy. The minimum registration in the School of Pharmacy, in order to qualify for the degree of Bachelor of Science in Pharmacy, shall be three years. The minimum residence requirement for the bachelor's degree shall be 30 credits and 30 grade-points at the University of Wisconsin. Substantially all of the last year's work shall be taken in residence in the School of Pharmacy at the University of Wisconsin.

CURRICULUM LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (Pharmacy)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b—Freshman English	3
Chemistry 1a—General chemistry	5	Chemistry 1b—General chemistry	5
Mathematics or Language	4	Mathematics or Language	4
Botany 17—Survey	3	Zoology 17—Survey	3
Pharmacy 1a—Orientation	1	Pharmacy 1b—Orientation	1
Physical Education	0	Physical Education	0
Military Training or Band	0	Military Training or Band	0
	16		16

SOPHOMORE YEAR

Pharm. Chem. 24a	3	Pharm. Chem. 24b	3
Pharm. Chem. 25a	1	Pharm. Chem. 25b	1
Pharmacy 3	2	Pharmacy 4	4
Physics 65	3	Physics 65	3
Agric. Bacteriology 1	4	Electives	5–6
Electives	3–4	Physical Education (women only)	0
Physical Education (women only)	0	Military Training	0
Military Training	0		
	16–17		16–17

JUNIOR YEAR

Pharm. Chem. 126	3	Pharm. Chem. 127	4
Pharm. Chem. 145	4	Pharmacognosy 120b	4
Pharmacy 128	2	Physiology 3	4
Pharmacy 129	2	Electives	4–5
Pharmacognosy 120a	3		
Electives	3		
	17		16–17

SENIOR YEAR

Pharmacy 134	2	Pharm. Chem. 140b	4
Pharmacy 135	2	Pharm. Chem. 146	2
Pharm. Chem. 140a	4	Pharmacy 150	2
Pharmacy 142	4	Pharmacy 151	2
Pharmacy 158	3	*Pharmacy 100	0–2
Pharmacy 100	0–2	Electives	6–5
Electives	2–0		
	17		16–17

* Students who have a grade-point average of 1.5 or better may elect 4 credits of Thesis during the senior year.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
cr—number of credit hours per semester
*cr—credit to be arranged

Courses numbered under 100 may be credited only by undergraduates; those in the 100–group may be credited by both undergraduates and graduates; those in the 200–group are ordinarily open only to graduates.

PHARMACY

1. Orientation in Pharmacy. Yr; 0–1 cr. Required of freshmen in the School of Pharmacy. Mr. Uhl and staff.

3. General Pharmacy. I; 2 cr. A course designed to acquaint the student with the theories, manipulations, and arithmetic of pharmacy. Mr. Uhl.

4. General Pharmacy. II; 4 cr. A continuation of Pharmacy 3; laboratory work dealing primarily with the manufacture of U. S. P. and N. F. galenicals. Mr. Uhl.

51. Drug Store Practice. II; 2 cr. Lectures and topics ranging from the planning and equipment of a store to salesmanship and the laws governing the practice of pharmacy. Mr. Apple and special lecturers.

100. Senior Thesis. Yr; 2 cr. Staff.

124. Pharmaceutical Manufacturing. I, II; 1–4 cr. A presentation of the methods and practice in the formulation of pharmaceuticals in semi-plant scale quantities. Prerequisite: Consent of instructor. Mr. Busse.

128. Pharmaceutical Technology. I; 2 cr. A course in the application of pharmaceutic agents and techniques to the preparation of official and unofficial pharmaceutical products. Prerequisite: Pharmaceutical Chemistry 24b. Mr. Busse.

129. Pharmaceutical Technology Laboratory. I; 2 cr. Prerequisite: Concurrent registration in Pharmacy 128.

131. Preservation and Stabilization of Pharmaceuticals. II; 3 cr. A study of the agents and problems involved in the preservation and stabilization of pharmaceuticals. Mr. Busse.

134. Prescription Practice. I; 2 cr. The study and the compounding of prescriptions representative of the various modes of administration. Prerequisites: Pharmaceutical Chemistry 24, Pharmacy 128. Mr. Wurster.

135. Prescription Practice Laboratory. I; 2 cr. Prerequisites: Pharmaceutical Chemistry 24, Pharmacy 128. Mr. Wurster.

142. Materia Medica. I; 4 cr. The chief physiological effect of drugs with special emphasis on the posology, toxicology and the bio-assay of the official preparations. Prerequisites: Pharmaceutical Chemistry 127; Physiology 3. Mr. Steinhaus.

150. Prescription Practice. II; 2 cr. A study of prescriptions with special reference to incompatibilities and the techniques in the proper dispensing thereof. Prerequisites: Pharmacy 134, 135, and 142. Mr. Wurster.

151. Prescription Practice Laboratory. II; 2 cr. Prerequisite: Concurrent registration in Pharmacy 150. Mr. Wurster.

156. Techniques and Instruments Useful in Pharmaceutical Research. I; 1–3 cr. A course designed to familiarize the student with the newer techniques, theory, and instruments useful in pharmaceutical research. Mr. Higuchi.

158. History of Pharmacy. I; 3 cr. Development of pharmacy in the principal countries of Europe and in the United States. Mr. Sonnedecker.

159. History of Pharmacopoeias. II; 2 cr. A survey of the development of official pharmaceutical standards. Prerequisite: Senior standing. Mr. Sonnedecker.

160. Pharmaceutical Literature. II; 2 cr. A study of the evolution of pharmaceutical literature and its influence on the development of the profession. Mr. Sonnedecker.

180. Advanced Independent Study. I ,II; 2–4 cr. Open only to superior students. Staff.

200. Graduate Research in Pharmacy. Yr; 2–6 cr. Staff.

210. Extraction and Adsorption Methods. 2 cr. (Given only in odd-numbered years.) The physical principles involved in separation by extraction and adsorption. Prerequisite: Chemistry 131. Mr. Higuchi.

232. Colloids, Suspensions, and Emulsions. II; 2 cr. (Given only in even-numbered years.) A presentation of the theory basic to the technology of colloidal suspension and emulsion used in pharmacy and medicine. Prerequisite: Chemistry 131 or equivalent. Mr. Busse, Mr. Higuchi.

250. Conference of Research Workers. Yr; 1 cr. Mr. Uhl.

PHARMACEUTICAL AND PLANT CHEMISTRY

24a. Organic Chemistry for Pharmacy Students. I; 3 cr. An elementary course drawing upon materials of pharmacy and medicine for illustrations and emphasizing reactions of pharmaceutical importance. Prerequisite: Chemistry 1b. Mr. Foye.

24b. Organic Chemistry for Pharmacy Students. II; 3 cr. Prerequisite: Pharmaceutical Chemistry 24a. Mr. Foye.

25a. Organic Chemistry for Pharmacy Students. Sem; 1 cr. Credit or concurrent registration in Pharmaceutical Chemistry 24a. Lab. 3 hrs. Mr. Foye.

25b. Organic Chemistry for Pharmacy Students. Sem; 1 cr. Credit or concurrent registration in Pharmaceutical Chemistry 24b. Lab. 3 hrs. Mr. Foye.

100. Senior Thesis. Yr; 2 cr. Staff.

126. Inorganic Pharmaceutical Chemistry. I; 3 cr. A review of certain of the principles of inorganic chemistry with special attention to preparation, properties, testing, and uses or medicinal chemicals. Prerequisites: Pharmaceutical Chemistry 24b, Pharmacy 4. Mr. Parks.

127. Organic Pharmaceutical Chemistry. II; 4 cr. A study of the chemistry of organic medicinal products. Prerequisites: Pharmaceutical Chemistry 24b, 25b, Pharmacy 4. Mr. Foye.

129. Synthesis of Organic Medicinals. II; 4 cr. A detailed consideration of the theory, mechanism and scope of commonly employed and selected reactions in the preparation of organic medicinal compounds. Prerequisites: Pharmaceutical Chemistry 127 and consent of instructor. Mr. Foye.

130. Selected Topics in Pharmaceutical Chemistry. I; 2 cr. An advanced study of those types of compounds of medicinal value that are presently under development. Prerequisite: Pharmaceutical Chemistry 127. Mr. Foye.

140a. Pharmaceutical Plant Chemistry. I; 4 cr. A study of natural drug plant principles and products with special attention to their pharmaceutical aspects. Prerequisites: Pharmaceutical Chemistry 24b, 25b, 145. Mr. Parks.

140b. Pharmaceutical Plant Chemistry. II; 4 cr. A study of the chemistry of the metabolic processes and products of living matter with special attention to their pharmaceutical aspects. Prerequisites: Pharmaceutical Chemistry 24b, 25b, 145, 140a. Mr. M. Green.

141. Phytochemical Methods and Techniques. II; 4 cr. A lecture-laboratory course on the methods, techniques, and equipment commonly used in the isolation, identification, and analysis of drug plant principles and products. Prerequisites: Pharmaceutical Chemistry 127, 145. Mr. Parks.

145. Quantitive Pharmaceutical Chemistry. I; 4 cr. Quantitive analytical procedures and theory as applied to the assay of pharmaceutical chemicals. Prerequisite: Pharmaceutical Chemistry 126 or concurrent registration. Mr. M. Green.

146. Drug Assay. II; 2 cr. Quantitative methods of analysis of drugs and pharmaceutical preparations with special reference to official products and procedures. Prerequisite: Pharmaceutical Chemistry 145. Mr. Parks.

147. Pharmaceutical Manufacturing Control. I; 3 cr. A study of the responsibility and authority of the control department. Prerequisites: Pharmaceutical Chemistry 146; Pharmacy 124 or concurrent registration. Mr. M. Green.

148. Development of Drug Standards. I; 2 cr. The organization and development of official drug standards in the United States. Prerequisites: Pharmaceutical Chemistry 145 and consent of instructor. Mr. M. Green.

200. Graduate Research. Yr; 1–5 cr. Staff.

229. Chemistry of Organic Sulfur Compounds. II; 2 cr. A study of the synthesis and general reactions of organic compounds containing sulfur with particular emphasis on compounds of medicinal interest. Prerequisite: Chemistry 124. Mr. Foye.

241. Advanced Plant Chemistry. Yr; 2 cr. A study of the chemistry of selected types of drug plant constituents. Prerequisite: Consent of instructor. Mr. Parks.

246. Advanced Drug Analysis. II; 2 cr. or 4 cr. with laboratory. An advanced study of basic analytical methods of drug assay. Prerequisites: Graduate standing and consent of instructor. Mr. M. Green.

PHARMACOGNOSY

22. Habitats of Crude Vegetable and Animal Drugs. I, II; 1 cr. Various factors influencing the geographic sources of natural remedial agents. Mr. Swintosky.

100. Senior Thesis. Yr; 2 cr. Mr. Swintosky.

110. Sources of Information of Crude Vegetable and Animal Drugs. I, II; 1–5 cr. The use of the library in locating literature relating to drugs. Mr. Swintosky.

120. Natural History of Vegetable and Animal Drugs. Yr; 3 cr. A monographic study of a considerable number of vegetable and animal drugs based on their natural relationships. Prerequisites: Pharmacognosy 112, Botany 1, Chemistry 1. Mr. Swintosky.

130. Cultivation of Medicinal Plants. Yr; 1–5 cr. Mr. Swintosky.

200. Research in Medicinal Plants. Yr; 1–5 cr. Mr. Swintosky.

EXTENSION DIVISION

LORENTZ HENNING ADOLFSON, *Ph.D.*, DIRECTOR

FACULTY

AHRNSBRAK, HENRY C., *Ph.D.*, Assistant Professor of Education; Director of Wausau Extension Center
ALEXANDER, LEE EDWARD, *M.A.*, Instructor in English
ALLEN, CHESTER, Assistant Professor, Director of Field Organization
ALLHISER, NORMAN CARL, *M.A.*, Assistant Professor, Industrial Management Institutes
ANDERSON, ROBERT THOMAS, *M.S.*, Instructor in Geography
APPLE, WILLIAM SHOULDEN, *M.B.A.*, Instructor, Coordinator of Extension Services in Pharmacy
ATWOOD, HARRY MASON, *B.S.*, Instructor in Chemistry
AZPELL, NORMAN JAMES, *M.A.*, Assistant Professor; Veterans' Counselor
BALE, MRS. MARIE F., *Ph.D.*, Assistant Professor of Sociology
BARRINGTON, DUANE JULE, *B.S.*, Instructor in Mechanical and Industrial Engineering
BASCOM, LELIA, *M.A.*, Emeritus Associate Professor of English
BATTIG, LEON, *M.A.*, Instructor in Mathematics
BAUMANN, RUTH, *M.A.*, Instructor in Political Science
BEATTIE, WALTER M., JR., *M.A.*, Instructor in Sociology
BEERY, GEORGE S., *Ph.D.*, Assistant Professor of Education
BERG, ROBERT LOUIS, *M.A.*, Instructor in Political Science
BERGER, ROLLAND DAVID, *Ph.B.*, Instructor, Bureau of Community Development
BLOTZ, MRS. HELENE STRATMAN-THOMAS, *M.A.*, Assistant Professor of Music
BONAR, HUGH S., JR., *Ph.D.*, Instructor in History
BOYD, BRADFORD BURTON, *M.B.A.*, Instructor, Industrial Management Institutes
BOYER, MRS. BARBARA WOODWARD, *B.A.*, Instructor, School for Workers
BRANDENBURG, JOHN FRANCIS, *M.S.*, Instructor in Mathematics, mil. lv.
BRIDGMAN, CHARLES SIMMONS, *Ph.D.*, Associate Professor and Director, Bureau of Industrial Psychology
BRIDGMAN, LOUIS WILLIAM, *B.A.*, Instructor and Editor
BRIGGS, OSCAR EDWARD, *M.A.*, Director of Green Bay Extension Center and Instructor in English
BROCKHAUS, HERMAN HENRY, *Ph.D.*, Associate Professor of Speech
BROWN, FREEMAN HARDING, *B.S.*, Assistant Professor; Director of Photographic Laboratory
BRUMBLAY, RAY ULYSSES, *Ph.D.*, Assistant Professor of Chemistry
BURKERT, ROBERT RANDALL, *B.S.*, Instructor, Bureau of Visual Instruction
COLBERT, ROY JEFFERSON, *Ph.D.*, Professor, Director of Bureau of Community Development
COLBY, CLYDE W., *B.S.*, Lecturer, Director of Industrial Activities, Bureau of Community Development
CRANE, FRANK DOUGALL, *Ph.D.*, Professor of English
DEAN, CHARLES LYMAN, *B.S.*, Emeritus Associate Professor of Mechanical Engineering
DEBAUN, HAROLD, *Ph.B.*, Associate Professor of Accounting and Business Administration
DONOGHUE, JAMES ROBERT, *Ph.D.*, Associate Professor of Political Science
DORLAG, ARTHUR HENRY, *M.S.*, Instructor in Speech
DUNCAN, M. MAGDALEN, *M.A.*, Assistant Professor of English
DUWE, HENRY JOHN, *M.A.*, Instructor and Business Manager
DWELLE, DOROTHY CAROLYN, *M.A.*, Instructor in English

DYSINGER, DALE WENDELL, *Ph.D.*, Assistant Professor of Psychology
EBISCH, KONRAD ERNST, *M.S.*, Instructor in Geography
EDSALL, BESSIE EVA, *Ph.M.*, Emeritus Professor of History
EMONT, MILTON D., *M.A.*, Instructor in French and Italian
ENGLISH, H. ROWLAND, *M.A.*, Professor of Business Administration; Chief, Bureau of Business Information
ESSER, ROBERT EMMET, *Ph.D.*, Assistant Professor of Botany and Zoology
EVANS, HERBERT PULSE, *Ph.D.*, Professor of Mathematics
FARRELL, MARY KATHERINE, *B.A., B.M.*, Instructor and Field Representative
FERRIS, MRS. MERLE BONNE, Instructor, Photographic Laboratory
FINLEY, ROBERT WILLIAM, *Ph.D.*, Assistant Professor of Geography
FORCEY, CHARLES BUDD, JR., *M.A.*, Instructor in History and Political Science
FOSTER, MARVIN REED, *M.S.*, Instructor, Director, Bureau of Lectures and Concerts
FOWLER, RUSSELL WINSLOW, *M.S.*, Associate Professor of Mechanical Engineering
FRASER, SHIRLEY, *M.S.*, Instructor in Chemistry
GANGSTAD, IDA MARIE, *B.A.*, Assistant Professor of Library Methods
GARD, ROBERT EDWARD, *M.A.*, Associate Professor of Speech and Rural Sociology; Director of "Wisconsin Idea" Theatre
GEE, RONALD CALLAWAY, *M.S.*, Instructor, "Wisconsin Idea" Theatre
GENOVESE, FRANCIS CHARLES, *M.A.*, Instructor in Economics
GEREND, MRS. HERTA FRIEDA, *B.A.*, Instructor in German
GEREND, JOSEPH JOHN, *M.A.*, Instructor in English and Supervisor, Marinette Extension Center
GILL, CLARK CYRUS, *Ph.D.*, Correspondence Study Specialist
GILLETT, ALVIN CHARLES, *B.A.*, Instructor in Sociology
GOTTLIEB, BERTRAM, *M.S.*, Instructor, School for Workers
GRAFF, MARSHALL CONANT, *M.A.*, Assistant Professor and Field Representative
GREENFIELD, MRS. THELMA NELSON, *Ph.D.*, Instructor in English
GROGAN, PAUL JOSEPH, *M.S.*, Assistant Professor of Mechanical Engineering and Coordinator of Engineering Activities in Extension
GROSNICK, RAYMOND OTTO, *B.Ed.*, Instructor in Mathematics
GUILFORD, HARRY GARRETT, *Ph.D.*, Assistant Professor of Botany and Zoology
HAILER, HAROLD HERMAN, *Ph.M.*, Instructor, Bureau of Visual Instruction
HANLEY, MRS. LOUISE WARDELL, *M.A.*, Instructor in English
HANLEY, WILBUR MATTHEW, *Ph.D.*, Associate Professor of Geography; Director of Extension Centers
HILL, HENRY BERTRAM, *Ph.D.*, Professor of History, on lv. academic year
HILLIS, LEONARD FOLSOM, *M.S.*, Associate Professor of Civil and Structural Engineering
HOLT, HARRIETTE GRACE, *M.A.*, Emeritus Assistant Professor of Mathematics
HORSEY, THOMAS CLAYTON, *B.A.*, Instructor, Industrial Management Institutes
HUMPHREYS, RICHARD WILLIAM, *M.A.*, Instructor, School for Workers
IMHOFF, LAVERNE JOSEPH, *M.S.*, Instructor and Field Representative
IVERSON, MAURICE THEOBALD, *M.A.*, Assistant Professor, Bureau of Visual Instruction
JAMES, MRS. LILLIAN JORGENSEN, *Mu.B.*, Instructor in Music
JANSKY, CYRIL METHODIUS, *B.S.*, Emeritus Professor of Electrical Engineering
JEROME, MRS. GLADYS SOLOMON, *M.A.*, Instructor in English
JONES, OMER REESE, *M.S.*, Instructor, Coordinator of Student Personnel Services
KAMARCK, EDWARD LAWRENCE, *M.A.*, Assistant Professor, "Wisconsin Idea" Theatre
KASTLER, NORMAN MANTONYA, *M.A.*, Associate Professor of Economics and Sociology
KERR, HAROLD HOUSTON, *B.S.*, Instructor in Mechanical Drawing
KIRCHBERGER, HANS FRITZ, *J.U.D.*, Lecturer in Political Science
KLEINER, JOSEPH LESTER, *M.B.A.*, Assistant Professor of Business Administration.
KNOWLES, MARGARET ISABEL, *Ph.D.*, Assistant Professor of History
KÖNIG, SELMA SOPHIE, *Ph.D.*, Assistant Professor of German
KOOB, ROBERT LIVINGSTON, *B.B.A.*, Instructor, Industrial Management Institutes

KRASSELT, OTTO LOUIS, *B.A.*, Instructor and Field Representative
KUBIAK, HENRY JOSEPH, *B.S.*, Assistant Professor of Electrical Engineering
KUHL, WILLIAM OWEN, *M.S.*, Instructor, School for Workers
KUHLMAN, JOHN MELVILLE, *M.S.*, Instructor in Economics
KUNEY, MRS. BERNICE DONNELLY, *M.A.*, Associate Professor of English
LEVI, HERBERT WALTER, *Ph.D.*, Assistant Professor of Botany and Zoology
LICHTY, JAMES JOHNSTON, *M.A.*, Instructor, Bureau of Community Development
LIESCH, WILLIAM HENRY H., Instructor and Field Representative
LIGHTY, WILLIAM HENRY, *Ph.B.*, Emeritus Professor of Extension Teaching
LOCKSMITH, LILA DELLA, *B.A.*, Instructor in Spanish
LOEFFLER, JOSEPH WELLINGTON, *B.S.*, Instructor in Physical Education
LOWE, MYRON JAMES, Instructor and Field Representative
LUDEMAN, JOHN FREDERICK, *M.S.*, Instructor in Psychology and Adviser to Students
MACAULEY, C. CAMERON, *B.A.*, Instructor, Bureau of Visual Instruction
MANN, HENRY LOUIS, *M.A.*, Instructor in English
MAY, ALBERT EMIL, *Ph.D.*, Associate Professor of Mathematics and Assistant Director, Racine Extension Center
MCCANSE, RALPH ALAN, *M.A.*, Associate Professor of English
MCCARROLL, WILLIAM GRIFFITH, *M.A.*, Instructor in Economics
MCCULLY, JOHN LYLE, *M.A.*, Instructor in Political Science
MCCUTCHEON, LEONA ESSIE FREDERICA, *M.A.*, Emeritus Assistant Professor, Bureau of Information and Program Services
MCMULLEN, KATHERINE WAY, *M.A.*, Assistant Professor of English
MCPHEE, RODERICK FULTON, *B.S.*, Instructor and Assistant Director, Bureau of Information and Program Services
MEIVES, WALTER JEWETT, *B.A.*, Instructor, Photographic Laboratory
MEYER, BENNO WALTER, *B.S.*, Instructor and Field Representative
MILLER, JOHN LESTER, *Ph.D.*, Professor of Economics, Sociology, and Anthropology
MOBERLY, RUSSELL LOUIS, *Ph.D.*, Professor and Director of Industrial Management Institutes, on lv. yr.
MONTROSS, HAROLD WESLEY, *Ph.D.*, Instructor, Field Representative for the Rhinelander Correspondence Study Project
MULVIHILL, EDWARD ROBERT, *Ph.D.*, Associate Professor of Spanish
MUNRO, HILDA MARY, *M.A.*, Instructor, Industrial Management Institutes
NAETER, CAROL ANN, *B.S.*, Instructor in Chemistry
NEMEC, MRS. LOIS GADD, *Ph.D.*, Associate Professor of Education
NORWOOD, MRS. LOTTE E., *M.A.*, Instructor in German
ONHEIBER, JEROME, *M.A.*, Instructor in Spanish
OSTAR, ALLAN WILLIAM, *B.A.*, Instructor, Publicity Director
OZANNE, ROBERT WILLARD, *M.S.*, Instructor and Director, School for Workers
PALMER, CHARLES EDWIN, *M.A.*, Instructor in Speech
PALMERI, JOSEPH, *Ph.D.*, Associate Professor of French and Italian
PETERSON, LAWRENCE HERBERT, *Ph.D.*, Instructor in History
PFLEGER, RAYMOND, *Ph.M.*, Instructor in Geography
PHILLIPSON, JOHN SAMUEL, *Ph.D.*, Instructor in English
PIETSCH, EWALD CARL, *M.S.*, Instructor in Geography
PITMAN, ANNA MARIA, *Ph.D.*, Emeritus Professor of Greek and Latin
PORZAK, BERNARD PETER, *M.A.*, Instructor in English
PORZAK, MRS. ELIZABETH W., *B.A.*, Instructor in English
PULVER, HARRY E., *B.S., C.E.*, Emeritus Professor of Civil and Structural Engineering
RIEKE, ROBERT WILLIAM, *M.A.*, Instructor in History
ROBERTS, MRS. ETHEL IRENE, *B.A.*, Instructor in Mathematics
ROBERTS, FRED BARKER, *B.S.*, Instructor, Industrial Management Institutes
RODMAN, GEORGE BUSH, *Ph.D.*, Associate Professor of English

SANGER, CARL EDGAR, *M.S.*, Associate Professor of Physical Education and Intramural Athletics
SARIG, EMMETT RAY, *M.M.*, Associate Professor of Music
SCHACHT, ROBERT HUGO, *M.S.*, Instructor; Director, Bureau of Information and Program Services
SCHLATTER, EDWARD BUNKER, *Ph.D.*, Emeritus Professor of Romance Languages
SCHLOEMER, ROBERT EDWIN, *B.S.*, Instructor in Civil Engineering
SCHMERDA, FRANK JOSEPH, *M.A.*, Instructor in Spanish
SCHULTZ, GWENDOLYN MANETTE, *M.A.*, Instructor in Geography
SCHULTZ, ROBERT ARTHUR, *B.S.*, Instructor, Industrial Management Institutes
SCHULZ, GERHARD ROBERT, *B.A.*, Instructor in Photographic Laboratory
SCHWEBKE, HOWARD JOHN, *M.S.*, Instructor in Engineering Drawing, mil. lv.
SCHWENN, ROGER EDWARD, *B.A.*, Instructor and Librarian
SEARLES, JOHN REXFORD, *Ph.D.*, Assistant Professor of English, on lv. yr.
SEIFERT, LESTER WILHELM J., *Ph.D.*, Assistant Professor of German
SELL, GEORGE RUBIN, *B.S.*, Instructor in Engineering
SHANNON, THEODORE JOSEPH, *M.A.*, Instructor, Director of Special Classes
SKINNER, GORDON S., *M.S.*, Instructor in Economics
SKINNER, VIRGINIA OLGA, *M.S.*, Instructor in Mathematics
STAUSS, NYLES GEORGE, *M.S.*, Instructor in Zoology
STEHN, MRS. FLORENCE, *M.A.*, Assistant Professor of French
STEINBERG, CHARLENE JUNE, *M.A.*, Instructor in Chemistry
STILWELL, WILLIAM PAUL, *B.B.A.*, Instructor, Industrial Management Institutes
STUEBER, RALPH KENT, *B.S.*, Instructor in Physical Education and Athletics
SULLIVAN, RICHARD ELMORE, *B.S.*, *B.B.A.*, Assistant Professor and Acting Director, Industrial Management Institutes
SWINDELL, BLANCHE, *M.A.*, Instructor in English
TALLENT, BERNARD COX, *M.A.*, Instructor in Political Science and Director of the Kenosha Extension Center
TAUBE, EDWARD E., *Ph.D.*, Instructor in Geography
TEGTMEYER, RAYMOND CHARLES, *M.S.*, Assistant Professor of Mechanical Engineering
TENNEY, HENRY BAIRD, *M.B.A.*, Instructor, Industrial Management Institutes
THACKRAY, RICHARD IRVING, *M.A.*, Instructor in Psychology and Adviser to Students
THIEDE, WILSON BICKFORD, *Ph.D.*, Director of Correspondence Study and Recorder
THOMSON, JOHN WALTER, JR., *Ph.D.*, Associate Professor of Botany and Zoology
TIETZE, FREDERICK INGLEBRIT, *Ph.D.*, Instructor in English
TIFFANY, JACKSON DEWAIN, Instructor, Bureau of Visual Instruction
TILDEN, CHLOE ELIZABETH, *M.A.*, Instructor in French and Spanish
TOWN, GEORGE GALLOWAY, *Ph.D.*, Professor of Chemistry
TRICE, HARRISON MILLER, *M.A.*, Instructor in Sociology
ULRIKSSON, VIDKUNN EUGEN, *Ph.D.*, Associate Director, School for Workers, and Assistant Professor of Economics, on lv. yr.
VOSKUIL, DONALD JOHN, *B.S.*, Instructor in Chemistry, mil. lv.
VOZZA, JOHN FERNANDO, *Ph.D.*, Assistant Professor of Chemistry
WAGNER, RAPHAEL DARREL, *Ph.D.*, Assistant Professor of Mathematics
WALTER, EDWARD DAVID, *M.S.W.*, Assistant Professor of Social Work
WARD, JAMES EUGENE, *M.S.*, Instructor in Mathematics
WEDEMEYER, CHARLES ADRIAN, *M.A.*, Director, Racine Extension Center
WEINER, SAMUEL, *Ph.D.*, Assistant Professor of Chemistry
WENDT, FLORENCE, *B.A.*, Instructor in Business Administration
WHIPPLE, PATRICIA ETHEL, *M.A.*, Instructor in Spanish
WHITE, FREDERICK ALLISON, *M.A.*, Instructor, Bureau of Visual Instruction
WHITE, H. DONALD, *Ph.D.*, Instructor in Art Education
WHITE, MAX LEE, *M.A.*, Instructor in Geography
WHITNEY, BERYL ESTHER, *M.A.*, Instructor in English

WILDA, EUGENE FRANKLIN, *M.S.*, Instructor in Chemistry
WILLIAMS, RICHARD HENRY, *M.A.*, Instructor, Bureau of Visual Instruction
WILSON, ROBERT SANFORD, *M.S.*, Instructor in Physics
WITTICH, WALTER ARNO, *Ph.D.*, Professor of Education; Director, Bureau of Visual Instruction
WOODRUFF, LLOYD WILBUR, *M.S.*, Instructor in Political Science
ZADROZNY, JOHN THOMAS, *M.A.*, Instructor in Sociology
ZARLING, LILLIAN BERTHA, *M.A.*, Instructor in Mathematics
ZYWICKI, DONNA SHIRLEY, *B.S.*, Instructor in Chemistry

UNIVERSITY EXTENSION DIVISION

ORGANIZATIONS AND AIMS

The broad philosophy of the "Wisconsin Idea" is to make the University an integral and dynamic part of the life of the State in every way possible. The Extension Division is responsible for making the University's vast resources available to the people of Wisconsin, and to meet their educational needs and demands.

To achieve this broad goal the Extension Division works in close cooperation, first, with University colleges, schools, and departments so that Extension programs will be rooted in the basic teaching and research of the campus, and, second, with a wide range of public and private agencies in the State so that programs can be developed for Wisconsin citizens in the most practical way possible.

Through subject-matter departments which are extension arms of the residence departments, the Extension Division provides instructional services in four major areas: correspondence study, extension centers, institutes, and special classes.

In addition, a number of special service agencies carry on the adult education functions of the Division and provide assistance to Wisconsin citizens, organizations, and schools.

CORRESPONDENCE STUDY

WILSON B. THIEDE, *Ph.D.*, DIRECTOR

In order to provide educational opportunities for individuals who can not or who prefer not to attend regular formal classes either at the University of Wisconsin or at some other educational institution, the Extension Division has developed correspondence courses which may be taken by the student in his own home in whatever time he has available for study.

PLAN AND SCOPE

The University of Wisconsin thus provides, through home-study instruction by correspondence, the following:

1. Certain regular university studies which may, under approved conditions, be taken for credit toward a degree.

2. Special courses in general or professional fields for adults who wish to continue learning.

3. High-school and preparatory studies.

4. Technical courses prepared with reference to the needs and requirements of given occupations.

METHOD

PROCEDURE. As soon as the student has selected his correspondence course or courses he should fill out the application blank and return it, with the required fee, to the Extension

Division. The necessary textbooks may be purchased through the Extension Division, if the student so desires. Ordering texts at the time of registration saves time and facilitates a prompt start. Students are encouraged to register for but one course at a time. Not more than two courses may be taken at one time unless the student can give evidence that he can devote several hours a day to study.

THE INSTRUCTION. Upon receipt of the application and fee, the first group of assignments will be sent with instructions for study, methods of preparation, and directions for returning written assignments. Each written assignment will be returned to the student with such corrections, explanations, and suggestions as may be needed. Lists of books, assignments for reading, and all necessary assistance will be furnished throughout the course, so that no student will be left without adequate aid and guidance. Questions on the subject in hand are at all times encouraged.

THE COURSE. The course is divided, where practicable, into twenty-four assignments. Such a course represents at least an amount of work equal to that done in residence at the University in a class of three hours a week for one semester or half year. It is assumed that this work may be done by the average student in twenty-four weeks on a minimum leisure for study of one hour a day, six days in the week. It is, however, the student's privilege to pursue his studies as rapidly as may be consistent with good work and the rules of the University.

The various courses have been arranged, wherever that is desirable, in coordination with the regular residence work, the short courses, and the summer session.

THE ASSIGNMENT. The course is divided into assignments. In some courses this may call for but a single report, but in others the assignment may be divided into two or more lessons.

EXAMINATIONS. Examinations are optional with the student, but are required where credits or certificates are sought. These examinations must be taken under supervised conditions approved by the University.

REGULATIONS. 1. Students may begin correspondence-study courses at any time during the year.

2. For admission to a correspondence-study course no preliminary examination is required. The student is required to fill out an application blank, giving such information as may be helpful to the instructor in adapting the instruction to his personal needs.

3. Students who undertake correspondence-study work for university credit must state this fact in advance and comply with all the requirements of the University.

4. It is desired that the applicant state fully the purpose he has in view in taking the work and also in detail such educational advantages, training, or experience as he may have had. The department endeavors to meet the needs of the individual student by advice and suggestion, as well as by formal instruction, but whenever it finds that the course elected is not for the best interest of the student, it reserves the right to reject the application, or to advise a change to another course.

5. The time in which a correspondence study course is to be completed is eighteen months.

6. Payment of fees in full is expected at the time of registration. In unusual circumstances arrangements can be made for the partial payment of instruction fees of $10 and over. Such arrangements include the filling out of an application form giving certain information, and the payment of a small additional fee. If an application for instruction is rejected, the fee is returned. Refunds may be granted under certain other approved conditions.

7. The instruction fee for university credit courses is $6.50 per credit for students who are residents of the state of Wisconsin. For students not residents of the state of Wisconsin,

the fee is $10 per credit. For courses not involving university credit, corresponding fees prevail. The expense connected with the instruction of each course is listed in the bulletins where these courses are announced.

UNIVERSITY CREDIT

1. Persons who have had the required preparation for admission to the University will, upon the satisfactory completion of a correspondence-study course designed for credit, have their grades permanently filed in the Recorder's office until the student has satisfactorily completed one year of study in residence. When all the requirements are satisfied, the correspondence-study records may be transferred to the Registrar's office and applied toward graduation.

2. The maximum credit granted for work done by correspondence study, however, may not exceed one-half the number of credit hours required for graduation.

3. At the completion of each correspondence-study course for university credit, the student shall pass an examination held under the direction of the instructor giving such course, or supervised by someone designated by the University for that purpose.

4. Correspondence study for university credit may not be done by any student while in attendance at any institute of learning, except by written approval from the authorized official of the institution concerned.

5. Students engaged upon correspondence-study courses prior to enrollment for residence work, which have not been completed by the date of campus enrollment, must take a suspension of correspondence-study instruction and must deposit with the Recorder of the Extension Division all assignments which have not been completed.

6. In special cases credit may be allowed for correspondence-study courses of preparatory grade to satisfy partial entrance requirements to the University.

LOCALLY DIRECTED HIGH-SCHOOL CREDIT COURSES

(Supervised Correspondence Study)

Correspondence-study courses involving high-school credit are available to all high schools in the State under a plan of local supervision by the high-school administration.

Included in the list of locally directed subjects are courses in art; English; French; German; Latin; Spanish; history; civics; economics; sociology; health; psychology; political science; library methods; journalism; mathematics; music; chemistry; geography; general science; radio; physics; bookkeeping; business law; business training; typing; drawing; civil and structural engineering; electrical engineering; mechanical engineering; the gasoline automobile; diesel engines—a total of 122 semester courses.

The instruction fees for high-school credit courses may be paid by local boards of education under a cooperative arrangement with the University Extension Division under the authorization of statute "40.47" (4A) entitled "Other Tuition." Twelve dollars ($12.00) is the fee for a semester course of 16 assignments. A lower fee prevails for courses of fewer than 16 assignments and a higher fee for those of more than 16 assignments.

This program enables the small high school to offer an enriched curriculum. It aids the larger high school in solving a number of teaching and administrative problems.

CORRESPONDENCE-STUDY COURSES

The number in parentheses, preceding the title of the course, is the number of the equivalent course which is given in residence at the University. For courses which give university credit, there are eight assignments to a credit; the number of credits appears after the title. The in-state fee appears first; the out-of-state fee follows.

Any of the courses listed are available free of charge to citizens of Wisconsin who are

members of the armed forces. The privilege of obtaining University of Wisconsin Extension Division correspondence courses without cost is also available to veterans (both residents and nonresidents) who can qualify under the provisions of United States Public Laws 16, 346, 550, and 894.

Art

1 HS A Elements of art. $12; $20.
1 HS B Elements of art. $12; $20.
2 HS A Advanced elements of art. $12; $20.

Astronomy

17 (17) Survey of astronomy. 3 cr. $19.50; $30.

Botany

1 (1) General botany. 5 cr. $32.50; $50.

Business

130 Introductory accounting, Part I. $13; $20.
131 Introductory accounting, Part II. $13; $20.
132 Intermediate accounting, Part I. $13; $20.
133 Intermediate accounting, Part II. $13; $20.
134 Advanced accounting, Part I. $13; $20.
135 Advanced accounting, Part II. $9.75; $15.
140 Advanced accounting. $9.75; $15.
141 Cost accounting, Part I. $13; $20.
142 Cost accounting, Part II. $13; $20.
144 Governmental accounting. $13; $20.
147 Auditing. $19.50; $30.
148R C.P.A. review. $19.50; $30.
160 Federal income tax, Part I. $13; $20.
161 Federal income tax, Part II. $13; $20.
125 Industrial accounting, Part I. $13; $20.
126 Industrial accounting, Part II. $13; $20.
127 Industrial accounting, Part III. $13; $20.
162 Business finance. $19.50; $30.
165 Financial statement analysis. $13; $20.
102 Business letter writing, Part I. $9.75; $15.
103 Business letter writing, Part II. $9.75; $15.
104 Business correspondence, Part I. $13; $20.
105 Business correspondence, Part II. $13; $20.
106 Secretarial training. $13; $20.
43 (43) Business ethics. 2 cr. $13; $20.
120 The law of contracts and agency. $13; $20.
121 The law of business transactions. $13; $20.
122 The law of business organization. $9.75; $15.
149 Management of a small business (Retail and service establishments). $9.75; $15.
150 Business management. $19.50; $30.
153 Marketing methods. $13; $20.
154 Principles of advertising. $13; $20.
155 Retail advertising and sales promotion. $13; $20.
159 Retail selling and consumer buying. $13; $20.
173 Fire insurance. $13; $20.
174 Casualty insurance. $13; $20.
175 Salesmanship. $13; $20.
176 Sales management. $13; $20.
1HS First year bookkeeping
Part A. $12; $20.
Part B. $12; $20.
2HS Second year bookkeeping
Part A. $12; $20.
Part B. $12; $20.
3HS Business training
Part A. $12; $20.
Part B. $12; $20.
4HS Management of a small business. $9.75; $15.
5HS Introduction to business law. $12; $20.
6HS Business English and correspondence. $12; $20..
7HS Thomas natural shorthand. $12; $20.
9HS Typing
Part A. $12; $20.
Part B. $12; $20.

Chemistry

11HS Functional chemistry
Part A. $12; $20.
Part B. $12; $20.

General Classics

38 (38) Origins of Greek and Latin terms. 3 cr. $19.50; $30.
51 (51) Classical mythology. 2 cr. $13; $20.
113 Greek drama in English. 2 cr. $13; $20.

Comparative Literature

67A (67A) Modern drama. 2 cr. $13; $20.
67B (67B) Modern drama. 2 cr. $13; $20.
68A (68A) Modern novel. 2 cr. $13; $20.
68B (68B) Modern novel. 2 cr. $13; $20.

Economics

1a (1a) General economics. 4 cr. $26; $40.
1b (1b) General economics. 4 cr. $26; $40.
122 (122) Labor problems. 3 cr. $19.50; $30.
124a (124a) Publicfinance-taxation. 3 cr. $19.50; $30.
127 (127) Cooperation. 3 cr. $19.50; $30.
135 (135) Railway transportation. 3 cr. $19.50; $30.
50 Practical economics. $12; $20.
51 Advanced practical economics. $19.50; $30.

Education

76 (76, in pt.) The teaching of English. 2 cr. $13; $20.
83 (83) The teaching of German. 2 cr. $13; $20.
84 (84) The teaching of history and social studies. 2 cr. $13; $20.
104 (104) Social history of education. 3 cr. $19.50; $30.
169 (169) Health information for teachers. 3 cr. $19.50; $30.
198 (198) The teaching of speech. 2 cr. $13; $20.
118 (118) Human abilities and learning. 3 cr. $19.50; $30.
184 (184) Introduction to guidance and personnel services. 3 cr. $19.50; $30.
181 (181) Techniques in guidance and personnel services. 3 cr. $19.50; $30.
193 (193) Introduction to educational supervision. 2 cr. $13; $20.

Engineering—Practical Mathematics

31 Practical arithmetic. $9.75; $15.
32 Practical algebra. $9.75; $15.
33 Mensuration and practical geometry.

$9.75; $15.
34 Practical trigonometry and logarithms. $9.75; $15.
35 **Practical calculus. $19.50; $30.**
201A Shop arithmetic. $16.25; $25.
201B Advanced shop mathematics. $16.25; $25.
241 Carpenters' and builders' arithmetic. **$13; $20.**
75 The operation and application of the slide rule. $5; $6.25.

Engineering—Drawing

403 How to read building plans. $13; $20.
204A Shop drawing. $16.25; $25.
204B Advanced shop drawing. $16.25; $25.
203-S Freehand industrial sketching. $13; $20.
205 Sheet metal drafting. $8.25; $12.50.
404 Civil engneering drawing. $13; $20.
243A Principles of architectural drawing. $13; $20.
243B Advanced architectural drafting. $8.25; $12.50.
4A Engineering lettering. $5; $7.50.
5 Show card writing. $8.25; $12.50.
2 (2) Elements of drawing. 3 cr. $19.50; $30.
3 (3) Descriptive geometry. 3 cr. **$19.50; $30.**
4 (4) Freehand lettering. 2 cr. **$13; $20.**
12 (12) Elements of drawing. 3 cr. $19.50; $30.
23 (23) Elements of drawing and descriptive geometry. 3 cr. $19.50; $30.
24 (24) Advanced engineering drawing. 2 cr. $13; $20.

Engineering—Mechanics and Materials

206 Elements of mechanics. $16.25; $25.
206-S Elements of graphic statics. $8.25; $12.50.
207 Strength of materials. $13; $20.
408 Essentials of structural theory. $13; $20.
409 Essentials of structural theory. $13; $20.
472 Materials of construction. $13; $20.
242 The properties and uses of wood. $9.75; $15.
242A Kiln drying of lumber. $8.25; $12.50.
1 (M. 1) Statics. 3 cr. $19.50; $30.
2 (M. 2) Dynamics. 3 cr. $19.50; $30.
3 (M. 3) Strength of materials. 4 cr. $26; $40.

Engineering—Civil

441A Elementary surveying. $13; $20.
441B Advanced surveying. $13; $20.
445 Railway curves. $13; $20.
501 Highway design and construction. $19.50; $30.
1T (C.E. 11) Surveying. 1 cr. $6.50; $10.
2T (C.E. 12) Surveying. 1 cr. $6.50; $10.
3T (C.E. 13) Surveying. 1½ cr. $9.75; $15.
104T (C.E. 114) Surveying. 1½ cr. $9.75; $15.
C.E. 118 (C.E. 118) Surveying. 2 cr. $13; $20.
C.E. 21 (C.E. 21) Railway engineering. 2 cr. $13; $20.
102 (C.E. 132) Highway engineering. 3 cr. $19.50; $30.
410 Roof trusses. $9.75; $15.
411 Plate girders. $9.75; $15.
412A Bridge stresses—uniform loads. $13; $20.
412B Bridge stresses—concentrated loads. $13; $20.
413 Design of railway bridge trusses. $13; $20.
418A Reinforced concrete fundamentals. $19.50; $30.
418C Reinforced concrete bridges. $19.50; $30.
421 Steel building design. 2 cr. $13; $20.
425 Deflection of structures and stresses in redundant members of trusses. 1 cr. **$6.50; $10.**
427 Stress analysis of rigid building frames. 3 cr. $19.50; $30.
430 Plain concrete construction. $13; $20.
496 Construction estimates and costs. $3 cr. $19.50; $30.
C.E. 52 (C.E. 52) Stresses in simple structures. 4 cr. $26; $40.
C.E. 53 (C.E. 53) Design of roof trusses and plate girders. 3 cr. $19.50; $30.
C.E. 54 (C.E. 54) Design of a railway bridge truss. 2 cr. $13; $20.
C.E. 155 (C.E. 155) Principles of reinforced concrete. 3 cr. $19.50; $30.
106 (C.E. 156) Concrete arches. 2 cr. $13; $20.
481 Principles of hydraulics. $19.50; $30.
483 Advanced hydraulics. $6.50; $10.
511 Construction of sewers. $6.50; $10.
521 Construction of water supply systems. **$6.50; $10.**
C.E. 72 (C.E. 72) Hydraulics, principles of. 3 cr. $19.50; $30.
115 (C.E. 175) Hydraulics, motors, and pumps. 1 cr. $6.50; $10.

Engineering—Electrical

327 Essentials of electricity. $16.25; $25.
315 Practical alternating currents. $16.25; $25.
312 Theory of alternating currents. $16.25; $25.
316 Central electric stations. $16.25; $25.
319A Watthour meters. $9.75; $15.
322 Storage batteries. $11.50; $17.50.
324 Practical electrical wiring. $16.25; $25.
328A Elements of radio. $13; $20.
330 Television. $13; $20.
313 (E.E. 7) Alternating current machinery. 3 cr. $19.50; $30.
341 (E.E. 2) Principles of direct-current machines. 4 cr. $26; $40.
343 (E.E. 3) Principles of alternating currents. 4 cr. $26; $40.
344 (E.E. 4) Principles of alternating current machinery. 4 cr. $26; $40.
317 Electric power transmission. 3 cr. 3 cr. $19.50; $30.

Engineering—Mechanical

208 Mechanism. $9.75; $15.
209 **Elementary machine design.** $13; $20.
214 Elementary steam engineering. $13; $20.
215 **Heat. $13; $20.**
216 **Steam boilers. $19.50; $30.**
217 **Steam engines. $16.25; $25.**
219D The gasoline automobile.
Part I The automobile engine. $9.75; $15.
Part II Automobile electrical equipment. $8.25; $12.50.
Part III The automobile chassis. $8.25; $12.50.
220 Diesel engines. $16.25; $25.
222 (M.E. 112) Refrigeration. 3 cr. $19.50; $30.
223 (M.E. 108) Heating and ventilating. 3 cr. $19.50; $30.
224 (M.E. 110) Air conditioning. 3 cr. $19.50; $30.
531 Industrial safety engineering. 3 cr. $19.50; $30.
535 Industrial organization and management. 3 cr. $19.50; $30.
272 Cupola practice. $5.75; $8.75.
274 Foundry metallurgy. $7.50; $11.25.
1 (M.E. 41) Machine design (Mechanism). 4 cr. $26; $40.
43 (43) Design of machine elements. 4 cr. $26; $40.

230A (M.E. 61) Elements of heat power engineering. 4 cr. $26; $40.
230B (M.E. 62) Elements of heat power engineering. 4 cr. $26; $40.

Physics

1HS Elementary physics.
Part A $12; $20.
Part B $12; $20.
51E (Physics 51) Engineering physics. 3 cr. $19.50; $30.
52E (Physics 52) Engineering physics. 3 cr. $19.50; $30.
60 Modern Physics. 4 cr. $26; $40.
91E (Physics 91) University physics, sound. 1 cr. $6.50; $10.

English and Comparative Literature

0 Remedial composition (Sub-freshman). $13; $20.
1A (1A) English composition. 3 cr. $19.50; $30.
1B (1B) English composition. 3 cr. $19.50; $30.
2 (2) Intermediate composition. 2–3 cr. $13 or $19.50; $20 or $30.
3 (3) Introduction to creative writing. 2–3 cr. $13 or $19.50; $20 or $30.
5A (5A) Advanced composition. 2–3 cr. $13 or $19.50; $20 or $30.
5B (5B) Advanced composition. 2–3 cr. $13 or $19.50; $20 or $30.
7 Short story writing. 2 cr. $13; $20.
88 Specialized exposition. 2 cr. $13; $20.
130 English versification. 2 cr. $13; $20.
30A (30A) General survey of English literature. 3 cr. $19.50; $30.
30B (30B) General survey of English literature. 3 cr. $19.50; $30.
32A (32A) Contemporary literature. 3 cr. $19.50; $30.
32B (32B) Contemporary literature. 3 cr. $19.50; $30.
33A (33A) Introduction to English literature. 2–3 cr. $13 or $19.50; $20 or $30.
33B (33B) Introduction to English literature. 2–3 cr. $13 or $19.50; $20 or $30.
40A (40A) General survey of American literature. 3 cr. $19.50; $30.
135 (135) Victorian poetry. 3 cr. $19.50; $30.
37A (37A) Shakespeare. 3 cr. $19.50; $30.
37B (37B) Shakespeare. 3 cr. $19.50; $30.
131 (131) Chaucer. 2–3 cr. $13 or $19.50; $20 or $30.
139B (139) The English novel (Dickens to Hardy). 3 cr. $19.50; $30.
44 Contemporary essay. 2 cr. $13; $20.
49 Modern short story. 2 cr. $13; $20.
134 (134) The romantic movement. 3 cr. $19.50; $30.
141 The poetry of Tennyson. 2 cr. $13; $20.
145 The poetry of Browning. 2 cr. $13; $20.
HS13 First year high-school English.
Part A. $12; $20.
Part B. $12; $20.
HS14 Second year high-school English.
Part A. $12; $20.
Part B. $12; $20.
HS15 American literature, third or fourth year high-school English.
Part A. $12; $20.
Part B. $12; $20.
HS16 English literature, fourth year high-school English.
Part A. $12; $20.
Part B. $12; $20.
HS12A Fundamentals of English grammar and composition. $12; $20.
HS17A Grammar review for high-school seniors and adults. $12; $20.
HS17B Composition for high-school seniors and adults. $12; $20.
20 Appreciation of literature. $6.50; $10.
88A Specialized composition. $6.50; $10.
67A (67A) Modern drama. (See comparative literature.)
67B (67B) Modern drama. (See comparative literature.)
68A (68A) Modern novel. (See comparative literature.)
68B (68B) Modern novel. (See comparative literature.)

French

1a (1a) Elementary French. 4 cr. $26; $40.
1b (1b) Elementary French. 4 cr. $26; $40.
10a (10a) Intermediate French. 3 cr. $19.50; $30.
10b (10b) Intermediate French. 3 cr. $19.50; $30.
15 (15 in pt.) Elementary composition. 2 cr. $13; $20.
25 (25) Intermediate composition. 2 cr. $13; $20.
124 (124 in pt.) Advanced composition. 2 cr. $13; $20.
21 (Special) (22a in pt.) Advanced reading. 2–3 cr. $13 or $19.50; $20 or $30.
22A (22A) Elementary survey. 3 cr. $19.50; $30.
22B (22B) Elementary survey. 3 cr. $19.50; $30.
123 (123 in pt.) Modern French dramatists. 2–3–4 cr. $13, $19.50, or $26; $20, $30, or $40.
136 (136) Modern French novelists. 2–3–4 cr. $13, $19.50, or $26; $20, $30, or $40.
131 (131) General survey of French literature. 3 cr. $19.50; $30.
1HS First year high-school French.
Part A. $12; $20.
Part B. $12; $20.
2HS Second year high-school French.
Part A. $12; $20.
Part B. $12; $20.
30 French for reading knowledge. $13; $20.

General Science

1HSA General science. 12; $20.
1HSB General science. $12; $20.

Geology and Geography

2S Physical geology. 3 cr. $19.50; $30.
7 (7) Economic geography. 3 cr. $19.50; $30.
5 (5) Physical earth and its resources. 3 cr. $19.50; $30.
101 (101) Geography of Europe. 3 cr. $19.50; $30.
102 (102) Geography of South America. 3 cr. $19.50; $30.
103 (103) Geography of Anglo-America. 3 cr. $19.50; $30.
110 (110) Geography of the Far East. 3 cr. $19.50; $30.
128 (128) Conservation of natural resources. 3 cr. $19.50; $30.
1HS Physical geography.
Part A. $12; $20.
Part B. $12; $20.

German

1a (1a) First semester German. 4 cr. $26; $40.
1b (1b) Second semester German. 4 cr. $26; $40.

2 Elementary German review. $13; $20.
10a (10a) Third semester German. 3–4 cr. $19.50 or $26; $30 or $40.
10b (10b) Fourth semester German. 3–4 cr. $19.50 or $26; $30 or $40.
20 Classical and modern writers. 3 cr. $19.50; $30.
21 Classical and modern writers. 3 cr. $19.50; $30.
22 (22) Prose writers of the 19th and 20th centuries. 2–3 cr. $13 or $19.50; $20 or $30.
23 (23) Literature of the 19th and 20th centuries. 2–3 cr. $13 or $19.50; $20 or $30.
25a (25a) Intermediate composition and conversation. 3 cr. $19.50; $30.
25b (25b) Intermediate composition and conversation. 3 cr. $19.50; $30.
28 (28) Scientific German (for students of chemistry). 2–4 cr. $13 or $26; $20 or $40.
29 (29) Scientific German (for students of medicine). 2–3 cr. $13 or $19.50; $20 or $30.
30 Reading German. $13; $20.
83 (83 in pt.) The teaching of German. 2 cr. $13; $20.
102 (102) The classical period. 3 cr. $19.50; $30.
104 (104) Contemporary German literature. 3 cr. $19.50; $30.
131 (131) Survey of German literature. 3 or 6 cr. $19.50 or $39; $30 or $60.
133 (133) Goethe's Faust. 3 cr. $19.50; $30.
1HS First year high-school German.
Part A. $12; $20.
Part B. $12; $20.
2HS Second year high-school German.
Part A. $12; $20.
Part B. $12; $20.
3HS Third year high-school German.
Part A. $12; $20.
Part B. $12; $20.

Greek

1 Elementary Greek. 4 cr. $26; $40.
2 Xenophon's *Anabasis*. 3 cr. $19.50; $30.
3 Homer: *The Iliad*. 3 cr. $19.50; $30.
7 Reading course in Herodotus. 3 cr. $19.50; $30.
8 Reading course in Greek drama. 2 cr. $13; $20.
38 Origins of Greek and Latin medical terms. 3 cr. $19.50; $30.
113 Greek drama in English. 2 cr. $13; $20.
51 (51) Classical mythology. 2 cr. $13; $20.

Health

6 Prevention of disease and home care of the sick. $13; $20.

History

1a Medieval history. 2–3 cr. $13 or $19.50; $20 or $30.
1b Medieval history. 2–3 cr. $13 or $19.50; $20 or $30.
2a (2a) Modern European history. 2–3 cr. $13 or $19.50; $20 or $30.
2b (2b) Modern European history. 2–3 cr. $13 or $19.50; $20 or $30.
3a (3a) European civilization, 800 to 1660. 3–4 cr. $19.50 or $26; $30 or $40.
3b (3b) European civilization, 1660 to the present. 3–4 cr. $19.50 or $26; $30 or $40.
4a (4a) History of the United States, 1492–1865. 3 cr. $19.50; $30.
4b (4b) History of the United States, 1865 to the present. 3 cr. $19.50; $30.
5a (5a) English history. 2–3 cr. $13 or $19.50; $20 or $30.
5b (5b) English history. 2–3 cr. $13 or $19.50; $20 or $30.
10a (10a) Ancient history. 3 cr. $19.50; $30.
10b (10b) Ancient history. 3 cr. $19.50; $30.
84 (84 in pt.) The teaching of history and social studies. 2 cr. $13; $20.
109 (109) History of Wisconsin. 3 cr. $19.50; $30.
124a Recent history of the United States, 1890–1917. 3 cr. $19.50; $30.
124b Recent history of the United States, 1917 to the present. 3 cr. $19.50; $30.
138a (138a) The French revolution and the Napoleonic period, 1789–1815. 2–3 cr. $13 or $19.50; $20 or $30.
138b (138b) History of Europe, 1815–1871. 2–3 cr. $13 or $19.50; $20 or $30.
139a (139a) The age of Imperialism, 1871–1918. 2–3 cr. $13 or $19.50; $20 or $30.
139b (139b) Recent and contemporary European history, 1918 to the present. 2–3 cr. $13 or $19.50; $20 or $30.
51 History of the United States. $12; $20.
52 History of the United States. $12; $20.
60 World history. $12; $20.
61 World history. $12; $20.

Home Economics

119 (119) Development of the young child in the home and the nursery school. 2 cr. $13; $20.

Italian

1a (1a) First semester Italian. 4 cr. $26; $40.
1b (1b) Second semester Italian. 4 cr. $26; $40.
10a (10a) Intermediate Italian. 3 cr. $19.50; $30.

Journalism

1 Writing publicity for clubs. $6.50; $10.
2 Community newspaper writing. $13; $20.

Latin

1R Elementary Latin. 4 cr. $26; $40.
2 Caesar. 4 cr. $26; $40.
3 Cicero: orations. 4 cr. $26; $40.
4 Virgil: *Aeneid*. 4 cr. $26; $40.
5 Sallust, the conspiracy of Catiline. 2 cr. $13; $20.
101 Advanced composition. 2 or 4 cr. $13 or $26; $20 or $40.
7 Livy, books I and XXI. 2–3 cr. $13 or $19.50; $20 or $30.
10 Cicero: *De Senectute*. 2 cr. $13; $20.
12 Terence: *Andria and Phormio*. 2 cr. $13; $20.
14 Horace: *Odes*. 3 cr. $19.50; $30.
15 Horace: *Satires and Epistles*. 3 cr. $19.50; $30.
16 Catullus. 2 cr. $13; $20.
17 Ovid: *Metamorphoses*. 2 cr. $13; $20.
18 Propertius: *Elegies*. 1 cr. $6.50; $10.
19 Tibullus: *Elegies*. 1 cr. $6.50; $10.
20 Cicero: Letters and orations. 3 cr. $19.50; $30.
130 Medieval Latin poetry. 2 cr. $13; $20.
1HS First year high-school Latin.
Part A. $12; $20.
Part B. $12; $20.

2HS Second year high-school Latin.
Part A. $12; $20.
Part B. $12; $20.
3HS Third year high-school Latin.
Part A. $12; $20.
Part B. $12; $20.
4HS Fourth year high-school Latin.
Part A. $12; $20.
Part B. $12; $20.

Library Methods

1 Library methods for teacher librarians. $26; $40.
6 Government publications and pamphlet collections for small libraries. $6.50; $10.
2 Cataloging. $13; $20.
3 Elementary school library methods. $9.75; $15.
4 Library practice for apprentices. $19.50; $30.
5 The library as an adult education agency. $6.50; $10.

Mathematics

2 Plane trigonometry. 3 cr. $19.50; $30.
2S Plane trigonometry. 2 cr. $13; $20.
1 (1) College algebra. 4 cr. $26; $40.
1a Introductory college algebra. 4 cr. $26; $40.
3 Analytic geometry. 3 cr. $19.50; $30.
3a College algebra and trigonometry. 4 cr. $26; $40.
3b Plane analytic geometry. 3 cr. $19.50; $30.
4 Spherical trigonometry. 1 cr. $6.50; $10.
5b Integral calculus. 4 cr. $26; $40.
7 (7) Theory of investment. 4 cr. $26; $40.
20 (20) Calculus and analytic geometry. 4 cr. $26; $40.
24 Theory of life insurance. 3 cr. $19.50; $30.
115a (115a) Theory of equations. 3 cr. $19.50; $30.
116a (116a) Higher analysis. 3 cr. $19.50; $30.
120 (120 in pt.) Advanced calculus. 3 cr. $19.50; $30.
112 (112) Differential equations. 3 cr. $19.50; $30.
114 Modern analytic geometry. 3 cr. $19.50; $30.
118 (118) Introduction to the theory of probability. 3 cr. $19.50; $30.
134 (134) Mathematics of elementary statistics. $19.50; $30.
51 (51) Elementary mathematical analysis. 5 cr. $32.50; $50.
52 (52) Elementary mathematical analysis. 5 cr. $32.50; $50.
102a (102a) Calculus. 4 cr. $26; $40.
102b (102b) Calculus. 4 cr. $26; $40.
110 (110) Higher mathematics for engineers. 3 cr. $19.50; $30.
111 (111) Higher mathematics for engineers. 3 cr. $19.50; $30.
9 Elementary algebra.
Part A. $15; $25.
Part B. $15; $25.
10 Plane geometry.
Part A. $15; $25.
Part B. $15; $25.
12A Solid geometry. $15; $25.
12B Plane trigonometry. $15; $25.
50 Advanced high-school algebra. $12; $20.

Music

1a Harmony. 3 cr. $19.50; $30.
1b Harmony. 3 cr. $19.50; $30.
20a (20a) Appreciation and history of music. 2 cr. $13; $20.
20b (20b) Appreciation and history of music. 2 cr. $13; $20.
3HS Fundamentals of musicianship.
Part A. $12; $20.
Part B. $12; $20.

Political Science

7 (7) American government and politics. 3 cr. $19.50; $30.
13 (13 in pt.) Municipal government. 2–3 cr. $13 or $19.50; $20 or $30.
25 (25) Survey of world politics. 3 cr. $19.50; $30.
27 (27) Modern foreign governments. 3 cr. $19.50; $30.
122 (122) Political parties and public opinion. 3 cr. $19.50; $30.
143 (143) Introduction to public administration. 3 cr. $19.50; $30.
50 American government and citizenship. $12; $20.
400 Home study course in English government for candidates for naturalization. $5.
401 Home study course in our constitution and government for candidates for naturalization. $5.
405 Wisconsin farm law. $13; $20.

Portuguese

1a (1a) First semester Portuguese. 4 cr. $26; $40.
1b (1b) Second semester Portuguese. 4 cr. $26; $40.

Psychology

1 (1) General psychology. 4 cr. $26; $40.
10 Human behavior. $9; $15.

Russian

1a (1a) Elementary Russian. 4 cr. $26; $40.
1b (1b) Elementary Russian. 4 cr. $26; $40.

Scandinavian

1A (1A) First semester Norwegian. 4 cr. $26; $40.

Social Work

145 (145) Introduction to the field of social work. 2–3 cr. $13 or $19.50; $20 or $30.

Sociology

1 (1) Introductory sociology. 3 cr. $19.50; $30.
2 (2) Social problems. 3 cr. $19.50; $30.
25 (25) Rural life. 3 cr. $19.50; $30.
161 (161) Criminology. 3 cr. $19.50; $30.
50 Human relations. $12; $30.

Spanish

1a (1a) Elementary Spanish. 4 cr. $26; $40.
1b (1b) Elementary Spanish. 4 cr. $26; $40.
10a (10a) Intermediate Spanish. 3 cr. $19.50; $30.
10b (10b) Intermediate Spanish. 3 cr. $19.50; $30.

16a (16a) Elementary composition and grammar review. 2 cr. $13; $20.
16b (16b) Elementary composition and grammar review. 2 cr. $13; $20.
21A (21A) Elementary survey of Spanish literature. 3 cr. $19.50; $30.
21B (21B) Elementary survey of Spanish literature. 3 cr. $19.50; $30.
23a (23a) Contemporary Spanish literature. 3 cr. $19.50; $30.
23b (23b) Contemporary Spanish literature. 3 cr. $19.50; $30.
25a (25a) Intermediate composition. 2 cr. $13; $20.
27 (27) Spanish commercial letter writing. 2 cr. $13; $20.
1HS Elementary Spanish for high schools. Part A. $12; $20. Part B. $12; $20.
2HS Elementary Spanish for high schools. Part A. $12; $20. Part B. $12; $20.

Speech

1 Elementary speech writing. $6.50; $10.
198 (198 in pt.) The teaching of speech. 2 cr. $13; $20.

SPECIAL CLASSES

THEODORE J. SHANNON, *M.A.*, DIRECTOR

Throughout Wisconsin the Extension Division organizes and conducts special classes to meet selected educational needs of the people of the State. These classes vary in content, scope and method depending upon the aims and problems of the groups served, and range from the informal liberal type of offering to the highly specialized pre-service and in-service requirements of professional, semi-professional, commercial and industrial activities.

CREDIT. Classes for university credit, both undergraduate and graduate, are made available in the late afternoons and evenings to qualified students who for one reason or another wish to carry only part-time programs of study. Requirements for admission, standard of instruction, content of courses, and credits earned are the same in special classes as in classes conducted on the university campus.

NON-CREDIT. Wherever there is sufficient demand, classes, conferences, tours, and group consultative services are made available to adults who desire further educational opportunities without regard to academic credit. Designed to meet changing educational needs and interests, these activities do not necessarily follow fixed college offerings, but tend, rather, to make available the various specialized resources of the University in the many forms required by the educational undertakings of the adults of Wisconsin.

EXTENSION CENTERS

W. M. HANLEY, *Ph.D.*, DIRECTOR

University Extension Centers, staffed with university faculty members and housed in physical facilities provided by the local communities, are operated in Green Bay, Kenosha, Manitowoc, Marinette, Menasha, Racine, Sheboygan and Wausau.

FRESHMAN-SOPHOMORE DAY CLASSES. The courses offered at these Extension Centers, which are located in areas not adequately served by other institutions of higher learning, parallel the courses offered in the residence departments of the University; the instructional staff is approved by the appropriate residence departments; the credits earned can be applied in full towards a university degree.

The requirements for admission and regulations governing the conduct of these courses are the same as the courses offered in residence. The tuition fee for Wisconsin residents is the same as it is for Wisconsin students who enroll in the University at Madison.

EVENING CREDIT CLASS PROGRAMS. University credit classes, including some of graduate level, are made available to teachers, to adults generally, and to students who can afford to take only part-time university programs while employed in their home communities.

NON-CREDIT PROGRAMS. Courses in business, engineering, social work, economics, mathematics, psychology, and in other subjects are made available wherever there is a sufficient demand by adults who want further technical or professional training but who are not concerned with academic credit.

ADDITIONAL SERVICES. In addition to the core activities, the Centers interpret to the University the local and regional educational needs which can best be served by the University Extension Division. Through the Centers, university resources are made available to the community through conferences, institutes, lecture and musical programs, educational counseling guidance and a variety of other activities.

MILWAUKEE EXTENSION DIVISION

GEORGE AMBROSE PARKINSON, *Ph.D.*, DIRECTOR

EDWARD DEMIN HOLST, *Ph.D.*, ASSISTANT DIRECTOR

FACULTY

AHLMANN, ELMER FREDERIC, *M.S.*, Instructor in Geography
ALDRICH, RUTH ISABELLE, *M.A.*, Instructor in English
AVEY, HARRY THOMPSON, *M.E.*, Emeritus Professor of Mechanical Engineering
BAIER, JOSEPH GEORGE, JR., *Ph.D.*, Professor of Zoology
BALDWIN, LEO STARR, *B.A.*, *B.S.*, Professor of Drawing
BARDELL, ROSS HARVEY, *Ph.D.*, Professor of Mathematics
BARTH, PATRICIA, *B.A.*, Instructor in Chemistry
BATES, WHITNEY K., *Ph.D.*, Instructor in History
BAXTER, MRS. IRMA B., *M.A.*, Instructor in Geography
BECKER, ARTHUR PETER, *Ph.D.*, Associate Professor of Economics
BELL, HOWARD FRANCIS, *Ph.B.*, Instructor in Journalism (part-time I)
BELL, MARY LOUISE, *M.A.*, Instructor in English
BEST, MARTHA, *M.A.*, Instructor in French
BLUM, LAWRENCE PHILIP, *Ph.D.*, Assistant Professor of Student Personnel Services and Assistant Adviser to Men
BONOW, EUNICE RUTH, *Ph.D.*, Assistant Professor of Pharmacy
BOZAK, IRENE MARY, *B.A.*, Assistant Professor and Registrar
BROOKS, DUDLEY COOKINGHAM, *M.A.*, Assistant Professor of English
BRUMBLAY, RAY ULYSSES, *Ph.D.*, Assistant Professor of Chemistry
CESTARIC, EDWARD STEPHEN, *M.S.*, Instructor in Chemistry
CHRISTMAN, WEBSTER MARCH, *M.Ed.*, Associate Professor of Drawing
COLLINS, FRANK MCDONALD, *M.A.*, Lecturer in English
CULVER, MRS. MARION PRENTISS, *B.A.*, Instructor in English
DAWE, WILLIAM HOWARD, *M.A.*, Instructor in English
DEPTULA, SZYMON STANISLAW, *M.A.*, Instructor in Slavic Languages
DOERING, HELMUTH REINHOLD, *M.B.A.*, Assistant Professor of Commerce
DOWNING, WILLARD EDWARD, *M.S.S.*, Associate Professor of Social Work (Also School of Social Work, Madison)
DUNLOP, DOUGLAS WAYNE, *Ph.D.*, Assistant Professor of Botany
ELMERGREEN, GEORGE LESTER, *M.S.*, Assistant Professor of Electrical Engineering
ENGLISH, H. ROWLAND, *M.A.*, Professor of Business Administration (Also Extension Division, Madison)
ERNST, DOROTHY JANET, *Ph.D.*, Assistant Professor of History and Faculty Secretary and Adviser to Women (Scholastic Activities)
ESCHE, MRS. GERTRUDE STOESSEL, *M.A.*, Assistant Professor and Faculty Secretary and Adviser to Women (Scholastic Activities); Instructor in French (on lv. yr.)
FRANZEL, CAROL JEAN, *B.A.*, Instructor in Chemistry
FREEMAN, MRS. MILDRED BROWNLEE, *M.A.*, Instructor in English
GANSWINDT, ALBERT HENRY, *M.Ed.*, *C.P.A.*, Assistant Professor of Commerce
GEHRZ, DONALD KENNETH, *M.S.*, Instructor in Botany
GOFF, CHARLES DAVIS, *Ph.D.*, Assistant Professor of Political Science
HAMMER, ALICE GERTRUDE, *M.A.*, Specialist in Social Work (Also Extension Division, Madison)

HAYES, MERLIN LEWIS, *Ph.D.*, Associate Professor of Zoology and Assistant to the Director (Student Affairs)
HILL, JOHN PAUL, *1st Lt. USA*, Instructor in Military Science and Tactics
HODGE, EDWIN R., *D.C.S.*, Associate Professor of Commerce
HOERRES, MARY ANN, *M.Ed.*, Instructor in Student Personnel Services
HOLMES, MRS. ELISABETH KATZ, *M.A.*, Associate Professor of English
HUDDLESTON, PAUL F., *M.B.A.*, Assistant Professor of Commerce
INSKIP, WILMA MARIE, *Ph.D.*, Assistant Professor of Psychology
JAECK, ELSA LAURA, *B.A.*, Assistant Professor and Librarian
JAGGARD, ROBERT ARTHUR, *M.S.*, Instructor in Physics
JOHNSON, ROBERT EARL, *M.Ph.*, Instructor in Physics
KENNEY, JOHN FRANCIS, *M.A.*, Associate Professor of Mathematics
KENNY, JOSEPH WILLIAM, *M.A.*, Lecturer in Geography
KIEHL, MRS. FRANCYS BARBEAU, *Ph.M.*, Instructor in Commerce
KITTSLEY, MRS. HELEN JUNG, *M.S.*, Instructor in Zoology (part-time)
KLECZKA, FLORENCE MARY, *B.A., B.L.S.*, Assistant Professor of Student Personnel Services and Assistant Adviser to Women (Social Activities) and Vocational Librarian
KNUTSEN, HAROLD WALDEMAR, *B.C.E.*, Assistant Professor of Drawing
KOCH, GILBERT HENRY, *M.S.*, Instructor in Chemistry
KRUSE, ALBERT JOHANNES, *Ph.D.*, Associate Professor of German
LANGWILL, MRS. IRENE, *B.A.*, Emeritus Associate Professor and Emeritus Faculty Secretary and Adviser to Women (Scholastic Activities)
LAWRENCE, LEE EDWARD, *Ph.D.*, Associate Professor of History
LAYDE, DURWARD CHARLES, *Ph.D.*, Associate Professor of Chemistry
LEER, JERRY ARTHUR, *M.B.A., C.P.A.*, Assistant Professor of Commerce
LINDBLAD, HAROLD ARTHUR, *M/Sgt, USA*, Assistant in Military Science and Tactics
LINDENBERG, GEORGE DUDLEIGH, *M.B.A.*, Instructor in Commerce
LURIE, MRS. NANCY OESTREICH, *Ph.D.*, Instructor in Anthropology
MAECHLER, HUGO CARL, *B.S.*, Assistant Professor of Drawing
MARCH, JAMES HERBERT, *M.B.A., C.P.A.*, Associate Professor of Commerce
MARDEN, MORRIS, *Ph.D.*, Professor of Mathematics
MCCORMICK, RAYMOND ANDREW, *M.D.*, Medical Specialist, Student Health Services (part-time)
MCLAUGHLIN, TEDDY JOHN, *Ph.D.*, Instructor in Speech
MEADOWS, LENORE FAY, *M.S.*, Instructor in Chemistry
MEYER, MRS. GENEVIEVE TESKE, *M.A.*, Instructor in Mathematics
MILLINGTON, PAUL EMMANUEL, *Ph.D., M.D.*, Professor of Chemistry
MYERS, RAYMOND HARLAND, *M.A.*, Professor of Speech
NOTESTEIN, ROBERT BRUCE, *M.S.*, Instructor in Sociology
O'DEA, JOHN DAVID, *Ph.D.*, Assistant Professor of Student Personnel Services
OESTREICH, CARL RALPH, *B.S.*, Associate Professor and Superintendent of Buildings and Grounds
OGAWA, GEORGE, *M.S.*, Instructor in Mathematics (on mil. lv.)
OTTO, OWEN, *M.D.*, Psychiatrist, Student Health Services (part-time)
PAULY, LUDWIG KOENEN, *M.S.*, Instructor in Zoology
PERSON, PHILIP HILMORE, *Ph.D.*, Professor of Sociology
PITMAN, ROBERT GERALD, *M.A.*, Instructor in English
PURIN, CHARLES MALTADOR, *Ph.D.*, Emeritus Director and Emeritus Professor of German
RANDALL, STERLING PRICE, JR., *M.S.*, Instructor in Chemistry
REINDERS, VICTOR AMBROSE, *Ph.D.*, Associate Professor of Chemistry
RENNO, JAMES GOODRICH, JR., *M.S.*, Instructor in Mathematics
RICE, CATHERINE LOUISE, *M.M.*, Lecturer in Music (part-time)
RIDDLE, GLENN KEITH, *M.A.*, Instructor in Philosophy
RITTER, WILLIAM A., *M.S.*, Assistant Professor of Athletics and Physical Education
ROBINSON, FLORENCE MILDRED, *M.A.*, Instructor in English

ROBY, HOUSTON STRODE, *Capt. USA*, Assistant Professor of Military Science and Tactics
ROEMING, ROBERT FREDERIC, *Ph.D.*, Associate Professor of French
ROUSE, THEODORE ALTON, *Ph.D.*, Professor of Physics
SACHTSCHALE, FLORENCE CLAIRE, *M.A.*, Instructor in Student Personnel Services
SCHAEFER, JAMES ROBERT, *M.B.A.*, Instructor in Commerce
SCHULD, ELMER GEORGE, *M.A.*, Instructor in Mathematics
SCHWARTZ, DONALD ALBERT, *M.Ph.*, Lecturer in Economics
SHEA, DONALD RICHARD, *M.A.*, Instructor in Political Science
SHELDON, DAVID CLARK, *Ph.D.*, Assistant Professor of English
SPITZBART, ABRAHAM, *Ph.D.*, Assistant Professor of Mathematics
STEFANIAK, NORBERT JOHN, *M.B.A., C.P.A.*, Instructor in Commerce
STEINFORT, META MARY, *M.A.*, Emeritus Professor of Spanish
STEWART, MARION FLORENCE, *M.A.*, Instructor in English
SULLIVAN, BENJAMIN ANDREW, *M.A.*, Associate Professor of Student Personnel Services and Adviser to Men
SUMM, HELMUT, *M.Ed.*, Associate Professor of Art Education
SWEETLAND, HARRIET MARGARET, *M.A.*, Instructor in English
TETER, JOHN WINFRED, *Ph.D.*, Assistant Professor of Social Work (Also School of Social Work, Madison)
TODD, MARY AVIS, *M.S.W.*, Assistant Professor of Social Work (Also School of Social Work, Madison)
TOWN, GEORGE GALLOWAY, *Ph.D.*, Professor of Chemistry
UHL, ARTHUR HOYT, *Ph.D.*, Dean of School of Pharmacy (Madison) (part-time)
VAN VLEET, JAMES G., *M.S.*, Professor of Mechanics and Mechanical Engineering
VOIGT, MRS. FRIEDA ANNAMARIE, *M.A.*, Assistant Professor of German
WALKER, RUTH IRENE, *Ph.D.*, Professor of Botany
WARMING, TROELS, *M.S.*, Associate Professor of Mechanical Engineering
WARNER, ELDON DEZELLE, *Ph.D.*, Associate Professor of Zoology
WEISS, ARNOLD HENRY, *Ph.D.*, Instructor in Spanish
WERN, JAMES EDWARD, *Sgt. USA*, Assistant in Military Science and Tactics
WESLE, HERBERT WILLIAM, *B.S.*, Professor of Civil Engineering
WHITEMAN, PAUL HENRY, *M.A.*, Instructor in Psychology
WHITFORD, PHILIP BURTON, *Ph.D.*, Assistant Professor of Botany
WISSBAUM, DONALD JAMES, *B.Ed., C.P.A.*, Assistant Professor of Commerce (on lv. I)
WOLF, LOUISE ADELAIDE, *Ph.D.*, Associate Professor of Mathematics
YAHR, DONALD EDMUND, *B.S.*, Instructor in Athletics and Physical Education
YOUNG, CHARLES EDMUND, *Ph.D.*, Emeritus Professor of French

MILWAUKEE EXTENSION DIVISION

GEORGE A. PARKINSON, *Ph.D.*, DIRECTOR

The work in Milwaukee is carried on through day classes in which students take a full-time or part-time program, and late afternoon and evening classes in which they carry a part-time schedule.

Fees in both day and evening classes are the same as those charged in residence at Madison.

DAY CLASSES. The day classes offer programs of the work of the freshman and sophomore years in chemistry, engineering, letters and science (general), including pre-commerce (plus a third year of commerce work with a limited selection of courses), pre-journalism, pre-law, pre-library, pre-medicine, pre-education, pre-forestry, pre-pharmacy, art education, home economics, and medical technology. Students may also arrange a program to include at least one year's work in agriculture, physical medicine, music, occupational therapy, pre-nursing, and physical education for men. There is offered two years of military training consisting of the basic course Army ROTC. This is required of all physically qualified male students. Students who complete this program may elect their field of specialization upon transfer to Madison.

With respect to their content, as well as with respect to general approach, the various courses offered in day classes are parallel to the courses listed under the same designation in the University at Madison. They have been approved by the respective residence departments at Madison, and carry full credit toward a university degree. The requirements for admission in the day classes are in all respects the same as in the University at Madison.

To meet the needs of veterans and others who wish to prepare themselves for specialized careers in business but who do not wish to work toward a university degree, a four-semester program of study in business is offered in each of the following five fields: general business; private accounting; production management; marketing; and real estate. This is primarily a day-school program; some of the courses, however, may be offered only in the late afternoon or evening.

The School of Social Work of the University at Madison operates a full two-year graduate day-school program in Milwaukee. Students in this program should consult the bulletins of the School of Social Work.

EVENING CLASSES. The courses offered in evening classes may be classified under two heads:

(1) University Credit Courses, including graduate work; (2) Noncredit Courses in business, engineering, and liberal education.

(1) *University Credit Courses, including Graduate Work*

The University Credit Courses are open to those who wish to obtain credits toward a degree during their spare time. To accumulate such credits students must have been admitted to the University and must have the prerequisites for the course taken.

In the College of Engineering and the School of Commerce it is possible to earn the Master of Science degree in Milwaukee without residence in Madison. Students who wish to enter the graduate program in commerce and who need some additional undergraduate requirements can take them in evening classes. In the School of Education half of the work required for the master's degree may be earned in Milwaukee. In the School of Social Work a maximum of twelve credits toward the master's degree may be earned through part-time study. For information regarding registration in any one of these programs, the prospective student should refer to the special bulletin.

(2) *Noncredit Courses in Business, Engineering, and Liberal Education*

Business certificate programs have been arranged for men and women who wish to receive specialized training in specific areas of business. Twenty-four hour and forty-eight hour programs are offered in Accounting, Marketing, General Business, Industrial Management, and Real Estate. Twenty-four hour programs are offered in Finance and Credit, Secretarial Work, Retailing, and Transportation and Traffic Management.

The underlying purpose of the courses in liberal education is to provide an opportunity for adults to keep abreast of our rapidly changing pattern of cultural development.

SPECIAL SERVICES

PURPOSE. Through the special services of the Extension Division, the University constantly lends its knowledge and expertness to the solution of the everyday problems facing the people of the State to whom it belongs. These Extension agencies are organized to provide information and counsel on problems of general interest and public welfare as well as technical problems of interest to specific groups.

ORGANIZATION. The special services fall into three categories:

1. School and Community Services—Bureau of Information and Program Services, Bureau of Lectures and Concerts, Bureau of Visual Instruction, Music Specialist, and Wisconsin Idea Theatre.
2. Applied Social Studies Services—Bureau of Business Information, Bureau of Community Development, Bureau of Government, and Bureau of Sociology.
3. Industrial Relations Services—Bureau of Industrial Psychology, Engineering Institutes, Industrial Management Institutes, and School for Workers.

METHOD. The special services seek to serve individual inquirers, groups, and communities. They provide informational material in answer to written inquiries, and they make available lecture, discussion, consultation, and other adult education aids to local groups in their home communities.

BUREAU OF INFORMATION AND PROGRAM SERVICES

ROBERT H. SCHACHT, *M.S.*, DIRECTOR

The Bureau of Information and Program Services, formerly the Department of Debating and Public Discussion, is the branch of the Extension Division designed to provide libraries, individuals, schools, and study groups of all kinds with study materials, and to give counsel in planning study programs. Its aim is to make available to any individual, school, or group in the State, study materials to supplement those that are available locally.

STUDY MATERIALS. In the bureau are assembled current library materials—newspaper and magazine clippings, pictures, graphs, charts, pamphlets, and booklets—which it makes available for free loan to any resident in the State. Special librarians are regularly engaged in collecting materials and assembling them into loan packages. Package libraries are prepared on request on almost any topic. They are used by teachers and school pupils, by the adult who is preparing a speech or a paper, by the individual confronted with a problem on the farm, by the businessman, by the homemaker, by writers—in short, by anyone who needs information which is not locally available.

For groups interested in art, several collections of reproductions of paintings and photographs of art objects are available for exhibit by schools, libraries, or study groups. The borrower pays only the shipping charges.

In the field of drama, a collection of nearly 16,000 plays offers productions suitable for both children and adults. These plays may be borrowed for examination only. Lists of plays for various types of groups and for various age levels may be secured on request.

PROGRAM-PLANNING SERVICE. In addition to the study materials, the bureau prepares lists of current topics which help program chairmen choose programs on significant present-day social, political, and economic questions. These lists are available free. Special outlines are prepared for individual clubs on request. Materials on discussion methods and program planning are available without cost.

Aid is given in planning a series of programs or on a single meeting. There are outlines available on such subjects as Russia, Africa, American Artists, United Nations, Wisconsin History, Music Appreciation, etc., which make possible several related meetings.

A limited number of engagements are accepted by the staff to visit communities and help personally in planning programs. For such visits it is suggested that program chairmen of several clubs arrange to meet on the same date.

In cooperation with the Bureau of Visual Instruction a monthly news letter entitled *Program Notes* is published. This will be sent without charge to any person in the State having a position of program planning responsibility.

LEADERSHIP TRAINING COURSES. Leaders of youth and adult groups are offered a non-credit course of five two-hour meetings which deals with such subjects as developing leadership, program planning, conducting business meetings, leading discussions, and speaking in public.

MUSIC LIBRARY. In addition to its regular library of sheet music, the bureau administers the Louise Fulcher Memorial Library of Choral and Organ Music which can be borrowed for examination or performance by any person in the State.

GUIDED READING COURSES. The bureau administers, for the Wisconsin Federation of Women's Clubs, an organized reading program known as Epsilon Sigma Omicron. This opportunity to read with a plan is also available to any resident of Wisconsin.

MAGAZINE LOAN SERVICE. The hundreds of magazines—bound and unbound—used by the bureau in its loan package and reference work may be borrowed without charge by any library or individual in the State.

WISCONSIN HIGH-SCHOOL FORENSIC ASSOCIATION. The director of the bureau is the secretary-treasurer of the Wisconsin High-School Forensic Association. This is the state-wide association which promotes and directs drama, debate, and speech work in the secondary schools of the State.

THE WISCONSIN IDEA THEATRE

ROBERT E. GARD, *M.A.*, DIRECTOR

The Wisconsin Idea Theatre is a project in Regional Drama conducted with the people of the State by the Extension Division, the College of Letters and Science, and the College of Agriculture. Its major purpose is an interpretation of the Wisconsin Region through the development of a comprehensive drama program throughout the State.

The Theatre staff provides encouragement and instruction for residents of the State in writing, acting, and producing plays for stage and radio, and serves as a clearing house for ideas and plans for the groups which are interested in dramatics. Manuals on writing for both stage and radio are available free, and correspondence is invited from all who are interested in the field of drama.

BUREAU OF LECTURES AND CONCERTS

MARVIN R. FOSTER, *M.S.*, DIRECTOR

The purpose of this bureau is to provide the opportunity for cultural expansion for both youth and adult audiences by assisting in the training of discriminating observers of the arts. By-products of this over-all aim will be to inspire persons of all ages to self expression in these media and an ever upward demand for excellence on the platform.

METHOD. Presently the bureau provides services in four distinct areas:

1. CONCERT-LECTURE SERIES. A series will be established for any community of any size. It will be designed to fit needs and desires of the locale. The bureau will provide consultative services for the local sponsoring group.

2. PROGRAMS FOR SCHOOL ASSEMBLIES AND CIVIC GROUPS. Carefully selected professional talent is available at minimum costs.

3. LECTURES. For many occasions including commencement addresses and special dates. Speaker lists are available upon request.

4. CONCERTS. Off-campus concerts by the Pro Arte Quartet, University Band, Orchestra, Men's Chorus and A Cappella Choir are booked through this office.

Anyone may apply for the above services by directing correspondence to the director of the bureau at Madison.

BUREAU OF VISUAL INSTRUCTION

WALTER ARNO WITTICH, *Ph.D.*, DIRECTOR

The purpose of the Bureau of Visual Instruction is to obtain and lend films not only to Wisconsin schools, but to service clubs, women's organizations, Parent-Teacher Associations, labor unions, libraries, manufacturing concerns, and other adult agencies. Practically every 16mm. teaching film produced in the United States and by foreign governments is previewed at the bureau, and those thought to be useful are subsequently previewed by interested teachers and adult groups throughout the State. The bureau makes available to Wisconsin users acceptable teaching and general information films on a rental basis. The largest number of educational motion pictures yet offered to Wisconsin users is listed in the 1953–54 film catalog and supplements. The new listings include about 2,400 titles and 8,300 copies of films, all of which have passed exacting tests for authenticity and for educational use. Wisconsin's film library includes both silent and sound films, the larger number by far being sound films.

Among the services now offered by the bureau are: (1) A curriculum advisory course-of-study film service for interested persons who submit their needs to the bureau. Workers at the bureau recommend films which supplement or illustrate the work being accomplished in the school, club, or community group. In every case, the ultimate user has complete freedom in accepting or rejecting recommendations. (2) Professional assistance in organizing, surveying, and improving audio-visual programs of instruction in Wisconsin schools. Services of a staff of six educators are available on request. (3) Assistance in setting up community film forum-discussion groups or other community programs involving film utilization. (4) Bibliographical service including film lists on health, physiology, nursing, chemistry, physics, nature study, birds, gardening, social studies, P.T.A. programs, American nations, sports, music, documentaries, rural living, home economics, and handicraft. (5) Leadership in organizing off-campus teacher training courses in audio-visual education. Through cooperative planning by school administrators, supervisors and members of the bureau staff, classes in audio-visual methods are offered during the school year in local communities requesting in-service instruction leadership. These classes are for teachers and are organized around a philosophy which explains what audio-visual education can do and then leads teachers toward actually trying out utilization procedures in their going classroom situations. (6) A film catalog, which includes use suggestions, a film description section, a cross reference, subject index, all facilitating the selection of films within special fields of interest. (7) A film production unit which produces documentary film in 16mm. sound and motion. These films attempt to describe socially useful university research findings and services which are of use to wide numbers of Wisconsin citizens.

PHOTOGRAPHIC LABORATORY

FREEMAN HARDING BROWN, *B.S.*, DIRECTOR

The Photographic Laboratory is the central laboratory for the University. A staff of experienced workers is employed. The laboratory specializes in the production of photographic aids to teaching and research. All negatives are accessioned and filed so as to be readily accessible to the departments owning them. Close touch is maintained with developments in photographic practice for the benefit of those who wish assistance in doing their own photographic work, as well as for the benefit of the patrons of the laboratory.

BUREAU OF COMMUNITY DEVELOPMENT

R. J. COLBERT, *Ph.D.*, DIRECTOR

The objectives of the bureau are: (1) To further a better understanding of the social and economic resources of Wisconsin; (2) to make readily available to the people of the State the University's knowledge, experience, and researches in handling social and economic problems; (3) to collect and organize material relating to community development; (4) to assist local communities in meeting social and economic adjustments.

THE SERVICES OF THE BUREAU ARE MADE AVAILABLE ONLY ON REQUEST, and include: (1) Supplying community leaders and groups with information, counsel, and assistance on matters relating to community development—in co-operation with other divisions and departments of the University and with such other state agencies and private organizations as may be concerned. (2) Assisting in conducting basic economic studies, trade area surveys, and regional resource studies, in co-operation with the School of Commerce and other university departments. (3) Collecting, organizing, and publishing information relative to the social and economic resources of the State, and other information helpful to community development. (4) Conducting community, regional, and state-wide institutes, seminars, and short courses for business, industrial, and civic leaders—in close cooperation with groups requesting such educational and training programs.

BUREAU OF BUSINESS INFORMATION

HENRY ROWLAND ENGLISH, *M.A.*, CHIEF

Through the Bureau of Business Information, businessmen of Wisconsin, as well as students in Extension classes and correspondence-study courses, may, without charge, obtain answers to inquiries on subjects related to their work. When an inquiry cannot be satisfactorily anwered by letter, the bureau prepares a package of books and materials from its reference library and lends it to the inquirer.

Selected lists of recommended books on specific phases of business are supplied upon request.

The bureau does not undertake statistical research. Requests for such service should be made to the Bureau of Business Research and Service, School of Commerce.

BUREAU OF INDUSTRIAL PSYCHOLOGY

CHARLES S. BRIDGMAN, *Ph.D.*, DIRECTOR

The primary function of the Bureau of Industrial Psychology is the performance of co-operative research with industrial concerns on psychological problems in the fields of personnel management and work management. In particular, the bureau offers experimental and statistical techniques for research and development on the measurement of attitudes and morale, on selection and placement tests and test batteries, and on optimum working conditions and equipment design.

In addition, the bureau provides consultation and advice on problems of industrial psy-

chology, particularly in the exploratory phases of potential research problems, administers tests for certain public agencies, conducts educational institutes, distributes general information and reports of research on industrial psychology, and is active in the graduate training program in this area. The bureau also lends its resources to the educational programs of other university and Extension Division agencies.

SCHOOL FOR WORKERS

ROBERT OZANNE, *M.S.*, DIRECTOR

The University of Wisconsin School for Workers is the pioneer in the United States in an educational service of training workers in their trade-union relations with management, the government, and the public. This service began in 1925. The School's summer activity is a series of residence two-week institutes in Madison during an eight-week period in the summer months, plus a six-week Workers' Education Training Course. In the winter months an extension service of forums and of week-end institutes and a series of evening classes, each of which runs one night a week for eight weeks, are held in local industrial communities.

INSTITUTES

The institute program of the Extension Division enables Wisconsin men and women who have completed their formal education to keep abreast of new developments in their fields.

Staffed by university subject-matter specialists and outside lecturers who are recognized as outstanding in their particular fields, these institutes provide an opportunity for vocational and professional groups to meet and exchange ideas. They also provide a channel by which the University can focus its unique educational resources on current issues and problems facing Wisconsin citizens and disseminate the fruits of its research.

The need and demand for continuing education is demonstrated in the rapid rise in institute enrollment. In 1948–49 Extension institute attendance was 6,676. In 1951–52 more than 20,000 persons attended 191 institutes, conducted both on and off the campus.

INDUSTRIAL MANAGEMENT INSTITUTE

RICHARD E. SULLIVAN, *M.B.A.*, ACTING DIRECTOR

The Industrial Management Institute offers approximately 115 institutes, conferences, and seminars for business and industry during the school year. In addition, an executive leadership course is offered during the summer.

A. The Executive Seminar and the Executive Leadership Course are designed for top level industrial executives.

B. Conferences are designed for men in staff positions or serving as department heads.

C. Special institutes cover technical subjects for administrative and executive management.

D. Supervisory institutes are designed primarily for first line supervision.

In addition to the specific institutes and conferences, the Industrial Management Institute also cooperates with various communities throughout the State in providing one-day conferences and specialized work in the supervisory area.

The objectives of the Institute are as follows:

(1) To promote cooperation and exchange of information between companies resulting in mutual benefit through more efficient management.

(2) To develop a better understanding of our industrial system and its needs.

(3) To train executive staff, and supervisory personnel to recognize more clearly and carry out more effectively their duties and responsibilities.

(4) To develop in management personnel the best qualities of leadership and most effective techniques of handling people.

(5) To keep enrollees informed on the newest developments in management techniques both in practice and research.

(6) To train management people to become better conference leaders by utilizing these people as discussion leaders for many of the institute programs.

A bulletin describing the complete scope of the program is available upon request.

ENGINEERING INSTITUTES

PAUL J. GROGAN, *M.S.*, CHAIRMAN

These conferences or short courses have been conducted for the past several years in cooperation with the College of Engineering. Valuable cooperation is also generally available from interested persons and agencies in business, education, industry, the government, the technical societies, and the trade associations.

The general objectives underlying this activitiy may be stated as follows:

1. To serve as an instrument of adult education for engineering and technical personnel who desire to keep abreast of late developments in their field.

2. To present a summary of sufficient fundamental information on the subject of the institute to help in recalling to mind long-forgotten training.

3. To bring together representatives of various companies in a given industry and to promote cooperation among them to the mutual benefit of all.

4. To provide an opportunity for an exchange of information drawn from the successful day-to-day operating experiences of the various persons attending.

5. To present information about the latest developments in each institute subject stemming from practical, theoretical, and research origins.

6. To provide an answer for every problem which is presented for discussion, whether it come as a result of the discussion or as the result of separate research.

7. To equip those in attendance with conference techniques which will be useful to them when communicating new information to their fellowmen.

The programs cover the general areas of engineering. From two to five days are required for the presentation of each subject. Institutes are planned upon the basis of several considerations. They are:

1. Courses which have been asked for by the greatest number of people requesting such services.

2. Courses which have obtained the greatest acceptance in the past.

3. Courses which have come to the forefront as a result of the ever-changing economic, industrial, and technological patterns.

The usual attendance at the institutes consists of representatives from large and small industries, from private professional practice and business enterprise, and from the state, county, and municipal government services.

OFFICE OF THE MUSIC SPECIALIST

EMMETT R. SARIG, *M.M.*, MUSIC SPECIALIST

This office helps develop music activities in local schools, rural and urban communities, and regional areas to stimulate greater interest in music among youth and adults and to aid in the esthetic and cultural growth of the State.

In cooperation with the School of Music it organizes and conducts music clinics, both on and off the campus, for outstanding young musicians in the State, workshops and conferences for music educators, festivals, and contests. It provides assistance on music curriculum in the school systems and assists in the organization of local and regional music ensembles.

BUREAU OF ECONOMICS AND SOCIOLOGY

The Bureau of Economics and Sociology was established in the late '20's as the service bureau of the Department of Economics and Sociology, and except for two years immediately after World War II has served continuously since its founding. It offers institutes and short courses for pastors of Wisconsin and short courses and lecture series on the problems of alcoholism to interested Wisconsin groups. On request it renders assistance on special problems lying within the fields of economics and sociology. It also serves in a consultative and advisory capacity on matters pertaining to its areas of specialization.

BUREAU OF GOVERNMENT

JAMES R. DONOGHUE, *Ph.D.*, DIRECTOR

The Bureau of Government was established in 1948 as the service arm of the Extension Department of Political Science. For state and local government officials it makes available technical information and skills that will enable them to serve their communities effectively. The bureau offers institutes and short courses for officials and carries on a program of research in Wisconsin governmental problems. From time to time, the bureau has provided assistance on special problems on request. A small library on current materials in public administration is maintained. For adult citizens the bureau presents short courses, institutes, and conferences on current political and governmental issues, especially in the field of United States foreign policy. It prepares study aids and materials designed for the citizen who wishes to keep abreast of events in these difficult times.

FIELD ORGANIZATION

CHESTER ALLEN, DIRECTOR

The University Extension Field Organization staff is composed of field representatives located in various cities of the State. These representatives explain University Extension service directly and personally to the people.

Field organization is a counseling and guidance service which assists the student in selecting a suitable home-study program.

Field organization representatives maintain a constant personal contact between the people of the State and the University at Madison. They interpret the services available from the University in terms of local needs. They are particularly well informed about correspondence-study courses, local classes by university professors either for degree or noncredit purposes, package libraries, and debate materials, lectures, and short courses, motion-picture films and where to secure authoritative information on problems of business, economics and sociology. They are also trained in the technique of organizing educational services for adult interests in local communities. The university field representatives are available without cost to community groups to assist in organizing such local adult education programs.

THE GRADUATE SCHOOL

C. A. Elvehjem, Dean
J. Homer Herriott, Associate Dean
W. J. Brogden, Associate Dean

ORGANIZATION AND PURPOSES

Graduate work at the University of Wisconsin began informally about 1880. By 1904 the departments offering graduate work and the students enrolled at the graduate level had so increased that the University formally established the Graduate School, and in the ensuing years it has grown steadily. Its purpose is to offer advanced instruction and opportunities for research to as many qualified students as possible, and to provide leadership in the advancement of human knowledge. In all departments of the Graduate School special attention is given to introducing the graduate student to the research problems of his field. To this end able students share in the investigations of their professors and are encouraged to acquire the spirit as well as the methods of productive work.

The Graduate School is made up of the departments which offer graduate instruction leading to advanced degrees, and its faculty is composed of the members of these departments who have professorial rank and instruct at the graduate level. The work of the Graduate School is under the general direction of the Graduate Faculty. The Dean of the Graduate School is responsible for the administration of the regulations and requirements pertaining to admission, conduct of work, and the granting of advanced degrees. These regulations and requirements are the minimum for the Graduate School as a whole and must be fulfilled by all students and all departments. Individual divisions and departments, however, may have additional regulations or requirements beyond the minimum established for the Graduate School. To obtain complete information on all of them that pertain to a given program, the student should consult the general section of this bulletin, the announcement of the department or departments concerned, and also the announcement of the graduate division of which this department is a member.

Some of the departments which offer graduate instruction are grouped in divisions according to subject matter. The purposes of these divisions are (1) to regulate, within bounds fixed by the Graduate School, graduate instruction and procedure in related fields, (2) to discuss matters of common interest, and (3) to promote scholarship and research through the cooperation of the several departments. These divisions are as follows: the Biological Division, the Division of Language and Literature, the Division of Mathematical and Physical Sciences, the Division of Social Sciences. A Division of Statistics is made up of members of the Graduate Faculty who offer graduate courses in statistics. It was organized for the purpose of (1) offering a broader selection of courses to graduate students, (2) providing the opportunity for a thorough mathematical background suitable for an appreciation of the assumption and limitation of methods adapted to subject-matter fields, (3) supervising a minor field for the degree of Doctor of Philosophy wherein the courses may be chosen from several fields.

ADMISSION

Admission to the Graduate School is based primarily on the applicant's undergraduate record. The applicant should write to the Dean of the Graduate School for a form on which to make his application. Transmission of this form and official transcripts of all undergraduate and graduate work to the Dean of the Graduate School normally completes an application for admission. *An official transcript from each school attended is necessary.* All credentials should be in the Graduate School Office at least six weeks before the registration

date for the semester (or summer session) which the applicant plans to attend. Evaluation of credentials is made in terms of undergraduate preparation at the University of Wisconsin or its equivalent. Correspondence and extension work may be accepted for credit for admission only if taken at the University of Wisconsin or at the institution from which the applicant was graduated. When this evaluation has been made, the applicant will be notified of his eligibility for admission to the Graduate School. If he is eligible, he will be sent a permit to register, which will state the conditions under which he may enter. Transcripts of applicants who are admitted to the Graduate School become a permanent part of the university files and may not be returned. The requirements and conditions of admission to the Graduate School are as follows:

Admission With Full Graduate Standing. (1) A bachelor's degree from the University of Wisconsin or other approved institution, (2) an undergraduate major, or its equivalent, in the field of proposed graduate study, (3) 70 semester hours of academic work outside of the undergraduate major with appropriate subject-matter distribution, (4) an undergraduate grade-point average of 1.75 (upon a basis of 3.00) or higher.

Admission With Deficiencies. If the applicant meets requirements (1) and (4) above, he may be considered for admission with deficiencies. The minimum requirement for admission with deficiencies in the applicant's proposed major field is as follows: the applicant shall normally have completed at least twelve semester hours of academic work in the field of proposed graduate study; in special cases an applicant will be accepted who has completed at least twelve semester hours of academic work in related fields approved by the department concerned. There is no minimum requirement for admission with deficiencies in (3) above. Each case will be considered individually. Students admitted with deficiencies must make up their deficiencies during the first semester (or summer session) of registration and shall be required to spend more time in residence than that normally required for the degree sought.

Admission on Probation. In exceptional cases students whose records show an undergraduate grade-point average slightly below 1.75 but who meet all other requirements for admission with full graduate standing may be admitted on probation providing other substantial evidence of scholastic aptitude is presented. Students whose records fall within this category should present all possible evidence to support the prediction that they are able to do satisfactory graduate work. A record of attainment in the Graduate Record Examination prepared and administered by the Educational Testing Service is considered particularly valuable in these cases. Applicants for admission to the Graduate School who wish to take this examination should apply directly to the Educational Testing Service, P. O. Box 592, Princeton, N. J., where full information may be secured and convenient arrangements made for taking the test. There is a fee of $12.00. To be permitted to continue in the Graduate School, a student who is admitted on probation must carry a full graduate program (9 to 12 credits) and must make grades of *B* or better in all courses.

Foreign Students. Before registering for the first time at the University of Wisconsin, every foreign student whose native tongue is not English is required to take the English Language Test for Foreign Students on the basis of which additional work in English may be required. Students should report to the Graduate School Office, 150 Bascom Hall, immediately upon arrival in Madison, for assignment to the examination.

Admission of Students Enrolled in Professional Colleges. Graduates of the University of Wisconsin or other approved institutions who are regularly enrolled in the professional colleges of the University and who meet all requirements for admission with full standing may enroll concurrently in the Graduate School. Upon the completion of an approved course of study they will be admitted to examination for the master's degree.

Admission of Seniors in the University of Wisconsin. Seniors in the University of Wisconsin who are within 6 credits of graduation who have earned an over-all grade-point average of 2.00 or better and who can otherwise meet all requirements of the Graduate

School for admission with full standing may be admitted on application. The student may enroll for one semester only under these conditions and may carry up to 6 credits of graduate work for which he may receive a maximum of two-thirds of one semester's residence credit. His entire program is subject to the regulations and requirements of the Graduate School. He will receive graduate credit only if he completes the requirements for the bachelor's degree at the end of the semester during which he is so enrolled.

ADMISSION OF MEMBERS OF THE FACULTY. Members of the faculty of the University of Wisconsin above the rank of instructor may not take a degree in course at the University of Wisconsin. This rule does not apply to members of the faculties of the Agricultural Extension Service and the University Extension Division working for the master's degree.

REGISTRATION

The permit issued to a successful applicant indicates the period for first registration in the Graduate School. If the permit is not used in that period the student must have it revalidated before he may register. Such revalidation of permits must be requested at least six weeks before the registration day of the semester (or summer session) in which the student wishes to start his graduate work. Registration for new students in a given semester (or summer session) is guaranteed only if the permit has been issued for that particular semester or summer session. Re-entering graduate students (not enrolled in either semester of previous academic year) are required to notify the Graduate School Office of their intention six weeks in advance so that materials will be available at registration time.

The normal program for a semester is from nine to twelve credits. In the summer session 5 to 6 credits is a full graduate program; in exceptional cases, the major professor may permit the student to carry a maximum of 8 credits. Although students may carry less than the normal program they are not permitted to enroll for credits in excess of twelve in the semester. The courses which carry graduate credit are those bearing numbers in the 100– and 200– groups. Graduate credit is given only for those courses in which the student receives a grade of *B* or better. When the work of a graduate student falls below *B*, a representative of the major department will be consulted; and after such consultation, the Dean of the Graduate School will determine whether the student may continue his graduate studies in the University. One semester of residence credit toward advanced degrees is allowed for each semester in which the candidate successfully completes a normal program; one half semester's residence credit is allowed for successful completion of the normal program of the summer session. Students are expected to carry a normal program except when they are employed in part or in full by the University or other agencies. In the cases of employed students, the programs which may be carried and the residence credit which may be allowed are limited. Students in this category should consult the Dean of the Graduate School for a ruling on program and residence credit.

At the time of matriculation the student will go to his major department and select, or be assigned to, a major professor. The major professor advises the student on his program of courses, directs the student's research and thesis work, and provides the student with a channel of communication to the major and other departments and the administrative organization of the Graduate School. The major professor must approve the student's program before registration may be completed. Any change in this program must have the approval of the major professor. The major professor directs the thesis research, signs the thesis, and serves as chairman of the committee which administers the comprehensive examination of candidates for the master's degree. For the doctoral candidate, the major professor directs the selection of courses and the research program; he serves as chairman of the thesis reading committee and of the committees which administer the preliminary and final examinations. It is primarily from the major professor that the student receives individual counsel, guidance, and instruction in the spirit and practice of scholarly research which characterize graduate training.

SUMMER SESSION. The large number of graduate courses and the ample provision for investigation afforded by the laboratories and libraries at Madison, make the eight-week

period profitable for serious work. High-school instructors who desire to test their qualifications for graduate work, and ultimately for college teaching, have a unique opportunity at this time. Students who desire to carry on special investigative work not specifically provided for in the announced courses, are invited to correspond with the professor whose aid and supervision they desire. Every assistance will be extended to them.

The courses which carry graduate credit are those bearing numbers in the 100– or 200– groups. The normal graduate load for the session is 5–6 credits.

The fee for the session is $60 for all students. There is no nonresident fee. A special bulletin on the Summer Session may be obtained from the Office of the Director of the Summer Session.

OFF-CAMPUS GRADUATE STUDY. The Graduate Faculty has authorized the teaching of courses off the Madison campus. Graduate credit obtained from such courses is applicable only to the master's degree. The establishment of this program extends the boundaries of the Graduate School beyond the limits of the Madison campus and provides an opportunity for advanced study to persons who are unable to complete on the Madison campus all the requirements for the master's degree. All off-campus instruction is given by members of the Graduate Faculty of the University of Wisconsin or by members of the faculties of other institutions who have been approved as graduate lecturers.

For most courses given off the Madison campus, the details of class organization, registration of students, collection of fees, and similar matters are administered by the University Extension Division in accordance with its regular procedures. At the present time courses have been authorized by which a student may earn credit toward a master's degree at Milwaukee and a number of other Extension Centers throughout the State.

Students interested in registering for off-campus courses should consult the Extension Division and the graduate department concerned. Admission to the Graduate School is not required for enrollment in off-campus graduate work. However, an official transcript of that work from the Extension Division must accompany other credentials when the student applies for admission to the Graduate School. Once the student has been on the campus in Madison for a period of registration and has done satisfactory work, the off-campus credits will be recorded on his official record card. Students who are fully employed may register for only one off-campus course in any given semester.

MILWAUKEE CENTER. A maximum of one semester of residence credit (18 weeks) will be granted on completion of 12 credits of graduate work. If less than 12 credits are earned, residence credit of 3 weeks for each 2 or 3 credit course is allowed. Residence credit of 2 weeks will be allowed if a single off-campus course is taken.

OTHER CENTERS. One-half semester of residence (9 weeks or the equivalent of a summer session) will be granted on completion of 6–9 credits (3 courses) of graduate work. Residence credit of 2 weeks will be allowed if a single off-campus course is taken.

THE MASTER'S DEGREE

The University of Wisconsin confers the degrees of Master of Arts, Master of Science, Master of Business Administration, and Master of Music. The particular degree conferred will depend upon the undergraduate preparation of the candidate. In order to qualify for the Master of Arts degree, a candidate must have the equivalent of the foreign-language requirement for a Bachelor of Arts degree at the University of Wisconsin. This consists of a minimum of 24 semester hours in one foreign language, 28 in two languages, or 30 in three. High-school work will be credited at the rate of four semester hours for each high-school unit.

The following requirements for the master's degree apply to all candidates and are the minimum requirements. Additional requirements may be found in the announcements of the divisions and individual departments.

RESIDENCE. The candidate must offer a minimum of two semesters of residence credit of

which at least one semester must have been earned at the University of Wisconsin. In order to obtain full residence for any semester, the candidate must complete satisfactorily at least nine credits of work on the graduate level. Complete summer sessions, semesters, or quarters of graduate work may be transferred from another approved institution and established as residence credit for a master's degree at the University of Wisconsin. Such transfer of residence credit from another institution will be based upon an evaluation of the official transcript and made only after the student has completed a semester (or summer session) of satisfactory work at the University of Wisconsin. In no case may more than one semester of residence be transferred from another institution. In some departments all the work for the master's degree must be done in residence at the University of Wisconsin.

COURSE CREDIT. The candidate must earn a minimum of 18 credits of course work, equally distributed over two semesters (or proportionate course work in summer sessions), in order to satisfy the residence requirement. Most departments require more course credits than the minimum.

COMPREHENSIVE EXAMINATION. The candidate must pass a comprehensive examination on the graduate work offered in support of his candidacy. At the option of the department concerned, the examination may be oral, written, or both. Eligibility for admission to the examination is determined by the Graduate School Office and the warrant will be issued if the student's record is clear of incompletes and his current program indicates that he will satisfy the residence requirement by completing the work of the semester. If a thesis is a part of the requirement for the master's degree, it must be completed before the examination is given. The time of this examination will be determined and the examining committee appointed by the Dean of the Graduate School.

THESIS. At the option of the major department a candidate for the master's degree may be required to prepare a thesis. The thesis offered in partial fulfillment of the requirements for a master's degree must be typewritten and bound according to specifications provided by the Librarian of the University and must be approved by the major professor under whose guidance it has been produced. It shall be deposited in the University Library the Friday before Commencement. A candidate for a degree at the close of the first semester or a summer session must file the thesis on or before the last day of the session.

TIME LIMIT ON WORK TOWARD A MASTER'S DEGREE. A candidate for a master's degree who does no graduate work for a period of five or more consecutive years will be required to start the work again.

THE DEGREE OF DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy is the highest degree in course conferred by the University. It is a research degree and is never conferred solely as a result of study, no matter how faithful, extending over any prescribed period. It represents more than merely the sum of semesters in residence and of credits for courses taken. The amount of residence and the plans of study listed below as minimum are secondary. The degree is granted solely upon evidence of general proficiency and of distinctive attainment in a special field, and particularly upon a recognized ability for independent investigation as demonstrated in a thesis based upon original research or creative scholarship and presented with a high degree of literary skill.

The following requirements for the degree, Doctor of Philosophy, apply to all candidates and are the minimum requirements. Additional requirements may be found in the announcements of the divisions and the individual departments.

RESIDENCE. The candidate must offer minimum residence credit of three academic years, at least three semesters of which must have been earned at the University of Wisconsin. In order to obtain full residence credit for any semester, the candidate must complete satisfactorily at least 9 credits of work on the graduate level. The transfer of residence credit

from other approved institutions will be considered after the student has been in residence at the University of Wisconsin for at least one semester. The residence requirement for the degree of Doctor of Philosophy may not be satisfied by summer session attendance only. A candidate must spend at least one continuous year in residence to assure continuity in his research work. This requirement is normally met by completion of a full graduate program during each semester of a single academic year.

A student may be granted leave from the University to carry out special investigation in the field or to take advantage of opportunities for research in a special subject not to be found at the University of Wisconsin. Residence credit is granted for such leave of absence only in special cases and under definite limitations. Students who wish leave of absence which carries residence credit should consult the Dean of the Graduate School.

MAJOR AND MINOR FIELDS OF STUDY. The degree of Doctor of Philosophy is never granted for miscellaneous studies. The course as a whole must be rationally unified, and all constituent parts must contribute to an organized program of study and research. Courses must be selected from groups embracing one principal subject of concentration called the major and from one or two related fields called the minor. The major field is normally co-extensive with the work of a single department or with one of the subjects under which certain departmental plans of courses have been formally arranged. A major will be permitted to extend beyond the above limits only with the prior approval of the Dean of the Graduate School.

Supplementary to his major study a candidate is required to take a minimum of either ten or twelve credits in graduate courses in another field. These courses must be selected according to a coherent plan under Option A or Option B as follows: *Option A,* a minimum of ten credits in courses within a single department, or a minimum of twelve credits divided between two departments, the courses to be prescribed by the department or departments concerned; *Option B,* a minimum of twelve credits in more than one department, in courses stipulated by a special committee of three or more members including the major professor. The Dean of the Graduate School will appoint the committee. Before the courses are taken the chairman of the committee will inform the Graduate School Office of the courses selected and of the method to be followed in testing the candidate. Each candidate must pass tests set up, in the case of Option A, by the department or departments; in the case of Option B, by the committee.

LANGUAGES. A reading knowledge of two foreign languages in which there is substantial scholarly literature in the student's major field is required of all candidates. One of these languages must be French or German. The student must obtain approval of his choice of languages from his major professor, the chairman of his major department, and the Dean of the Graduate School not later than the third semester of graduate work.

The Graduate School Office will supply a card to the student on which he will indicate his choice of the two foreign languages in which he will demonstrate a reading proficiency. The major professor and the chairman of the major department shall certify by their signatures on the card that in the student's field of study and research there is a substantial body of scholarly literature in the foreign language chosen. The signature of the Dean of the Graduate School will constitute final approval for the two languages shown on the card.

Certification of reading proficiency in these languages must be obtained from the appropriate language departments of the University of Wisconsin upon passage of an examination. Students should pass the foreign-language examinations and file the certificates with the Dean of the Graduate School as soon as possible after admission to the Graduate School. These certificates must be filed with the Dean of the Graduate School before the student may be admitted to the preliminary examination. Certificates of reading proficiency in foreign languages from other schools are not acceptable.

ADMISSION TO CANDIDACY. An applicant will be admitted to candidacy for the degree of Doctor of Philosophy when he has (a) passed the comprehensive preliminary examination in the major field, (b) obtained approval of the scope of the proposed minor from the professor in charge, and (c) presented the title or special field of the proposed thesis, approved by the

major professor. A blank form to be filled out with the information above will be supplied by the Graduate School Office to students who have satisfied the foreign-language reading proficiency and whose records are cleared of incomplete grades. When this form is appropriately completed and filed with the Dean of the Graduate School, it constitutes a formal application for admission to candidacy for the degree of Doctor of Philosophy. The applicant will be admitted to candidacy when his application has been approved by the Administrative Committee. If a candidate for the degree of Doctor of Philosophy fails to take the final oral examination within five years after passing the preliminary examination, he will be required to take another preliminary examination and be admitted to candidacy a second time.

THESIS. At any time after admission to candidacy, and at least thirty days prior to the final examination, the candidate must submit to the Dean of the Graduate School for approval of mechanical form and execution, two typewritten copies of his completed thesis—one original and one duplicate copy. The thesis must be the candidate's own work. It may be the result of research enterprises in which others have collaborated, but in such cases the candidate will be required to present in his own style a substantial portion which represents his own contribution. The dean will furnish an official title page for the thesis and appoint a committee of three, consisting of the major professor and two other members of the Graduate Faculty, to pass on its substantial merit. Their report, if favorable, will be endorsed on the official title page. If the thesis is approved, both copies will be filed in the University Library by the Friday before Commencement. A candidate for a degree at the close of the first semester or a summer session must file the thesis on or before the last day of the session.

The University publishes summaries of the theses of successful candidates for the degree of Doctor of Philosophy. The Editorial Board of the Graduate School examines these summaries and, if necessary, makes editorial changes and suggestions covering such matters as grammar, punctuation, paragraphing, clarity, and completeness of statement, arrangement of the material, and general effectiveness of presentation. Detailed information concerning the formal requirements for the summary will be sent to each candidate. Each successful candidate will pay a fee of $15.00 for the publication of the summary of his thesis. This fund will be used in the publication of a volume of summaries of theses, and a copy of the volume will be sent to each person whose summary is included.

FINAL ORAL EXAMINATION. Every candidate for the doctor's degree is subject to an oral examination on the thesis and the general field of the major and the minor studies; but the preliminary examination may be construed as final for certain aspects of these fields, if the professors in charge of the candidate's work are satisfied with his preparation.

The candidate may not take the final examination until all requirements for the degree have been satisfied and there has been a lapse of one academic year or its equivalent from the time of the preliminary examination. The student's record must be cleared of incomplete grades. The Dean of the Graduate School will appoint for each candidate an examining committee of five or more members of the Graduate Faculty, with the major professor as chairman. The time and place of the examination will be arranged by the major professor. When the candidate passes this examination, the fact will be recorded on the warrant provided.

LOANS AND SCHOLARSHIPS

(See page 16)

FEES AND EXPENSES

(See page 13)

FELLOWSHIPS—SCHOLARSHIPS—ASSISTANTSHIPS

For the promotion of scholarship and research the Regents of the University have authorized various fellowships and scholarships in the Graduate School. Many of these are on a permanent basis while others, particularly industrial fellowships, are established for only a limited time. All fellowships and scholarships will be filled each year except where special funds supporting them do not permit. Men and women are equally eligible except where the donor has decreed otherwise.

For detailed information write to the Dean of the Graduate School.

LOAN FUNDS

The University has available some loan funds for graduate students. These loans are of an emergency character and are restricted in amount and duration.. Further information may be obtained at the Student Loan Office, Administration Building.

A more detailed bulletin of the Graduate School may be obtained by writing to the Dean of the Graduate School.

SUMMER SESSION

JOHN GUY FOWLKES, DIRECTOR

The Summer Session, instituted over fifty years ago as a period of study and review for teachers, has become an integral part of the university year, with nearly all departments represented. The courses range through all grades of undergraduate work to the most advanced graduate instruction and investigation. The work for teachers and for graduate students receives major emphasis, but many undergraduate students of this and other colleges now avail themselves of the opportunity thus presented to shorten the period of their college residence or to make up deficiencies in either preparation or course requirements. They have the advantage in summer of being free from many of the distractions which obtain during the semester. At the same time there is no lack of social life and wholesale recreation during the summer.

Courses, both academic and professional, are offered for graduates and for undergraduates in letters and science, commerce, education, engineering, home economics, pharmacy, law and agriculture, for teachers in colleges, agricultural schools, high schools, and technical schools, and for special students, as lawyers, doctors, chemists, writers, social workers, farmers, and practicing engineers. Virtually all the courses carry full academic credit. All the library, laboratory, and other facilities of the University are available during the summer, and the opportunities for thesis and advanced investigative work are particularly favorable at this time. A special bulletin describing the various courses is issued annually, copies of which may be obtained upon application to the Director of the Summer Session.

UNDERGRADUATES. The admission requirements for a student who desires credit toward a degree at Wisconsin are the same for the summer session as for the other sessions at the University; these are described in detail beginning with page 7. A student who desires to graduate from the University and who comes with advanced standing from a normal school or from another college or university, should submit a complete official record of his preparatory work and college credits to the Office of Admissions, 166 Bascom Hall.

A student in the eight-week session who wishes to secure credit toward graduation at some other institution and who is not a candidate for a degree at Wisconsin, need not comply with the entrance requirements but may register upon presentation of a satisfactory statement of status and aims. Forms for such statements are provided by the Summer Session office. Upon registration by this method, a student may enroll in any course or courses, which, in the estimation of the instructor in charge, he is able to carry to advantage. Upon satisfactory completion of such work, application may be made to the Registrar for a transcript of credits, stating the number of hours, work carried, and the grades earned. Credit toward graduation at this University, however, will be given only after complete matriculation by one of the regular methods.

GRADUATES. A general statement of the work in the Graduate School may be found on page 547 of this catalog. The Graduate School also publishes special bulletins containing detailed information.

Special eight-week courses are provided to enable students to earn a half semester of residence credit in a summer session.

CREDITS. The maximum number of credits which may be earned toward a degree at Wisconsin is eight for the eight-week session. However, upon request, programs of nine or ten credits are authorized for purposes of transfer and for promotional credit in school systems. In the Graduate School, credit is by period of residence only, an eight-week session yielding one half of a semester of residence credit toward a higher degree.

Each student not enrolled in the Graduate School will be required to carry at least six credits of work unless specifically exempted from this requirement by the Dean of the college concerned. Students enrolled in the Graduate School will arrange their programs with the Graduate Office.

SUMMER SESSION FEES

INCLUDING TUITION, INCIDENTAL, LABORATORY AND INFIRMARY FEES

The University reserves the right to alter any of these charges without notice.

	Undergraduate	Graduate
Eight-week	$60	$60
Ten-week Law Course	$80	$80

(There is no nonresident fee in the eight-week session or the Law session.)

Graduate students pursuing no courses but who are candidates for an oral examination during the session, may register after the third week of the session for a fee of $10, but may earn no credit.

REFUND OF FEES. Upon recommendation of the Registrar, the Cashier is authorized to make partial refund of fees to students withdrawing early from the Summer Session in accordance with a schedule published in the Summer Session bulletin.

OTHER EXPENSE. Other expenses for the eight-week session may be estimated from the following: room rent, $40–50; board, $90–$130; books and classroom materials, $10–$20; incidental expenses, including laundry, $20–$40; total, not including fees or traveling expenses, $160–240.

PHYSICAL EDUCATION

The aims of the Departments of Physical Education are (1) to promote the physical development of students by contributing to their health, organic vigor, and good physical habits; (2) to provide an incentive and an opportunity for every student to engage in some physical activity at least one hour daily as a balance to the sedentary demands of university life; (3) to provide opportunity for students to participate in and develop a reasonable degree of skill in a variety of leisure-time or carry-over activities both for immediate and later appreciation; (4) to offer opportunities for worth-while social contacts in the activities of the general program, and in intramural sports and contests; (5) to train physical educators, sports coaches, and play leaders; and (6) to promote a more effective organization of play and administration of physical education throughout the state of Wisconsin.

MEDICAL AND PHYSICAL EXAMINATIONS

The organic condition, state of physical development, and degree of motor efficiency of each freshman are determined at the opening of the college year by a series of examinations and tests made by the Department of Student Health and the Department of Physical Education. An endeavor is made to outline for each student a proper regimen of exercise, diet, rest, and work. Students are classified on an organic scale and are permitted to engage only in sports and games for which they are physically fitted. Candidates for all intramural teams and intercollegiate athletic squads must secure permission from the Departments of Student Health and Physical Education before reporting for participation.

All new students are held responsible for keeping the appointment for the medical examination given by the Department of Student Health at the beginning of each semester.

PHYSICAL EDUCATION REQUIREMENT - MEN

A. L. Masley, Director

All male freshmen are required to take two hours of physical education per week for two semesters during their first year of residence at the University. Students who fail to pass the basic swimming test will be required to take a third hour per week until this deficiency is removed.

Exemptions. The following students are exempt: 1) students who are certified as physically unfit by the Department of Student Health; 2) students who have served three (3) months or more in the armed forces; 3) students who at the time of registration have passed their twenty-first (21st) birthday; 4) transfer students with 25 credits; and 5) other exemptions at the discretion of the director.

NOTE: All freshman transfer students may apply toward the completion of their requirement here any physical education credit earned at another institution and accredited by this University.

Deferments. All applications for postponements must be made in advance to the director of required physical education. In addition to passing the swimming test, the satisfactory completion of the required course in physical education is determined on the basis of motor proficiency and physical fitness, and knowledge and skills in a balanced selection of recreational sports for leisure-time use.

Although the physical education requirement may be satisfied through participation in intercollegiate sports, it is necessary that students fill out a registration card for physical education at the time of the regular registration period.

COSTUME. A regular gym suit required of all students is a white T shirt, white pants with cardinal trim, supporter, sweat socks, rubber-soled tennis shoes, and a regulation towel. For outdoor classes a plain gray sweat shirt and gray sweat pants are recommended. The cost of the complete costume is approximately $9.00 to $12.00.

INTRAMURAL SPORTS. The opportunity for participation in a year-round sports program of varied activities is offered to all male students enrolled in the University. Intramural tournaments and contests are conducted and supervised under the management of the Division of Physical Education for Men.

The intramural program includes such sports as touch football, volleyball, bowling, basketball, water polo, badminton, softball, tennis, and golf, and are organized in three divisions, namely, the Fraternity League, the Men's Halls League, and the Independent League. Every male student with a satisfactory health grade may participate in at least one of these leagues. The Wisconsin aim is "sports for all."

INTERCOLLEGIATE ATHLETICS

GUY M. SUNDT, DIRECTOR

The University is a member of the Western Intercollegiate Conference Athletic Association and maintains representative teams in all intercollegiate sports. The requirements for membership on an intercollegiate team are as follows: one year's residence at the University, regular enrollment and a full program of studies in the college or school in which the student is enrolled; no disciplinary probation; no unsatisfied failure, condition, or incomplete.

Intercollegiate sports are under the government of the Athletic Board, a committee of seven members consisting of four faculty members, two representatives of the Alumni Association, and the president of the Student Athletic Board. The four faculty members of the Board are chosen by the president, in conjunction with the University Committee; the two alumni members are chosen by the president from a panel of six nominees presented by the Alumni Association. All appointments are subject to confirmation by the Board of Regents.

Baseball
Basketball
Boxing
Crew
Cross-country
Fencing
Football
Golf
Gymnastics
Swimming
Tennis
Track
Wrestling

WOMEN'S DEPARTMENT

MARIE L. CARNS, DIRECTOR

Freshman and sophomore women are required to take the equivalent of two hours of physical education per week for four semesters (i.e., for their first two years in the University). All transfer students who enter the University with less than 58 credits are required to take physical education until they attain junior standing and have satisfactorily completed all courses taken in the department. They may apply any physical education credit which has been transferred from another institution and accredited by this University toward the completion of their requirement here.

COURSE REQUIREMENT. The satisfactory completion of the required course in physical education is determined upon the basis of participation, motor proficiency, and knowledge of the principles of efficient body control and healthful living. Every woman who enters the University as a freshman is required to meet the following specific course requirements during her two years in the department: (1) participate for one semester (two seasons) in a class in the Fundamentals of Physical Education; (2) participate for one season in each of the following: a team sport, a dance activity, an individual or dual sport; (3) meet the swimming requirement by demonstrating her ability to swim or be at ease in deep water; otherwise she must elect swimming as her individual activity for one or two seasons depending upon her

ability to keep afloat in deep water; and (4) attain the prescribed grade in posture. After these requirements are met, a student may elect any activity offered by the department. Adjustments are made in the course requirement for students who enter the University with sophomore standing.

There are two registrations in physical education during the year, one at the beginning of each semester. Both registrations are held at Lathrop Hall.

Activities included in the three required groups from which students may elect are:

Team Sports	Dance	Individual and Dual
Basketball	Basic Dance Forms	Archery
Hockey	Group Dance	Badminton
Soccer	Introduction to Dance	Bowling
Softball		Canoeing
Volleyball		Diving
		Fencing
		Golf
		Life Saving
		Posture
		Swimming
		Tennis
		Water Safety

EXEMPTIONS. The following students are exempt: (a) women who are certified as physically unfit by the Department of Student Health, (b) women who have served three (3) months or more in the armed forces and present evidence of such service, and (c) women who at the time of registration have passed their twenty-first (21st) birthday.

POSTPONEMENTS. Self-supporting students and occasionally others for whom the requirement of physical education may cause a temporary hardship may be permitted to postpone the requirement. Permission to postpone the requirement will not be granted for more than one semester at a time and no work will be postponed into the senior year. All requests for postponements must be made in advance to the director of required physical education at 108 Lathrop Hall.

COSTUME. A specified costume for sports is required. Price about $4.50. A two-piece dance costume is required for Basic Dance Forms, Introduction to Dance, Fundamentals, and Posture. Price about $4.00. These costumes are to be purchased in Madison.

OPPORTUNITIES FOR RECREATIONAL PARTICIPATION. The Women's Athletic Association in cooperation with the Women's Department of Physical Education, offers a variety of intramural and club activities. This makes it possible for every woman to enjoy some form of exercise and competition within the range of her ability.

INTRAMURALS. Intramurals are open to any woman interested in playing in the different tournaments sponsored throughout the year. Dormitories, living houses, sororities, church, and independent groups enter teams in these tournaments.

CLUBS. There are two clubs, Dolphin and Orchesis, whose programs run throughout the year. Dolphin Clubs, both junior and senior, stimulate interest in swimming, diving, and water games. Orchesis, junior and senior clubs, offer opportunity for the study of dance beyond regular scheduled class work. Orchesis and Dolphin Clubs have a yearly demonstration or program.

Other clubs such as basketball and hockey clubs have seasonal programs. They promote sport days and interclass competition.

WISKITS. The Women's Athletic Association also sponsors Wiskits, the women's all-university competitive vaudeville show given each year around Thanksgiving time.

EQUIPMENT AND FACILITIES. Students participating in the recreational program are privileged to use all facilities of the department including sports equipment free of charge.

MILITARY SCIENCE

FACULTY

ROBERT J. MCBRIDE, *B.S.*, Colonel of Infantry, Commandant and Professor of Military Science and Tactics

HAROLDE T. LOFTIN, *LL.B.*, Lieutenant Colonel of Military Police Corps, Associate Professor of Military Science and Tactics

JACK C. JEFFREY, *B.S., M.S.*, Lieutenant Colonel, Corps of Engineers, Associate Professor of Military Science and Tactics

JOHN F. COOTE, *B.S., LL.D., L.L.M.*, Lieutenant Colonel of Transportation Corps, Associate Professor of Military Science and Tactics

HAROLD A. SMITH, *B.S.*, Lieutenant Colonel of Signal Corps, Associate Professor of Military Science and Tactics

EARL F. GILES, *B.S.*, Lieutenant Colonel of Transportation Corps, Associate Professor of Military Science and Tactics

JOHN H. SMITH, Major of Military Police Corps, Assistant Professor of Military Science and Tactics

LOUIS E. WOLFORD, *B.S., M.D.*, Major of Medical Corps, Assistant Professor of Military Science and Tactics

HAROLD HASFJORD, *B.S.*, Major, Corps of Engineers, Assistant Professor of Military Science and Tactics.

RICHARD E. BOZEMAN, *B.A.*, Major of Transportation Corps, Assistant Professor of Military Science and Tactics

ALFRED A. SANELLI, *B.A.*, Major of Military Police Corps, Assistant Professor of Military Science and Tactics

LLOYD L. GLESSNER, *B.A.*, Captain of Infantry, Assistant Professor of Military Science and Tactics

BERNARD J. MCKEARNEY, *B.S.*, Captain of Infantry, Assistant Professor of Military Science and Tactics

WILLIAM H. DUVALL, *B.S.*, Captain of Infantry, Assistant Professor of Military Science and Tactics

FURMAN ALLEN, *B.S.*, Captain of Signal Corps, Assistant Professor of Military Science and Tactics

MELVIN W. CROTTY, *B.S.*, Captain of Medical Service Corps, Assistant Professor of Military Science and Tactics

ELMER C. COX, *B.S.*, Captain, Corps of Engineers, Assistant Professor of Military Science and Tactics

RAYMOND A. CARLSON, First Lieutenant of Infantry, Instructor in Military Science and Tactics

WILLIAM D. WHITE, *B.A.*, First Lieutenant of Military Police Corps, Instructor in Military Science and Tactics

OLIVER H. KROSSA, Warrant Officer, USA, Adjutant, Military Science and Tactics

UNITS AND OBJECT OF INSTRUCTION

The Department of Military Science comprises Infantry, Corps of Engineers, Signal Corps, Military Police Corps, Transportation Corps, Medical Corps, and Medical Service Corps (Pharmacy) units of the Reserve Officers' Training Corps, organized under the National Defense Act of 1916. This course provides for a progressive course of military training consisting of two years basic and two years advanced study. The object of the training is to prepare students to perform the duties of commissioned officers, so that in time of national emer-

gency, educated men with a knowledge of military science will be available to help organize, train, and command the army units required to defend the United States. A selected number of highly qualified advanced course graduates are selected annually for appointment as Second Lieutenants in the Regular Army. Three hours of instruction per week are required in the basic course and five hours in the advanced course. A bulletin giving detailed information concerning the ROTC program is available upon request to the Military Department.

BASIC COURSE

Enrollment in the basic course is compulsory for all male freshman and sophomore students between the ages of 14 and 23 who are citizens of the United States, are physically qualified and have not completed at least three months' active service in any of the armed forces of the United States. Aliens and students who have completed at least three months' active service in any of the armed forces of the United States will be exempt from the basic course upon application to the Professor of Military Science and Tactics.

Students entering the University who have previously completed courses in junior or other senior units of the ROTC, in a school or college conducting military training under an officer of the army detailed as Professor of Military Science and Tactics, or at the United States Military Academy, may apply for advanced standing in the Department of Military Science and Tactics. Such application should be made to the Professor of Military Science and Tactics prior to or at the time of registration.

ADVANCED COURSE

Upon completion of the sophomore year of the basic course or one year's active service in any of the armed forces of the United States, a student may make application for the advanced course of Military Science. This application will be made to the President of the University, through the Professor of Military Science and Tactics. Applicants must not have reached 27 years of age at the time of initial enrollment in the advanced course, with the following exceptions: students accepted for formal enrollment in the advanced medical course must not have reached 31 years of age at time of initial enrollment in that course; and advanced course pharmacy students must not have reached 28 years of age at time of initial enrollment in that course. All applicants must pass a final type officers' physical examination, and successfully complete the general survey and screening tests prescribed by the Professor of Military Science and Tactics. Students selected for the advanced course are required to sign a written contract wherein they agree to complete the course, five hours a week, over a period of two years, and attend one summer camp of not more than six weeks' duration, and accept a commission in the ORC if tendered.

Upon the execution of this agreement, the Department of the Army furnishes to members of the advanced course, in addition to uniforms and equipment, commutation of subsistence at the rate of approximately $27.00 per month while they are enrolled in the course. Students enrolling in the advanced course must begin work in the course at least two years prior to normal completion of the student's academic course or graduate work.

Students are paid at the rate of $75.00 per month while attending the advanced course summer camp. Transportation, at a rate of five cents per mile to and from the camp, and all expenses at the camp are paid by the Federal Government.

Upon satisfactory completion of the advanced course, including the prescribed summer camp training, and satisfactory completion of the course of instruction pursued at the University during the period of enrollment in the advanced course, graduates are eligible for appointment by the President of the United States as members of the Officers' Reserve Corps, United States Army, in the grade of Second Lieutenant.

Students designated by the Professor of Military Science and Tactics as Distinguished Military Graduates are eligible for direct appointment as Second Lieutenants in the Regular Army.

UNIFORMS

Basic course students are issued a standard uniform, returnable at the end of each school year. Each advanced course student will be issued an officer-type uniform.

PERSONNEL AND EQUIPMENT

The instruction in the Department of Military Science is conducted by army officers and non-commissioned officers selected by the Department of the Army and approved by the University. Equipment and texts necessary to make the course both complete and practical, are provided by the Federal Government.

EXTRA-CURRICULAR ACTIVITIES

The department maintains representative teams in rifle and pistol shooting. Both teams receive training in marksmanship for approximately five months of the school year, and fire in both postal and shoulder-to-shoulder matches with the leading colleges and universities throughout the United States.

Advanced course members are eligible for membership in Scabbard and Blade, a national honorary military society which has 80 chapters at various universities throughout the United States. Company A, First Regiment, of this organization, was founded at this University in 1904.

Basic course students are eligible for membership in Pershing Rifles, also a national honorary military society organized throughout the United States. Company C, Second Regiment, of this organization, was organized at the University in 1936.

DEPARTMENTS OF INSTRUCTION

1. a. MILITARY SCIENCE I "Branch Immaterial." Yr; 0 cr. Individual weapons and marksmapship; military organization; first aid and hygiene; evolution of warfare; maps and aerial photographs; military policy of U. S.; National Defense Act and ROTC; military problems of the U. S.; leadership, drill and exercise of command.

b. MILITARY SCIENCE I. Yr; 0 cr. MEDICAL SERVICE (PHARMACY). Military policy of the U. S.; National Defense Act and ROTC; organization of the D/A and Air Force; courtesies and customs of the service; military obligation of citizenship; organization of the army and air force, medical service; military law; duties of the surgeon; mobilization; general military administration; military leadership; military hygiene and sanitation; map and aerial photograph reading. Credit is given for technical pharmaceutical instruction in regular curricula.

2. MILITARY SCIENCE II. Yr; 0 cr. At the end of the basic year, cadets are assigned to the branch of their choice, or the one for which they are best suited, e.g., civil engineer students to the Corps of Engineers, and electrical engineers to the Signal Corps.

a. INFANTRY. Organization of infantry units; weapons; scouting and patrolling; combat formations; tactics of a rifle squad; marksmanship, technique of rifle fire; leadership, drill and exercise of command.

b. CORPS OF ENGINEERS. History and traditions of the Corps of Engineers; characteristics of supporting weapons; individual and small unit tactics; hand tools and rigging; camouflage; chemical, bacteriological, and radiological warfare; explosives and demolitions; mines and booby traps; field fortifications; leadership, drill and exercise of command.

c. SIGNAL CORPS. Organization and mission of the Signal Corps; basic wire communication; basic radio theory; communication center procedure; organization and signal com-

munication practices of the infantry, armored and airborne divisions; leadership, drill and exercise of command.

d. MILITARY POLICE CORPS. Military courtesy and customs; MPC history, functions, and organizations; military law; mapping and sketching; weapons, communications; train and town patrolling; leadership, drill and exercise of command.

e. TRANSPORTATION CORPS. Introduction to Transportation Corps; economics of Transportation Corps; organization and operation RR ZI; military highway transport; convoy operations; tactics of individual soldier; leadership, drill and exercise of command.

f. MEDICAL SERVICE CORPS (PHARMACY). Military leadership; army and air force pharmaceutical service; medical aspects of chemical and biological warfare; map and aerial photograph reading; army and air force as a career; army and air force, medical service, ZI; organization and employment of medical service in a field army; first aid, bandaging and splinting. Credit is given for technical subjects in the regular curricula.

3. MILITARY SCIENCE III. Yr; 4 cr.

a. INFANTRY. Organization; weapons; gunnery; combat intelligence; field fortifications; communication; estimate of the situation and combat orders; tactics—platoon and co (rifle and heavy weapons co); leadership, drill and exercise of command.

b. CORPS OF ENGINEERS. Individual weapons and marksmanship; signal communications; water supply; engineer combat intelligence; organization of engineer units; organization of combat divisions; vehicle operation and maintenance; tactics of engineer units; bridges, rafts, and boats; military roads and runways; engineer supply; leadership, drill and exercise of command.

c. SIGNAL CORPS. Weapons and marksmanship; field wire communication fundamentals; communication security; signal orders; communication center procedure; field radio communication fundamentals; applied signal communication (division); signal supply and repair; tactics of the rifle squad; leadership, drill and exercise of command.

d. MILITARY POLICE CORPS. Principles of police administration; protection of vital installations; civil disturbances; criminal investigation; guardhouses, stockades, and hospital prison wards; town and train patrolling; army safety program; map reading; vehicles and troop movements; traffic control; weapons and marksmanship; small unit infantry tactics; leadership, drill and exercise of command.

e. TRANSPORTATION CORPS. Organization theater of war and TC staff sections; movements; military railway service; airlift planning and operations; port operations; stevedore operations; harborcraft operations; highway transport service operations; tactics of rifle squad; tactics of rifle platoons; weapons; leadership, drill and exercise of command.

f. MEDICAL SERVICE CORPS (PHARMACY). Military leadership; military preventive medicine; administration of hospitals; food service program; medical supply procedure and records; pharmaceutical aspects of medical supply; medical records and reports. Credit is given for technical pharmaceutical instruction in regular pharmacy curricula subjects.

g. MEDICAL CORPS. Army and air force graduate professional education program; army and air force as a career; military leadership, aviation medicine; military preventive medicine; military medical research development; bandaging and splinting; radiological defense; field medicine; field surgery. Credit is given for technical medical instruction in regular curricula.

4. MILITARY SCIENCE IV. Yr; 4 cr.

a. INFANTRY. Military teaching methods; organization; command and staff; supply and evacuation; psychological warfare; motors and transports; geographical foundations of national power; military administration; troop movements; new developments; communications; military team; military law and boards; tactics of infantry battalion in attack and defense; customs of the service; leadership, drill and exercise of command.

b. CORPS OF ENGINEERS. Military teaching methods; command and staff; river crossing operations; psychological warfare; geographical foundations of national power; military administration; construction, utilities, and job management; engineer support; military law; motor movements; military courtesy and customs of the service; leadership, drill and exercise of command.

c. SIGNAL CORPS. Military teaching methods; wire communication—materiel; psychological warfare; post signal operations; combat intelligence; geographical foundations of national power; military administration; radio communication—materiel; higher echelon signal communication; military law and boards; command and staff; leadership, drill and exercise of command.

d. MILITARY POLICE CORPS. Military teaching methods; the military team; division military police; organization and staff procedures; psychological warfare; prisoners of war; geographical foundations of national power; military administration; maps and aerial photographs; military government; combat intelligence; supply and evacuation; control of individuals in the field; military law and boards; the armed forces officer; guerilla warfare; leadership, drill and exercise of command.

e. TRANSPORTATION CORPS. Military teaching methods; logistics; supply and property; psychological warfare; command and staff; geographical foundations of national power; military administration; military railway service t/operations; highway regulation and traffic planning; movement control t/operations; special defensive operations; military law and boards; combat and TC intelligence; leadership, drill and exercise of command.

f. MEDICAL SERVICE CORPS (PHARMACY). Military leadership; technique of instructing; military preventive medicine; personnel management; radiological defense. Credit is given for technical pharmaceutical instruction in regular curricula.

g. MEDICAL CORPS. Military leadership; aviation medicine; military preventive medicine; military obligations of citizenship; field medicine; physical medicine in the army; military neuropsychiatry; technique of instructing. Credit is given for technical medical instruction in regular curricula.

NAVAL SCIENCE

FACULTY

N. W. Ellis, *B.S.*, Captain, USN, Professor of Naval Science
T. K. Lyford, *B.S.*, Major, USMC, Associate professor of Naval Science
C. O. Bloom, *M.S.*, Lieutenant, USNR, Assistant Professor of Naval Science
H. B. Thomas, *B.S.*, Lieutenant, USN, Assistant Professor of Naval Science
R. D. Rabe, *B.S.*, Lieutenant, USN, Assistant Professor of Naval Science
R. E. McCabe, *B.S.*, Lieutenant, USN, Assistant Professor of Naval Science

OBJECT AND SCOPE OF INSTRUCTION

The Department of Naval Science, established by agreement between the Regents of the University of Wisconsin and the U. S. Navy Department, functions as a unit of the Naval Reserve Officers' Training Corps under the authority of the Act of Congress of March 4, 1925, as amended. Similar units operate in fifty-one other leading colleges and universities. Its purpose is to provide instruction in naval subjects which, in conjunction with the student's other academic work, will qualify him for a regular or reserve commission in the U. S. Navy or U. S. Marine Corps.

Enrollment in the Naval Science course is limited to annual quotas set by the Navy Department.

Applicants must meet the physical requirements for a commission in the Navy, be unmarried, and be less than 25 years of age by July 1 of expected year of graduation.

Students in the Naval ROTC program may be in one of the following classifications:

Regular Students are selected annually by nation-wide competitive examination and selective interviewing. On graduation they are commissioned in the Regular Navy or Marine Corps and are obliged to serve on active duty as officers for three years.

Contract Students are selected on a competitive basis by the Professor of Naval Science from freshman applicants at the beginning of the fall semester. On graduation they are commissioned in the Naval or Marine Corps Reserve. Contract students are currently required to agree to accept a commission, if tendered, and to serve not less than two years on active duty after commissioning.

Naval Science Students receive the same instruction as the above except that they are under no contract or obligation to the Navy. They are in effect alternates for contract students, to fill vacancies in the unit that may occur from time to time.

Enlisted Veterans of any of the armed services who wish to qualify for a commission may apply for advanced standing as contract students. Normally the advanced standing that can be given is limited to two semesters.

DEPARTMENTS OF INSTRUCTION

The complete Naval Science course includes twenty-four semester hours of classroom instruction. Three credits are taken each semester. Two hours of laboratory instruction, of which approximately 25 per cent is infantry drill, is additional, as are the summer cruises.

A bachelor's degree is required for a commission. The several colleges of the University have ruled individually regarding the courses necessary to obtain an established degree in conjunction with the twenty-four credits in Naval Science, or to obtain the degree of Bachelor of Science (Naval Science).

11. Naval History. Sem; 3 cr. Influence of sea power upon global history; history of the United States Navy; elementary naval strategy and tactics.

12. Naval Orientation and Seamanship. Sem; 3 cr. Naval customs, regulations, and organization; warship construction and characteristics; elementary seamanship and ship-handling.

21. Ordnance and Fire Control. Sem; 3 cr. Ammunition components and gun assemblies; major and intermediate caliber gun installations; automatic weapons; torpedoes, mines and depth charges; rockets and nuclear explosives; control of gun fire against surface targets.

22. Fire Control and Applied Electronics. Sem; 3 cr. Antiaircraft gun fire control; director systems for control of gun fire; basic principles of sonar and radar and their application; combat information center; torpedo fire control; short bombardment; guided missiles.

31. Navigation. Sem; 3 cr. Elementary navigation; gyro and magnetic compasses; plane, mercator, and great circle sailings; piloting; nautical astronomy; theory and basic components of the celestial navigation problem.

*31M. Evolution of the Art of War. Sem; 3 cr. Survey of the evolution of weapons, strategy, tactics, and materiel; illustrates the classic principles of war by a study of selected battles and campaigns; summary of the development of U. S. military and foreign policy.

32. Advanced Navigation and Tactics. Sem; 3 cr. Advanced celestial navigation; loran navigation; radar navigation; simple tactics and problems in relative motion; advanced ship tactics; aircraft and task force tactics; combat information center; submarine and anti-submarine warfare; naval logistics.

*32M. Modern Basic Strategy and Tactics. Sem; 3 cr. Survey of modern tactical principles and techniques, using contemporary historical examples; develop a general understanding of strategy.

41. Naval Machinery. Sem; 3 cr. Marine engineering power plants; boiler, feed water and fuel oil systems; turbine propulsion systems; auxiliary systems, distillers, refrigeration systems, electrical plants; internal combution engines, systems and controls; aircraft engines.

*41M. Amphibious Warfare. Sem; 3 cr. History of amphibious warfare and its development; principles of amphibious warfare techniques; application of these principles in selected examples from modern history.

42. Ship Stability, Uniform Code of Military Justice and Leadership. Sem; 3 cr. Fundamentals of stability; effect of weights on stability; impaired stability and damage control; repair parties and repair of damage; court martial procedures; career planning; development of leadership.

*42M. Amphibious Warfare Part IV, Leadership and the Uniform Code of Military Justice. Sem; 3 cr. Basic psychology of leadership and development of a knowledge of leadership techniques; administration of the Uniform Code of Military Justice.

PAY AND ALLOWANCES

Regular Students receive retainer pay at the rate of $50.00 per month, and on summer

* Substituted for equivalent navy course by candidates for USMC or USMCR commission.

NROTC students are required to complete a sequence in mathematics through trigonometry, and (regulars only) a year of college physics, by the end of the second year. Political Science 121, Foundations of International Relations, is required if not in conflict with other curriculum requirements.

cruises, the pay prescribed by law for midshipmen. Tuition and all textbooks are paid for by the Navy.

CONTRACT STUDENTS receive money allowance for commuted rations (about $27.00 per month) during their junior and senior years. On summer cruises they are paid at the rate prescribed by law for enlisted men of the first pay grade, $78.00 per month.

NAVAL SCIENCE STUDENTS receive no pay or allowances.

UNIFORMS

Students are furnished, at government expense, a complete outfit of midshipman uniforms and insignia on entrance into the NROTC. The uniform is worn only to drill and laboratory periods, twice a week, and to designated functions.

SUMMER CRUISES

Summer training cruises are made in vessels of the Atlantic or Pacific fleets. *Regular students* are required to make three such cruises of six to eight weeks' duration. *Contract students* are required to make one cruise, normally of shorter duration and occurring between the junior and senior years. *Naval Science students* are not eligible to participate in cruises. Transportation to and from cruise embarkation points is defrayed by the Navy.

PERSONNEL AND EQUIPMENT

Instruction in the Department of Naval Science is conducted by officers of the Regular Navy and Marine Corps specially selected for that purpose. Naval equipment and texts for use in Naval Science courses are provided by the Navy Department.

AIR SCIENCE AND TACTICS

FACULTY

EDWIN P. ARCHIBALD, *B.S.*, Colonel, United States Air Force, Professor of Air Science and Tactics

JOHN M. FARGO, *B.S.*, *M.S.*, *Ph.D.*, Lieutenant Colonel, United States Air Force, Associate Professor of Air Science and Tactics

ROBERT S. FISHER, *B.S.*, Major, United States Air Force, Assistant Professor of Air Science and Tactics

JOSEPH J. MARSHALL, *A.B.*, *M.A.*, Major, United States Air Force, Assistant Professor of Air Science and Tactics

WILLIAM E. BYERS, *B.A.*, Captain, United States Air Force, Assistant Professor of Air Science and Tactics

ERNEST O. GILBERTS, Captain, United States Air Force, Assistant Professor of Air Science and Tactics

FREDERICK M. PATTERSON, *B.A.*, *M.A.*, Captain, United States Air Force, Assistant Professor of Air Science and Tactics

EDGAR P. CAPON, *B.B.A.*, 1st Lieutenant, United States Air Force, Instructor, Air Science and Tactics

ERNEST E. ORR, Warrant Officer, United States Air Force. Instructor, Air Science and Tactics

MISSION

The mission of the Department of Air Science and Tactics is to provide the students with knowledge and understanding of the organization, administration and operation of the United States Air Force and its role in the National Military Establishment; to instill in the students a desire to serve as officers in the Air Force, particularly in rated capacities, and to develop in them the officer-like qualities of integrity, leadership and love of country; to train the students to be able to serve as junior officers of the Air Force and to select those best qualified for commissions in the regular and reserve components of the United States Air Force.

GENERAL INFORMATION

The United States Air Force has an Air Force ROTC unit at the University of Wisconsin. It offers a Basic Course, consisting of Air Science I and II, and an Advanced Course, composed of Air Science III and IV.

BASIC COURSE

The university requirement for military training of freshmen and sophomores may be satisfied by taking the Basic Course. Any student who is required to take, or is eligible for, basic military training may, within quota limitations, elect to take that training in the Air Force ROTC. This Basic Course provides the student with an introduction to aviation, the elements of aerial warfare, and the role of the United States Air Force in national security. It develops by precept and example the attributes of character, personality, leadership and discipline which are indispensable to every officer of the Air Force. It also prepares the student for the Advanced Course. The Basic Course consists of three hours of instruction per week for two academic years. No credits are allowed for this course. Thirty of the ninety hours per year are spent in drill.

ADVANCED COURSE

The number of students selected for the Advanced Course is determined by Headquarters United States Air Force and Headquarters Air Force ROTC. This course consists of five hours of instruction per week for two academic years. Two credits per semester are allowed providing the student completes the four semesters of the course.

To be selected for the Advanced Course students must:

1. Have successfully completed the Basic Course, or had at least one year of honorable active military service.
2. Execute a written agreement with the Government to complete the Advanced Course, contingent upon remaining in school, and to attend the AF ROTC Summer Camp at the time specified.
3. Be less than 25 years of age at the time of initial enrollment in the Advanced Course.
4. Successfully complete such general survey and screening tests as may be prescribed.
5. Be selected by the Professor of Air Science and Tactics and the President of the University.
6. Pass the required physical examination.

Members of the Air Force Reserve and the Air National Guard are eligible for formal enrollment in the Advanced Air Force ROTC program. Members of other Reserve Components can not, at the present time, be formally enrolled, but may take part in the program on an informal basis. It is possible to resign from such other Reserve Components and thus become eligible for formal enrollment in the Air Force ROTC program.

Only one course of instruction is offered. Subjects taught include communications processes, military law, aircraft engineering, navigation, weather, principles of leadership, military aspects of world political geography and military aviation. In summer camp the student will study the Air Force in operation.

EXTRA-CURRICULAR ACTIVITIES

The Mitchell Airmen, an organization for Basic Course AF ROTC students, is named in honor of General Billy Mitchell, who did so much to advance the cause of military aviation. The purpose of the society is to promote better understanding of the Air Force, develop drill proficiency, and enable basic AF ROTC students to become better acquainted with their program and each other.

The Arnold Air Society, a National Society of USAF ROTC Cadets, is named in honor of General of the Air Force H. H. Arnold. Membership is open to the cadets of Air Science III and IV. To qualify for membership cadets must maintain an academic grade in Air Science and Tactics commensurate with the university average required for graduation. The purpose of the society is to further the mission of the United States Air Force at college or university level by encouraging greater team work, technical knowledge, and cooperation among students enrolled in the Air Science program.

The University of Wisconsin Rifle Team, an affiliate of the National Rifle Association, is made up of both the Varsity and Freshman Rifle Teams. This team, although sponsored by the Department of Military Science, is open to Air Force ROTC cadets on a competitive basis. There is also an Air Force ROTC rifle team consisting of cadets of the Air Force ROTC unit selected through open competition among all interested Air Force cadets. The Air Force team schedules postal matches with other Air Force ROTC rifle teams at colleges and universities throughout the nation.

The Military Ball is the most colorful and traditional dance on the campus. It is sponsored jointly by the Army, Navy and Air Force ROTC units of the University. Each year

the Air Force ROTC cadets elect their proportionate share of committeemen to organize and carry on this gala event.

UNIFORMS AND PAY

Air Force ROTC students are furnished complete Air Force blue uniforms, including appropriate distinctive Air Force ROTC insignia.

Summer uniforms and special purpose clothing are furnished without cost to Air Force ROTC students of the Advanced Course while attending summer camp.

Each Advanced Course student is paid a monetary allowance of 90¢ per day (subject to change) for not to exceed 595 days for the entire course. Textbooks are furnished by the Air Force. While attending summer camp, each Advanced Course student is paid at the rate of $78.00 per month and is furnished travel to and from camp, subsistence, housing, uniforms and medical attention at Government expense.

OTHER ADVANTAGES

Deferments from Selective Service may be given to both Basic and Advanced Course Air Force ROTC Cadets.

Students who successfully complete the Advanced Course will, upon graduation, be commissioned as Second Lieutenants in the Air Force Reserve. Some of the newly commissioned officers will have the opportunity to enter on extended active duty and a few will be integrated into the Regular Air Force.

DIVISION OF SOCIAL EDUCATION

PORTER BUTTS, DIRECTOR

The Division of Social Education was established in 1935 to develop the teaching and guidance functions of the Union, the campus community center. The educational officers of the Union serve as the division staff. The division complements other personnel agencies in planning for the social and recreational welfare of the student body. Specific educational functions include counseling and instructing students in the administrative and professional aspects of community service, and utilizing the building's facilities as laboratories for those academic departments wishing to give credit for field work (in cultural, social, or administrative fields) that is performed under the supervision jointly of the department instructor and the educational officers of the Union.

The division conducts the required recreation laboratory for recreation majors and offers field work opportunities for students in group leadership.

The Union art galleries are used as a laboratory by students in the Art Education course in museum and gallery techniques, with instruction by the Social Education staff.

Students in School of Education courses, "Educational and Vocational Guidance" and "Job and Occupational Analysis," may be given credit for field work under the joint supervision of instructors in vocational guidance and social education.

The Union staff also offers noncredit training in community leadership and programming to 500 students working on Union house committees and campus projects.

Included in the noncredit offerings of the division is informal instruction for groups and individuals in social dancing, square dancing, skiing, archery, bridge, billiards, bowling, sailing, canoeing, riding, mountaineering, crafts, scene painting, and stage management.

DIVISION OF RESIDENCE HALLS

S. Lee Burns, Director

The Division of Residence Halls provides living accommodations for 2,500 men and women students in university-owned residence halls. Standards are high, and a professionally trained staff is responsible for the operation of these living units.

Within the halls is developed a program of social education which endeavors to teach, beyond classroom and laboratory, a useful and intelligent way of life, through which the personality will be strengthened and enriched.

Graduate counselors, or "Fellows," members of the Division's academic staff, live with the students. Along with others of the Division's faculty, they assist the residents in orienting themselves to the demands of university life, promote scholastic attainment, encourage the development of a strong student self-government organization, and are available for consultation with the individual on any problem.

Hobby and recreational facilities are present in photography, woodworking, amateur radio, journalism, chorus, and all sports; these preoccupations and many others, such as libraries and music rooms, encourage healthful, interesting and pleasurable use of the spare hours which intersperse classes, study and routine living.

Social events vary in character from informal exchange dinners between men's and women's houses, to faculty dinners, teas, open houses, formal dances. The intent is to aid residents, through experience, in acquiring a sense of familiarity and ease in normal social situations.

All emphasis is placed upon the healthful development of the individual in a beneficial environment, within the larger pattern of civic group consciousness and responsibility. To this end the Division is staffed with members of mature and capable judgment, who have been schooled in this philosophy of the University of Wisconsin.

In assigning rooms, preference is given to Wisconsin residents. Most of the vacancies are reserved for freshmen; a few assignments are made to new upperclass applicants. Preference in assignment is also given to Wisconsin veterans.

For specific information regarding accommodations, see pages 17–22. Further information about university residence halls can be secured by writing the Assignment Office, Division of Residence Halls, Slichter Hall, Madison 6, Wisconsin.

DIVISION OF RADIO-TELEVISION EDUCATION

H. B. McCarty, Director

INSTRUCTIONAL STAFF

Harold Anton Engel, *M.A.*, Professor of Radio Education
Henry Lee Ewbank, *Ph.D.*, Professor of Speech; Chairman, University Radio Committee
William Gardner Harley, *M.A.*, Associate Professor of Radio Education
Mrs. Aline Watson Hazard, *B.A., B.S.*, Assistant Professor of Agricultcral Journalism
Glenn Koehler, *M.S.*, Professor of Electrical Engineering
Harold Berkley McCarty, *M.A.*, Professor of Radio Education
Arlene McKellar, *M.A.*, Assistant Professor of Radio Education
Karl Francis Schmidt, *M.S.*, Instructor in Radio Education
James Alfred Schwalbach, *M.S.*, Assistant Professor of Rural Sociology
Josephine Helen Stanley, *B.A.*, Lecturer in Radio Education
Raymond John Stanley, *Ph.M.*, Assistant Professor of Radio Education
John Henry Stiehl, *B.S.*, Associate Professor of Radio Education
Robert Taylor, *B.A.*, Assistant Professor of Journalism
Donald Joseph Voegeli, *M.M.*, Assistant Professor of Radio Education
Roy Charles Vogelman, *M.A.*, Assistant Professor of Radio Education
Maurice Everett White, *M.S.*, Assistant Professor of Agricultural Journalism

Since the earliest days of radio, the University of Wisconsin has engaged in broadcasting and the development of radio education. Operating experimental station 9XM, the University made successful telephonic broadcasts in 1917 and began giving scheduled broadcasts of weather reports and market information as early as 1919. Station WHA, the outgrowth of 9XM, is accordingly known as "The Oldest Station in the Nation."

The University also operates a Television Laboratory, established to provide the necessary facilities for research, program experimentation, and training. The Laboratory is equipped with three image orthicon camera chains, auxiliary video and audio apparatus, kinescope recorder and processor, and a mobile control unit. Functions of the Laboratory include the production of experimental programs for broadcast over television stations and for exchange with other institutions.

Combining actual broadcast operations and services with experienced teaching and research personnel, the University of Wisconsin is well equipped, therefore, to provide *instruction in radio and television* and *education by radio and television.*

All radio and television activities at the University, including course instruction and broadcasting services, are coordinated through the Division of Radio-Television Education. Authority for the control and administration of the Division is vested in a faculty Radio-Television Committee representing various schools and colleges of the University. The Committee studies the educational uses of radio and television, forms the policies and supervises the operation of station WHA and the Television Laboratory, and coordinates instruction in radio-television broadcasting.

I. INSTRUCTION IN RADIO AND TELEVISION

Instruction in radio and television at Wisconsin is designed to perform two basic functions: (1) general education, for those seeking to improve their speaking and writing skills and those wishing to gain an understanding of radio-television broadcasting and its place in American life, and (2) vocational instruction, for those preparing for positions in various branches of the radio-television industry and those planning to use their radio-television

training in such professions as teaching, journalism, advertising, public relations, acting, and electrical engineering.

Because radio and television embrace so many fields of study, instruction is presented as a cooperative program of several schools and departments of the University. Courses currently offered are:

SPEECH:
110—Elements of Broadcasting
115—Broadcasting Workshop (Acting, Directing, and Producing)
116—Radio, Television, and Society
117—Writing for Radio
118—Introduction to Television
210—Seminar in Radio and Television

EDUCATION:
163—Classroom Use of Radio-Television

JOURNALISM:
118—Radio and Television in Advertising
122—Radio News Writing

MUSIC:
125—Music in Radio

AGRICULTURAL JOURNALISM:
18—Farm and Home Radio Writing

ELECTRICAL ENGINEERING:
101—Fundamentals of Electro-Acoustical Engineering
182, 183—Electronics and Communications Engineering
184, 185—Advanced Electronics and Communications Engineering

Students choose one of the various schools and departmental majors with their particular interests and abilities in mind. Accordingly, prospective speakers, actors, script writers, announcers and radio-television performers normally major in speech; those planning for combined radio, television, and newspaper work, in journalism; those interested in the business side of broadcasting, in commerce; and so on. So far as practicable, students are advised to include as many of the broadcasting courses in different departments as their programs will permit. All radio-television courses must be preceded by required introductory courses in the respective departments.

In general, students may not elect radio-television courses until their junior year. The freshman and sophomore years are devoted to subjects required of all graduates from the school or college in which they are enrolled and to elementary courses in the major departments. Such courses provide knowledge and training basic to an understanding of the problems of radio-television communication and the development of radio-television skills.

Extra-curricular activity at station WHA and the Television Laboratory is available, however, as early as the second semester of the freshman year.

Radio Hall, home of WHA and center of campus broadcasting activities, affords generous training facilities for students. During a typical week, as many as 150 students gain practical experience in all phases of radio programming—script and continuity writing, announcing, speaking, acting, production, musical performance, and technical operation. Those who survive the auditions and trials have the benefit of close supervision of members of the regular WHA staff and the advantage of experience under professional broadcast conditions.

The Television Laboratory provides similar opportunities for student experience and training in program planning, writing, set design and construction, creation of TV art materials, acting, directing, equipment operation, and related phases of television programming.

Inquiries concerning courses and training leading to professional work in radio and television (including production, administration, and engineering) may be addressed to the Director of Radio-Television Education, Radio Hall, Madison 6, Wisconsin.

II. EDUCATION BY RADIO AND TELEVISION

To provide an educational broadcasting service to the people of Wisconsin, the State maintains station WHA on the university campus, operated through the Division of Radio-Television Education. WHA is on the air daily throughout the year presenting an extensive program service planned for listeners of all ages and varied interests.

For elementary school children the Wisconsin School of the Air provides ten programs weekly to enrich and supplement regular classroom teaching. For adult listeners there is the Wisconsin College of the Air, which makes it possible for listeners to "go to college at home" through broadcasts direct from university classrooms and special courses presented from the Radio Hall studios. The daily Farm Program keeps rural Wisconsin abreast of developments coming through the College of Agriculture and the Experiment Station. The Homemakers' Hour gives housewives information and inspiration. Interviews, forums, book reviews, news, dramas, children's stories, special events, organization broadcasts, discussions of state affairs, foreign language lessons, and similar programs, together with generous periods of fine music, are combined to round out the service.

Numerous university departments participate in the broadcasting activity, either by presenting regular series or by offering special features to be included in the general program service. As many as 265 members of the faculty participate in university broadcasts in a typical year. WHA operates with 5,000 watts power on the 970 kilocycle regional channel. Limited to daytime, it is on the air from 7:00 a.m. until sunset with an average of 70–75 hours of programs each week. The station is entirely noncommercial.

In addition to operating WHA, the University participates with other state agencies and educational institutions in the operation of the State Radio Network under the auspices of the State Radio Council. The network includes, in addition to WHA, eight FM stations and one AM station, located in various parts of the state to provide state-wide coverage. The stations are linked by a pick-up and rebroadcast system which permits simultaneous transmission of the same programs by all stations.

Programs totaling 16 hours daily (7:00 a.m.–11:00 p.m.) are presented by the FM network. These include the entire service of WHA plus additional features planned for the nighttime audience.

The State Radio Council, created by the 1945 Legislature to "plan, construct, and develop a state system of radio broadcasting for the presentation of educational, informational, and public service programs," is made up of the Governor of the State and ten representatives from the University, the State Department of Public Instruction, the Board of Regents of Normal Schools, the State Board of Vocational and Adult Education, and the State Department of Agriculture.

Educational television developments were given impetus in 1952 when the Federal Communications Commission announced the reservation of 242 frequency assignments for noncommercial educational stations in the United States. Twelve channels were marked for educational use in Wisconsin. Aware of the need for objective evidence on the educational applications and values of television, the University of Wisconsin promptly established a television laboratory and began a program of research, experimentation, and training.

ASSOCIATED SCIENTIFIC INSTITUTIONS

FOREST PRODUCTS LABORATORY

J. A. HALL, DIRECTOR

The Forest Products Laboratory is a scientific institution engaged in research for the Forest Service, United States Department of Agriculture, in cooperation with the University of Wisconsin. The final objective of the organization is to guide and stimulate the economic development and maintenance of forests through more efficient utilization. To this end it conducts research on the basic properties of wood and other forest products and on improved methods of production, processing, handling, and use; it cooperates, both in its research and the application of the results, with public and private agencies also interested in the improved utilization of forest products and the development of forest lands. The Laboratory offers unusual facilities for research in the field of forest products and possesses very complete scientific and technical equipment for this purpose. In some of its research, the results are carried to the pilot plant stages to develop further their application under more nearly commercial conditions; it also cooperates with various manufacturing establishments in testing out its research on a commercial basis.

The technical investigations of the Laboratory are as follows:

(1) Timber Mechanics and Engineering: Investigations of strength, stiffness, hardness, and other mechanical properties of wood, plywood, and wood-base materials; factors affecting strength, including temperature, moisture, defects, seasoning and treating methods: effects of duration of stress and rate of loading; flat-plate and direct-stress fatigue; methods of testing joints and fastenings; improvements in structural design and fabrication of wood structures; working stresses.

(2) Timber Physics: Fundamentals of wood-moisture relations; physical properties of woods; moisture equilibrium; vapor barriers; improvement in wood-seasoning technique and methods to reduce losses; chemical seasoning; design and operation of dry kilns.

(3) Packing and Packaging: Design and construction of wood and fiber shipping containers; methods of corrosion prevention; interior bracing and cushioning; crate design; fundamental relation of paper sheet properties to properties of fiber board and fiber containers; influence of manufacturing variables.

(4) Plywood, Glues, and Laminated Stock: Study of veneer and plywood manufacturing problems; study of characteristics and application techniques of glues to improve usefulness of glued wood products; study of new uses for laminated construction in commercial work.

(5) Chemical Studies: Research in organic, physical, and biological chemistry of wood, cellulose, lignin, extractives, and naval stores. Methods of modifying the properties of wood and of converting wood waste into useful commodities; chemistry of wood preservatives.

(6) Wood Preservation: Research on practical means of preventing decay of timbers; the efficiency of various wood-preserving processes and preservatives; other processes to modify the properties of wood, such as fire-resistant and antishrink treatments; paints and painting practices.

(7) Pulp and Paper: The suitability of woods and other fibrous materials for pulp, paper, and fiber specialties; studies in the chemistry and engineering of pulping and papermaking processes; chemical and physical studies of pulps and papers.

(8) Microstructure and Ecology: Identification of wood; the effect of growth conditions on the structure of wood; and the relation of the structure of wood to its properties.

(9) Timber Harvesting and Conversion: Study of the economic utilization of wood with a view to eliminating waste; lumber grades and specifications; methods of measuring, manufacturing, and marketing logs, lumber, and small dimension stock; development of efficient uses of wood.

(10) Forest Pathology: Research on fungi causing deterioration of wood and wood products, their prevention and control; decay resistance of woods; laboratory evaluation of preservatives.

LECTURE AND LABORATORY COURSES

The staff of the Laboratory cooperates with that of the University of Wisconsin in the courses of lectures and research.

The courses presented do not supply the needs of students desiring to take up the study of forestry as a profession. Such students should enter one of the regular forestry schools.

FACULTY

ROY H. BAECHLER, *Ph.D.*, Lecturer in Forest Products
PARKER KARNS BAIRD, *M.A.*, Lecturer in Forest Products
J. OSCAR BLEW, *M.S.*, Lecturer in Forest Products
RICHARD FREDERICK BLOMQUIST, *Ph.D.*, Lecturer in Forest Products
DON BROUSE, *Ph.D.*, Lecturer in Forest Products
FREDERICK L. BROWNE, *Ph.D.*, Lecturer in Forest Products
HERBERT DALE BRUCE, *M.S.*, Lecturer in Forest Products
THORWALD AXEL CARLSON, *M.S.*, Lecturer in Forest Products
GARDNER HOTCHKISS CHIDESTER, *B.S.*, Lecturer in Forest Products
DONALD GEORGE COLEMAN, *B.A.*, Lecturer in Forest Products
EDWARD MANNING DAVIS, *M.F.*, Lecturer in Forest Products
EDWIN CARL OLAF ERICKSON, *B.S.*, Lecturer in Forest Products
HERBERT O. FLEISCHER, *M.F.*, Lecturer in Forest Products
ALAN D'YARMETT FREAS, *M.S.*, Lecturer in Forest Products
ELOISE GERRY, *Ph.D.*, Lecturer in Forest Products
ELWIN ELMER HARRIS, *Ph.D.*, Lecturer in Forest Products
BRUCE GEORGE HEEBINK, *B.S.*, Lecturer in Forest Products
OTTO C. HEYER, Lecturer in Forest Products
CLARENCE EARL HRUBESKY, *M.S.*, Lecturer in Forest Products
ROBERT PILSON ALBERT JOHNSON, *C.E.*, Lecturer in Forest Products
KENNETH WALTER KRUGER, *B.S.*, Lecturer in Forest Products
B. FRANCIS KUKACHKA, *Ph.D.*, Lecturer in Forest Products
EUGENE FAY LANDT, *B.S.*, Lecturer in Forest Products
DON F. LAUGHNAN, *B.S.*, Lecturer in Forest Products
WAYNE CUTHBERT LEWIS, *B.S.*, Lecturer in Forest Products
RALPH MELVIN LINDGREN, *Ph.D.*, Lecturer in Forest Products
JOSEPH ARTHUR LISKA, *M.S.*, Lecturer in Forest Products
EDWARD GIBSON LOCKE, *Ph.D.*, Lecturer in Forest Products
RONALD FLOYD LUXFORD, *C.E.*, Lecturer in Forest Products
L. J. MARKWARDT, *C.E.*, Assistant Director and Lecturer in Forest Products
JOHN NEILSON MCGOVERN, *Ph.D.*, Lecturer in Forest Products
BENSON HOWARD PAUL, *M.F.*, Lecturer in Forest Products
EDMUND FREDERICK RASMUSSEN, *M.S.*, Lecturer in Forest Products
RAYMOND C. RIETZ, *B.A.*, Lecturer in Forest Products
JEROME FRANCIS SAEMAN, *Ph.D.*, Lecturer in Forest Products

EARL ROGERS SCHAFER, *B.Ch.E.*, Lecturer in Forest Products
THEODORE COMSTOCK SCHEFFER, *Ph.D.*, Lecturer in Forest Products
JOHN A. SCHOLTEN, *B.S.*, Lecturer in Forest Products
FORREST A. SIMMONDS, *B.S.*, Lecturer in Forest Products
ALFRED J. STAMM, *Ph.D.*, Lecturer in Forest Products
CARROLL V. SWEET, *M.F.*, Lecturer in Forest Products
MICHAEL ANDREW TARAS, *M.F.*, Lecturer in Forest Products
HAROLD TARKOW, *Ph.D.*, Lecturer in Forest Products
LAURENCE VICTOR TEESDALE, Lecturer in Forest Products
THOMAS ROY TRUAX, *M.S.*, Lecturer in Forest Products
LYMAN WENTCH WOOD, *M.S.*, Lecturer in Forest Products
WALDEMAR GUSTAVE YOUNGQUIST, *B.S.*, Lecturer in Forest Products

*101. PROPERTIES OF WOOD. I; 5 cr. Structure and properties of wood with special reference to its use in light building construction. Mr. Andrews, Mr. Blew, Mr. Blomquist, Mr. Brouse, Mr. Browne, Mr. Bruce, Mr. Davis, Mr. Erickson, Mr. Fleischer, Mr. Freas, Mr. Heebink, Mr. Heyer, Mr. Kukachka, Mr. Landt, Mr. Lewis, Mr. Paul, Mr. Rasmussen, Mr. Rietz, Mr. Scheffer, Mr. Scholten, Mr. Taras, Mr. Teesdale, Mr. Wood.

103. CHEMISTRY APPLIED TO FOREST PRODUCTS. II; 2 cr. Includes course of lectures descriptive of industrial chemical processes that use wood and wood waste, such as pulp and paper, wood distillation, and wood preservation, and the chemistry of various forest products. Prerequisites: Chemistry 120, 121, 122, 123. Offered 1951–52 and in alternate years. Mr. Baechler, Mr. Chidester, Mr. Harris, Mr. Locke, Mr. Saeman, Mr. Stamm.

119. FUNGUS DETERIORATION OF FOREST PRODUCTS. I; 2 cr. (Same as PLANT PATHOLOGY 119.) A survey of the cause and prevention of stains and decay in forest products, and control measures. Prerequisites: Plant Pathology 101 and 104. Offered 1950–51 and in alternate years. Mr. Lindgren.

200. RESEARCH IN FOREST PRODUCTS. Yr; *cr. Chemistry of coal tars, wood tars, and wood preservatives, Mr. Baechler. The chemistry of wood hydrolysis and lignin, Mr. Harris. General wood chemistry, Mr. Saeman. The chemical action of micro-organisms on wood and pulp, Mr. Lindgren. Physical and colloidal properties of wood and wood products, Mr. Stamm. Pulp and paper, Mr. Chidester. Wood preservation and glue, Mr. Blomquist, Mr. Truax. Microscopic structure of wood in relation to growth conditions and properties, Miss Gerry, Mr. Paul. Fungus deterioration of forest products, Mr. Lindgren. Timber mechanics and engineering, Mr. Johnson, Mr. Luxford, Mr. Liska, Mr. Youngquist, Mr. Freas, Mr. Wood. Timber physics and wood liquid relations, Mr. Rietz.

UNITED STATES WEATHER BUREAU

LOTHAR A. JOOS, METEOROLOGIST IN CHARGE

RUPERT J. BATZ, METEOROLOGIST

The University of Wisconsin has cooperated with the national weather services throughout its history. The first meterological observations at Madison were begun in 1853 at North Hall, using instruments furnished by the Smithsonian Institution. Observations were continued until 1864 by Professors J. W. Sterling and S. H. Carpenter but were halted by the Civil War. The work was revived in 1869 by Professor W. W. Daniells, pioneer professor of agriculture, and the uninterrupted series of observations continues to this day. Supervision of weather observers in the country was transferred from the Smithsonian Institution to the Chief Signal Officer of the Army in 1874. Daniells continued the observations until October 1878 when the Army established an official station manned by noncommissioned officers at

the site of the present First Central Building. This station was closed in April 1883 and the instruments were transferred to Washburn Observatory.

In 1890 the Weather Bureau was established in the U. S. Department of Agriculture, and in September 1904 an official station was opened at North Hall on the University of Wisconsin campus. Under the direction of Eric R. Miller, who served there continuously from 1908 to 1944, the station pioneered in solar radiation measurements. Routine measurements of upper winds were begun in 1919, and the station became part of the civil airway weather network during the early 1930's. In 1939 the airway work was transferred to its present location at Truax Field where a complete airport station was organized. In 1940 the nationwide Weather Bureau was transferred to the Department of Commerce.

The North Hall office is staffed by two professional meteorologists who serve the general interests of the community and the special interests of various university departments. Weather forecasts and bulletins are prepared and distributed through the newspapers and radio broadcasting stations. Since 1938 direct radio broadcasts have originated in this office and reach most of Wisconsin by way of the state-owned radio stations. The office has extensive files of records of weather and climate both local and general. It is open to the public from 6 A.M. to 3 P.M. daily except Sundays, holidays, and Wednesday and Saturday afternoons.

WASHBURN OBSERVATORY

ALBERT E. WHITFORD, DIRECTOR, PROFESSOR OF ASTRONOMY

The Washburn Observatory was established in the year 1878 through the munificence of the late Governor Cadwallader C. Washburn. Although its obligations and opportunities as a branch of a teaching university have not been ignored, the energies of its staff from the beginning have been directed mainly to astronomical research. Among the lines of research cultivated have been the measurement of the positions and motions of the heavenly bodies, the discovery and measurement of double stars, with investigations of their orbits, the study of changes of latitude and the amount and character of the atmospheric refraction, the determination of the amount of the aberration of light, proper motions of faint stars, a systematic investigation of the parallaxes of stars. Current researches are concerned with the photoelectric photometry of eclipsing stars, the determination of absorption in interstellar space from the colors of stars, and with problems of galactic and extragalactic structure.

The principal instruments of the observatory are refracting telescopes of 15.6 and 6 inches aperture with optical parts by Alvan Clark and Sons. Both telescopes have been provided with modern mountings constructed in the shops of the College of Engineering. There are precision clocks by Hohwü and by Howard and equipment for the reception of radio time signals.

In the students' observatory is housed the 6-inch refractor and a 3-inch transit instrument of the broken telescope type by Bamberg. The observatory also possesses a considerable number of subsidiary instruments such as portable telescopes, photometers, chronometers, sextants, engineers' transits, an altazimuth, a universal instrument, calculating machines, photographic equipment, and nautical charts and instruments.

A well-equipped electronic laboratory is maintained for experimentation with photoelectric devices. Facilities for development and construction of research apparatus are available in the observatory shop.

The Woodman Astronomical Library, supported from the income of a fund given by the late Cyrus Woodman, contains approximately 6,500 volumes and 3,000 pamphlets. The publications of the leading observatories of the world are received on exchange, and a complete file of current astronomical journals is available.

The results of investigations by the staff have appeared in fifteen volumes of the *Publications of the Washburn Observatory,* and in various astronomical journals.

Students of sufficient technical attainment are admitted to the observatory and take part

in the investigations in progress. Such students are encouraged to pursue studies in the Astronomy Department leading to advanced degrees, and to use the facilities of the observatory for original research. Course offerings are listed on page 99.

WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY

E. F. BEAN, STATE GEOLOGIST

This Survey has always been closely associated with the University. Its origin dates from a motion offered by Dr. C. R. Van Hise to the Wisconsin Academy of Sciences in 1893, calling for the appointment of a committee to secure legislation establishing such a survey. The committee, with Dr. Van Hise as chairman, took up the task and finally secured the establishment of the Survey by the legislature of 1897. The offices and laboratories of the Survey are in university buildings. In 1931, the Survey was placed under the charge of the Board of Regents of the University.

The Survey was at first organized in two divisions—Geology and Natural History; the legislature of 1909 added a third division by establishing a Soil Survey of the State. From the first much attention was given to highways, and a Highway Division was organized in 1907; active work in this field was carried on until 1911, when the legislature created the Highway Commission and made the State Geologist one of its members.

The Geology Division was under the charge of Dr. W. O. Hotchkiss from 1906 to 1925; since that date Mr. E. F. Bean has been State Geologist. This is the largest division of the Survey and has issued numerous maps and reports on the general and economic geology of the State. It has investigated also such subjects as water power, underground waters, peat, and clays. Careful surveys are made of materials available for road construction, with a success which has been worth to the State several hundred thousand dollars annually. The study of underground waters has made the Survey an authority on the supply of water from artesian wells. Topographic maps which are necessary for all engineering undertakings have been made in cooperation with the United States Geological Survey. The geography and physical geography of the State have been studied, and numerous bulletins have shown the connection between the geological and the social history of the several regions of Wisconsin.

The Soils Division has carried on a soil survey which will result in a complete soil map of the State. The work, formerly directed by Professor A. R. Whitson, was done in cooperation with the United States Department of Agriculture and the College of Agriculture of the University. No state funds were available for this work from 1931 to 1945, when a legislative appropriation was made. Professor Emil Truog is in charge. Soils are studied with reference to their best agricultural use and the fertilizer and other treatment necessary to make them most productive including a study of the limestones, marls, and by-products from manufacturing plants available as a source of lime. Special attention is given the adaptability of particular soils to special crops such as potatoes, tobacco, and canning crops. Numerous maps and bulletins showing the nature and distribution of the types of soils and their agricultural uses have been published. A reconnaissance survey of the northern part of the State has been completed, and detailed county surveys covering a large part of the southern half of the State have been made.

The Natural History Division was under the immediate charge of Dr. Birge until his death in 1950. Since 1931, no direct state appropriation has been made for this work. It has issued numerous bulletins on specific topics relating to the botany and zoology of the State. Its main continuous work has been on the inland lakes. Many hydrographic maps have been made, as well as studies of the temperatures of the lakes, the chemical composition of their waters, and the plants and animals inhabiting them. The main problem to which all these studies lead is that of the nature and quantity of the fundamental food supply of the lakes, its variation with season and year, and the resulting economic value of the lakes.

During the summer months the Survey employs university students as assistants in field work. This arrangement enables students to gain practical experience during their university careers. The close cooperative relationship existing between the University and the Survey is very valuable to both.

UNIVERSITY HOSPITALS

H. M. Coon, *M.D.*, Superintendent

The University Hospitals include the Student Infirmary, the Mary Cornelia Bradley Memorial Hospital, the State of Wisconsin General Hospital, the Wisconsin Orthopedic Hospital for Children, and the Cancer Research Hospital, and all are integrated as the teaching hospitals of the Medical School.

The State of Wisconsin General Hospital is designed as a memorial to those who served in World War I, and was built and equipped from balances remaining in the Service Recognition Fund. Recently additions to the hospital have increased the beds available to a total of nine hundred.

The chief purposes of the hospitals are defined as follows: (1) For instruction of medical students, physicians, and nurses; (2) For the care of persons afflicted with a malady, deformity, or ailment of a nature which probably can be remedied by hospital service and treatments, who would be unable otherwise to secure such care; (3) For such scientific research as will promote the welfare of the patients and assist in the application of science to the alleviation of human suffering.

WISCONSIN PSYCHIATRIC SOCIETY

W. F. Lorenz, *M.D.*, Director Emeritus

L. A. Osborn, *M.D.*, Director, Professor of Psychiatry

The Wisconsin Psychiatric Institute, developed originally under the Board of Control of the State of Wisconsin, was started in 1915 at Mendota State Hospital, where research in mental and nervous diseases was carried on. The Institute was transferred to the University in 1925 by the legislature so that its primary purpose could be preserved with increased opportunities in research through cooperation with the departments of the Medical School and other departments of the University. Basically, its program is designed to develop methods of treatment and prevention in the psychiatric field, more especially as psychiatric disorders become problems for the state and for communities.

The earliest research activities of the Institute centered about syphilis, and in cooperation with the State Board of Health much has been accomplished in the course of 30 years. The Institute pioneered in providing free blood and spinal fluid examinations to the physicians, institutions, and hospitals of the state. At a later date the Institute provided a service in blood chemistry on the same basis. In cooperation with the Department of Pharmacology, the staff of the Institute undertook extensive research in the field of treatment of syphilis, jointly carrying on the experimental phases of such research as new drugs were developed.

Throughout its history, the Institute has been in close relation with the mental hygiene services of the state. It has served clinic consultation through its affiliation with the Neuropsychiatric Department of the Medical School, conducted surveys, advised on developments in psychiatric care, sponsored clinical research in psychiatry and given educational support to institutions. The research carried on in conjunction with the Department of Neuropsychiatry, the Medical School, and the University Hospitals has included: encephalography, shock therapy, the use of barbiturates in the treatment of mental disorders and in methods

of examination. As a by-product of certain of these investigations an antidote for barbiturate poisoning was developed.

The Institute has three divisions: diagnostic laboratory service; medical education; and clinical or hospital service in connection with the University Hospitals. All divisions are used in the program of medical education for students, interns, residents, and visiting physicians. With a new building for the Laboratory of Hygiene under construction, plans are being made for transfer of the laboratory function of the Institute to the Laboratory of Hygiene.

Dr. William F. Lorenz, founder of the Institute, carried on its work as Director from 1915 to June 30, 1952, when the Board of Regents appointed him Director Emeritus and Professor Emeritus of Neuropsychiatry.

Continuing its historical function in both the University and the State Department of Public Welfare, the Institute was given additional responsibility in 1950 when the Board of Regents and the State Board of Public Welfare, after numerous consultations, decided that the successor to the directorship should also be Director of the Division of Mental Hygiene of the State Department of Public Welfare. By this arrangement, the educational and research strength of the University are still further applied to the clinical needs of the state service, while increasing emphasis on practical experience in psychiatric education makes this arrangement equally advantageous to the University.

With this added linkage, the Institute is carrying on its responsibility for study of the causes and prevention of psychiatric disorders and state care, is sponsoring new research projects in mental deficiency and in speech therapy (in conjunction with the Speech Department) and is increasing its program of special education. The construction of the Wisconsin Diagnostic Center near the University Hospitals now underway will provide an additional means whereby the Institute's linkage with the Division of Mental Hygiene is utilized. The Diagnostic Center will be operated as an institution of the State Department of Public Welfare, and will be staffed by members of the Medical School faculty appointed by the Dean. This arrangement insures a clinical function in which the University contributes to the highest possible standards of patient care and further strengthens the educational program of the state service.

These purposes of the Institute are more fully realized by its administration as a department of the University in close affiliation with the Medical School and the University Hospitals.

STATE HISTORICAL SOCIETY

CLIFFORD L. LORD, DIRECTOR

This distinguished and nationally known Society was founded in 1846, two years before Wisconsin became a state. The Society, supported by the State and a trustee of the State, has in its 106 years done much to achieve its aims of preserving and disseminating the history of the State and of the Middle West.

The Library of the Society is today a busy historical laboratory, rendering service to the people of the State, the University, and scholars all over the country. The Society's building is situated on the lower campus of the University, facing the new building of the University Library. The Historical Society's Library is the largest of any historical society in the nation. It includes 700,000 titles, and is growing at the rate of more than 10,000 each year. The Society also maintains a Historical Museum on the fourth floor of its building, with special changing exhibitions displayed in the main floor corridor. The Museum is especially strong in Wisconsin Indian material, American textiles and clothing, and portraits of early state figures.

An active trained research staff has published many volumes dealing with Wisconsin history. The *Wisconsin Magazine of History,* a quarterly, is now in its thirty-fifth year. Thirty-one volumes of *Wisconsin Historical Collections* have been issued, as well as separate annual publications of *Proceedings: An Economic History of Wisconsin* by Frederick Merk;

The Wisconsin Domesday Book (four volumes of general studies and one volume of town studies) by Joseph Schafer; *The French Régime in Wisconsin and the Northwest* and *The British Régime in Wisconsin and the Northwest* by Louise Phelps Kellogg; and several other volumes. A Wisconsin biography series is now in preparation. Other periodical publications of the Society include *Badger History*, published for school use monthly during the school year; *Wisconsin Historical News*, mimeographed, monthly; *What's Going On*, a monthly newsletter for members; and the *Wisconsin Teacher Newsletter*, issued monthly during the school year. The *Wisconsin Calendar* is published annually; the *Checklist of Wisconsin Public Documents* quarterly. The Society regularly publishes several books a year, including the annual current prize volume. Its American History Research Center gives annual grants-in-aid for projects in civilized history.

The State Historical Library is unequalled in the field of Middle Western history and has one of the most important newspaper (more than 50,000 volumes) and periodical collections in the United States. In local history and genealogy it is especially well equipped. The printed colonial records and government documents, state and federal, are equally extensive, and the Government Publications section is now the official state depository for such materials, except in the field of law. The manuscript collections of over 1,800,000 items contain a wealth of unexploited primary materials. The Draper Collection alone is the richest collection extant for the study of upland Virginia, North Carolina, Georgia, Kentucky, Tennessee, and the old Northwest during the Colonial and Revolutionary periods. It contains such rare items as thirty-four volumes on the life of Daniel Boone and sixty-five volumes on the career of George Rogers Clark. There are also excellent manuscript collections on the American Fur Company, Wisconsin governors, early settlers, immigration, lumbering, and recent Wisconsin statesmen. The John R. Commons Labor Collection, comprised of books, manuscripts, labor newspapers, convention proceedings, agreements, and the like, is the finest in the country. The McCormick Collection is rich in agricultural history materials and source materials for the study of business, political, social and cultural history. The Society also houses the official archives of the State.

The Society has an adult membership of over 3,200 and a junior membership of some 20,000. Its series of circulating museum exhibits and film strips, its radio programs and speakers services, help carry the story of Wisconsin's past to the four corners of the State.

WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS

ROBERT J. DICKE, SECRETARY-TREASURER; PROFESSOR OF ENTOMOLOGY

The Wisconsin Academy of Sciences, Arts and Letters was established by legislative action on March 16, 1870. Its membership of about 400 people is composed of men and women who are concerned with the search for and the dissemination of knowledge in the fields of their professional or avocational interests.

The purpose of the Academy is to develop and advance the sciences, arts and letters in Wisconsin. To accomplish that purpose the Academy engages in the following activities: (1) it holds an annual meeting at one of the colleges in the State at which scientific and literary papers are presented by members or their associates, (2) it publishes the papers so presented, together with other papers, in its *Transactions*, (3) it exchanges its publications for those of other learned societies in all parts of the world and makes available to all citizens of the State the valuable and extensive library accumulated by such exchanges, (4) it is affiliated with the American Association for the Advancement of Science and receives from it an annual grant-in-aid for research to be awarded by the Academy to some Wisconsin scientist or scholar, and (5) it sponsors, encourages, and supervises the Junior Academies of Science comprised of the Science Clubs in the high schools of Wisconsin.

Publications of the *Transactions* of the Academy have been aided quite consistently by modest appropriations from the Wisconsin legislature. During the 82 years of its existence, the Academy has published 42 volumes of its *Transactions*. The library of the Academy

contains more than 35,000 volumes at an estimated value slightly over a quarter million dollars.

Annual meetings have been held at almost every college in the State. In 1943, the meetings were held at Marquette Univrsity, Milwaukee; in 1944 and 1946 they were held at the University of Wisconsin; in 1948 at Wisconsin State College, Stevens Point; in 1950 at Beloit College; in 1951 at Milwaukee-Downer College; and in 1952 at Ripon College.

The Academy is in close collaboration with the University of Wisconsin. A large proportion of its active members are now, and about one half of its presidents were, members of the faculty of the University; many of the papers published in the *Transactions* were written by members of the university staff; and the library of the Academy is located in the University Library. The Academy also maintains associations with like academies of other states and countries and with various organizations in this State.

ARBORETUM, WILD LIFE REFUGE AND FORESTRY PRESERVE

G. Wm. Longenecker, Executive Director
John C. Curtis, Director of Plant Research
J. R. Jacobson, Supervisor

The University Arboretum, Wild Life Refuge, and Forestry Preserve is a tract of around 1,200 acres of land on the shore of Lake Wingra, on the outskirts of Madison. Its purpose is to serve the University as an outdoor laboratory for the study of plants, birds, mammals, insects, aquatic life, soils, and their interrelation in nature.

An Arboretum is a necessary part of an adequate educational and scientific program where natural sciences, conservation, and nature education are being studied and taught. The indoor laboratory method of instruction must be supplemented by an outdoor laboratory for outdoor instruction, if we are to make progress in these fields. An Arboretum also plays the same role in experimenting with woody plants as the experimental farm plays with agronomic crops.

Types of primitive Wisconsin landscape with their flora and fauna are being preserved and restored at a point near the University. Plants and animals are being studied as individuals and as groups, particular emphasis being made on ecological relationships. These communities include a large prairie area, the principal types of marsh land, and will include the principal types of forest.

Some land is also set aside for displaying, testing, and improving horticultural material, and for experimentation with nut-bearing plants.

To date over 150,000 trees and shrubs and a large quantity of prairie plants have been planted.

The area is administered by a faculty committee, with A. F. Gallistel as Chairman.

MUSEUMS

The museums of the University are principally illustrative collections for use in connection with the work of instruction in the various departments. Worthy of special mention are the collection of chemical products; the extensive drug collection of the Pharmacy Department; the herbarium, containing a rich array of Wisconsin flowering plants, fleshy fungi, and mosses; the geological museum, containing very extensive collections of minerals, rocks, ores, and fossils, including thin sections; and the valuable collections of the Department of Art History and Criticism, which embraces a series of prints illustrating the development of the graphic arts and a large number of facsimile and photographic reproductions of paintings and drawings by artists of all periods.

The State Historical Museum which, though not administered by the University, is open to the use of its students for purposes of study and research, makes a specialty of the archae-

ology and social history of the western Indians and of the western pioneer life, especially in Wisconsin, and is notable for its collections illustrating the early history of the upper Mississippi valley.

A large pictorial collection contains portraits, paintings, prints and photographs which are also available for study purposes.

STATE LABORATORY OF HYGIENE

W. D. STOVALL, DIRECTOR, PROFESSOR OF HYGIENE

The State Laboratory of Hygiene, located in the Service Memorial Institutes Building on the university campus, is at once a university laboratory and the central laboratory for the State Board of Health. The staff is occupied in teaching, in the development of laboratory tests which are of assistance in the diagnosis and control of communicable diseases, in other laboratory procedures with which sanitary science is concerned, and in special investigation.

Last year 172,930 specimens for the diagnosis of diphtheria, typhoid fever, rabies, tuberculosis, whooping cough, and other diseases were received from physicians, health officers, public nurses, and others throughout the State. The facilities of the laboratory are used by three fourths of the physicians in the State. Prophylactic vaccines are distributed free from the laboratory, and silver nitrate ampules are prepared for free distribution by the State Board of Health.

FACULTY SUMMARY

1950–51

Rank	Men	Women	Total
Administrative Staff	67	5	72
Professors	350	31	381
Associate Professors	208	36	244
Assistant Professors	293	69	362
Lecturers (including Forest Products)	68	6	74
Associates	25	8	33
Instructors	382	172	554
Assistance (Proj, Tchng, Resch)	848	214	1062
Teachers in Wisconsin High School	8	9	17
Total	2249	550	2799

THE ABOVE TABLE INCLUDES:

A. Members of the instructional, research, and administrative staff, including military, naval, and air sciences, and Forest Products lecturers.

B. Extension workers throughout the state, including Milwaukee and other extension centers.

C. County and home demonstration agents.

D. The following who were on leave for the entire year:

Rank	Men	Women	Total
Professors	7	0	7
Associate Professors	3	0	3
Assistant Professors	4	1	5
Total	14	1	15

E. The following who were here for only one semester, because of a one-semester appointment, because of resignation, or because of leave for one semester:

Rank	Men	Women	Total
Administrative Staff	1	0	1
Professors	12	0	12
Associate Professors	3	0	3
Assistant Professors	11	3	14
Lecturers (including Forest Products)	6	3	9
Associates	5	0	5
Instructors	45	20	65
Assistants	196	43	239
Total	279	69	348

THE ABOVE TABLE DOES NOT INCLUDE THE FOLLOWING EMERITUS FACULTY MEMBERS:

Rank	Men	Women	Total
Administrative Staff	6	0	6
Professors	53	5	58
Associate Professors	6	3	9
Assistant Professors	3	4	7
Lecturers	4	1	5
Instructors	1	0	1
Total	73	13	86

1951–52

Rank	Men	Women	Total
Administrative Staff	68	5	73
Professors	366	34	400
Associate Professors	225	40	265
Assistant Professors	329	71	400
Lecturers (including Forest Products)	85	13	98
Associates	58	15	73
Instructors	438	195	633
Assistants (Proj, Tchg, Resch)	1323	314	1637
Teachers in Wisconsin High School	12	13	25
Total	2904	700	3604

THE ABOVE TABLE INCLUDES:

A. Members of the instructional, research, and administrative staff, including military, naval, and air sciences, and Forest Products lecturers.

B. Extension workers throughout the state, including Milwaukee and other extension centers.

C. County and home demonstration agents.

D. The following who were on leave for the entire year:

Rank	Men	Women	Total
Administrative Staff	3	2	5
Professors	13	1	14
Associate Professors	6	1	7
Assistant Professors	9	2	11
Total	31	6	37

E. The following who were here for only one semester, because of a one-semester appointment, because of resignation, or because of leave for one semester:

Rank	Men	Women	Total
Professors	15	2	17
Associate Professors	3	–	3
Assistant Professors	14	2	16
Lecturers (including Forest Products)	12	4	50
Associates	11	2	16
Instructors	35	15	13
Assistants	267	67	334
Total	357	92	449

THE ABOVE TABLE DOES NOT INCLUDE THE FOLLOWING EMERITUS FACULTY MEMBERS:

Rank	Men	Women	Total
Administrative Staff	6	0	6
Professors	58	5	63
Associate Professors	7	3	10
Assistant Professors	4	4	8
Lecturers	3	1	4
Instructors	1	0	1
Total	79	13	92

DEGREES ACCORDING TO COURSES

Baccalaureate Degrees Earned

	1854–1949	1949
Number of First Degrees Earned 1854-1949	62,891	4,337
Bachelor of Arts (Classical Humanities) 1934–1949	21	1
Bachelor of Arts (General) 1904–1949	18,642	607
Bachelor of Arts (Journalism) 1914–1949	1,702	111
Bachelor of Arts (Medical Science) 1939–1949	163	3
Bachelor of Arts (Modern Humanities) 1922–1949	99	1
Bachelor of Business Administration, 1945–1949	1,323	654
Bachelor of Laws, 1869–1949	4,559	221
Bachelor of Library Science, 1939–1949	339	44
Bachelor of Music, 1917–1949	621	34
Bachelor of Naval Science, 1947–1949	42	3
Bachelor of Philosophy, (General) 1878–1949	2,606	51
Bachelor of Science (Agriculture) 1878–1949	3,219	263
Bachelor of Science (Agriculture and Education) 1932–1949	278	21
Bachelor of Science (Applied Art) 1941–1949	144	24
Bachelor of Science (App. Math. and Mech.) 1944–1949	26	11
Bachelor of Science (Art Education) 1922–1949	751	53
Bachelor of Science (Biochemical Engineering) 1949	1	1
Bachelor of Science (Chemical Engineering) 1903–1949	1,257	97
Bachelor of Science (Chemistry) 1909–1949	972	43
Bachelor of Science (Civil Engineering) 1876–1949	1,853	94
Bachelor of Science (Education) 1932–1949	2,532	247
Bachelor of Science (Electrical Engineering) 1892–1949	2,442	233
Bachelor of Science (General) 1946–1949	1,315	734
Bachelor of Science (Home Economics) 1909–1949	2,313	110
Bachelor of Science (Home Economics and Education) 1932–1949	677	42
Bachelor of Science (Journalism) 1949	18	18
Bachelor of Science (Light Building Industry) 1947–1949	69	50
Bachelor of Science (Mechanical Engineering) 1876–1949	2,565	240
Bachelor of Science (Medical Science) 1909–1949	1,482	70
Bachelor of Science (Medical Technology) 1939–1949	160	21
Bachelor of Science (Metallurgical Engineering) 1930–1949	166	25
Bachelor of Science (Mining Engineering) 1910–1949	242	12
Bachelor of Science (Nursing) 1927–1949	212	28
Bachelor of Science (Occupational Therapy) 1945–1949	70	10
Bachelor of Science (Pharmacy) 1895–1949	592	86
Bachelor of Science (Physical Education) 1920–1949	1,061	58
Bachelor of Science (Physical Medicine) 1947–1949	30	12
Degrees and Courses Discontinued		
Bachelor of Arts (Ancient Classical) 1854–1903	470	
Bachelor of Arts (Commerce) 1904–1949	3,067	3
Bachelor of Letters (Civil Historical) 1893–1903	383	
Bachelor of Letters (Commerce) 1902–1903	8	
Bachelor of Letters (English) 1887–1903	459	
Bachelor of Letters (Modern Classical) 1876–1903	548	
Bachelor of Metallurgical Engineering, 1876–1896	16	
Bachelor of Philosophy (Commerce) 1932–1949	564	
Bachelor of Philosophy (Normal) 1898–1932	1,151	
Bachelor of Science (Chemistry-Commerce) 1929–1949	48	1

Bachelor of Science (Commerce) 1903	1	
Bachelor of Science (General Engineering) 1901–1910	96	
Bachelor of Science (General Science) 1886–1903	722	
Bachelor of Science (Geology) 1914	1	
Bachelor of Science (Industrial Education) 1922–1933	74	
Bachelor of Science (Manual Arts) 1921	2	
Graduate in Agriculture, 1910–1949	262*	3*
Graduate in Agriculture (2-Year Course in Home Economics) 1920–1922	8*	
Graduate in Music, 1898–1916	134	
Graduate in Music (2-Year Course for Supervisors) 1910–1925	173*	
Graduate in Music (3-Year Course for Supervisors) 1925	4*	
Graduate in Normal Course, 1865–1868	25	
Graduate in Nursing, 1927–1949	484*	27*
Graduate in Pharmacy, 1884–1940	558	

HIGHER DEGREES EARNED

Number of Higher Degrees Earned, 1875–1949	19,063	1,354
PRESENT DEGREES		
Doctor of Juridical Science, 1934–1949	15	—
Doctor of Medicine, 1927–1949	1,228	56
Doctor of Philosophy, 1892–1949	3,948	284
Engineer, 1876–1949	515	3
Master of Arts, 1879–1949	6,189	247
Master of Business Administration, 1946–1949	55	25
Master of Laws, 1946–1949	7	3
Master of Music, 1938–1949	32	4
Master of Science, 1882–1949	4,686	643
Master of Science, (Engineering) 1922–1949	660	89
DEGREES DISCONTINUED		
Doctor of Public Health, 1912–1915	2	
Master of Agriculture, 1893	1	
Master of Letters, 1882–1903	97	
Master of Pharmacy, 1894 and 1902	2	
Master of Philosophy, 1902–1948	1,622	
Master of Public Health, 1915–1916	4	

KINDS OF DEGREES EARNED

Number of First Degrees Earned, 1854–1949	62,891	4,337
Bachelor of Arts, 1854–1949	24,164	726
Bachelor of Business Administration, 1945–1949	1,323	654
Bachelor of Laws, 1869–1949	4,559	221
Bachelor of Letters, 1876–1903	1,398	..
Bachelor of Library Science, 1939–1949	339	44
Bachelor of Metallurgical Engineering, 1876–1949	16	..
Bachelor of Music, 1917–1949	621	34
Bachelor of Naval Science, 1947–1949	42	3
Bachelor of Philosophy, 1898–1949	4,321	51
Bachelor of Science, 1873–1949	25,391	2,604
Graduate in Agriculture, 1910–1949	270*	3*
Graduate in Music, 1898–1916	134	..
Graduate in Music, (Courses for Supervisors) 1910–1925	177*	..
Graduate in Normal Course, 1865–1868	25	..
Graduate in Nursing, 1927–1949	484*	27*

Graduate in Pharmacy, 1884–1940	558	..

*Not included in totals because not considered degrees.

Number of Higher Degrees Earned, 1875–1949	19,063	1,354
Engineer, 1875–1949	515	3
Doctor of Juridical Science, 1934–1949	15	..
Doctor of Medicine, 1927–1949	1,228	56
Doctor of Philosophy, 1892–1949	3,948	284
Doctor of Public Health, 1912–1915	2	..
Masters, 1879–1949	13,355	1,011
Grand Total of First and Higher Degrees Earned, 1854–1949	81,954	5,691

HONORARY DEGREES

Bachelor of Arts, 1885	1	
Bachelor of Mechanical Engineering, 1887	1	
Civil Engineer, 1877–1915	4	
Doctor of Engineering, 1939	1	
Doctor of Laws, 1866–1949	182	7
Doctor of Letters, 1910–1949	36	2
Doctor of Medicine, 1856	1	
Doctor of Music, 1934 and 1949	2	1
Doctor of Philosophy, 1883–1887	4	
Doctor of Science, 1910–1949	44	3
Master of Arts, 1867–1938	35	
Master of Science, 1877	1	
Mechanical Engineer, 1898–1928	2	
Total Honorary Degrees	314	13

DEGREES ACCORDING TO COURSES

Baccalaureate Degrees Earned

	1854–50	1950
Number of First Degrees Earned, 1854–1950	67,606	4,715
Present Degrees		
Bachelor of Arts (Classical Humanities) 1934–1950	21	..
Bachelor of Arts (General) 1904–1950	19,107	465
Bachelor of Arts (Journalism) 1914–1950	1,763	61
Bachelor of Arts (Medical Science) 1939–1950	165	2
Bachelor of Arts (Modern Humanities) 1922–1950	99	—
Bachelor of Business Administration, 1945–1950	2,020	697
Bachelor of Laws, 1869–1950	4,762	203
Bachelor of Library Science, 1939–1950	380	41
Bachelor of Music, 1917–1950	653	32
Bachelor of Naval Science, 1947–1950	44	2
Bachelor of Philosophy (General) 1917–1950	2,621	15
Bachelor of Science (Agriculture) 1878–1950	3,525	306
Bachelor of Science (Agriculture and Education) 1932–1950	305	27
Bachelor of Science (Applied Art) 1941–1950	176	32
Bachelor of Science (App. Math. and Mech.) 1944–1950	35	9
Bachelor of Science (Art Education) 1922–1950	809	58
Bachelor of Science (Biochemical Engineering) 1950	5	4
Bachelor of Science (Chemical Engineering) 1903–1950	1,379	122

Bachelor of Science (Chemistry) 1909–1950	1,022	50
Bachelor of Science (Civil Engineering) 1876–1950	1,956	103
Bachelor of Science (Education) 1932–1950	2,869	337
Bachelor of Science (Electrical Engineering) 1892–1950	2,702	260
Bachelor of Science (General) 1946–1950	2,253	938
Bachelor of Science (Home Economics) 1909–1950	2,422	109
Bachelor of Science (Home Economics and Education) 1932–1950	709	32
Bachelor of Science (Journalism) 1949–1950	88	70
Bachelor of Science (Light Building Industry) 1947–1950	137	68
Bachelor of Science (Mechanical Engineering) 1876–1950	2,840	275
Bachelor of Science (Medical Science) 1909–1950	1,573	91
Bachelor of Science (Medical Technology) 1939–1950	176	16
Bachelor of Science (Metallurgical Engineering) 1930–1950	189	23
Bachelor of Science (Mining Engineering) 1910–1950	256	14
Bachelor of Science (Nursing) 1927–1950	242	30
Bachelor of Science (Occupational Therapy) 1945–1950	91	21
Bachelor of Science (Pharmacy) 1895–1950	708	116
Bachelor of Science (Physical Education) 1920–1950	1,138	77
Bachelor of Science (Physical Medicine) 1947–1950	39	9
Degrees and Courses Discontinued		
Bachelor of Arts (Ancient Classical) 1854–1903	470	
Bachelor of Arts (Commerce) 1904–1948	3,067	
Bachelor of Letters (Civil Historical) 1893–1903	383	
Bachelor of Letters (Commerce) 1902–1903	8	
Bachelor of Letters (English) 1887–1903	459	
Bachelor of Letters (Modern Classical) 1876–1903	548	
Bachelor of Metallurgical Engineering, 1876–1896	16	
Bachelor of Philosophy (Commerce) 1932–1949	564	
Bachelor of Philosophy (Normal) 1898–1932	1,151	
Bachelor of Science (Chemistry-Commerce) 1929–1949	48	
Bachelor of Science (Commerce) 1903	1	
Bachelor of Science (General Engineering) 1901–1910	96	
Bachelor of Science (General Science) 1886–1903	722	
Bachelor of Science (Geology) 1914	1	
Bachelor of Science (Industrial Education) 1922–1933	74	
Bachelor of Science (Manual Arts) 1921	2	
Graduate in Agriculture, 1910–1950	269*	7*
Graduate in Agriculture (2-Year Course in Home Economics) 1920–1922	8*	
Graduate in Music, 1898–1916	134	
Graduate in Music (2-Year Course for Supervisors) 1910–1925	173*	
Graduate in Music (3-Year Course for Supervisors) 1925	4*	
Graduate in Normal Course, 1865–1868	25	
Graduate in Nursing, 1927–1950	513*	29*
Graduate in Pharmacy, 1884–1940	558	

HIGHER DEGREES EARNED

Number of Higher Degrees Earned, 1875–1950	20,501	1,438
Present Degrees		
Doctor of Juridical Science, 1934–1950	15	..
Doctor of Medicine, 1927–1950	1,302	74

Doctor of Philosophy, 1892–1950	4,231	283
Engineer, 1875–1950	518	3
Master of Arts, 1879–1950	6,434	245
Master of Business Administration, 1946–1950	88	33
Master of Laws, 1946–1950	10	3
Master of Music, 1938–1950	41	9
Master of Science, 1882–1950	5,381	695
Master of Science (Engineering) 1922–1950	753	93

DEGREES DISCONTINUED

Doctor of Public Health, 1912 and 1915	2	..
Master of Agriculture, 1893	1	..
Master of Letters, 1882–1903	97	..
Master of Pharmacy, 1894 and 1902	2	..
Master of Philosophy, 1902–1948	1,622	..
Master of Public Health, 1915–1916	4	..

KINDS OF DEGREES EARNED

Number of First Degrees Earned, 1854–1950	67,606	4,715
Bachelor of Arts, 1854–1950	24,692	528
Bachelor of Business Administration, 1945–1950	2,020	697
Bachelor of Laws, 1869–1950	4,762	203
Bachelor of Letters, 1876–1903	1,398	..
Bachelor of Library Science, 1939–1950	380	41
Bachelor of Metallurgical Engineering, 1876–1896	16	..
Bachelor of Music, 1917–1950	653	32
Bachelor of Naval Science, 1947–1950	44	2
Bachelor of Philosophy, 1898–1950	4,336	15
Bachelor of Science, 1873–1950	28,588	3,197
Graduate in Agriculture, 1910–1950	277*	7*
Graduate in Music, 1898–1916	134	..
Graduate in Music (Courses for Supervisors) 1910–1925	177*	..
Graduate in Normal Course, 1865–1868	25	—
Graduate in Nursing, 1927–1950	513*	29*
Graduate in Pharmacy, 1884–1940	558	..

*Not included in totals because not considered degrees.

Number of Higher Degrees Earned, 1875–1950	20,501	1,438
Engineer, 1875–1950	518	3
Doctor of Juridical Science, 1934–1950	15	..
Doctor of Medicine, 1927–1950	1,302	74
Doctor of Philosophy, 1892–1950	4,231	283
Doctor of Public Health, 1912–1915	2	..
Masters, 1879–1950	14,433	1,078
Grand Total of First and Higher Degrees Earned, 1854–1950	88,107	6,153

HONORARY DEGREES

Bachelor of Arts, 1885	1	..
Bachelor of Mechanical Engineering, 1887	1	..
Civil Engineer, 1877–1915	4	..
Doctor of Engineering, 1939	1	..
Doctor of Laws, 1866–1950	185	3

Doctor of Letters, 1910–1949	37	1
Doctor of Medicine, 1856	1	..
Doctor of Music, 1934	2	..
Doctor of Philosophy, 1883–1887	4	..
Doctor of Science, 1910–1950	45	1
Master of Arts, 1867–1938	35	..
Master of Science, 1877	1	..
Mechanical Engineer, 1898–1928	2	..
Total Honorary Degrees	319	5

DEGREES ACCORDING TO COURSES

Baccalaureate Degrees Earned

	1854–51	1951
Number of First Degrees Earned 1854–1951	71,024	3,418
Bachelor of Arts (Classical Humanities) 1934–1951	21	..
Bachelor of Arts (General) 1904–1951	19,447	340
Bachelor of Arts (Journalism) 1914–1951	1,798	35
Bachelor of Arts (Medical Science) 1939–1951	168	3
Bachelor of Arts (Modern Humanities) 1922–1951	99	..
Bachelor of Business Administration, 1945–1951	2,400	380
Bachelor of Laws 1869–1951	4,950	188
Bachelor of Library Science 1939–1951	395	15
Bachelor of Music 1917–1951	680	27
Bachelor of Naval Science 1947–1951	57	13
Bachelor of Philosophy (General) 1878–1951	2,632	11
Bachelor of Science (Agriculture) 1878–1951	3,760	235
Bachelor of Science (Agriculture and Education) 1932–1951	330	25
Bachelor of Science (Applied Art) 1941–1951	208	32
Bachelor of Science (App. Math. and Mech.) 1944–1951	45	10
Bachelor of Science (Art Education) 1922–1951	863	54
Bachelor of Science (Biochemical Engineering) 1949–1951	11	6
Bachelor of Science (Chemical Engineering) 1903–1951	1,462	83
Bachelor of Science (Chemistry) 1909–1951	1,058	36
Bachelor of Science (Civil Engineering) 1876–1951	2,035	79
Bachelor of Science (Education) 1932–1951	3,121	252
Bachelor of Science (Electrical Engineering) 1892–1951	2,854	152
Bachelor of Science (General) 1946–1951	2,987	734
Bachelor of Science (Home Economics) 1909–1951	2,521	99
Bachelor of Science (Home Economics and Education) 1932–1951	747	38
Bachelor of Science (Journalism) 1949–1951	156	68
Bachelor of Science (Light Building Industry) 1947–1951	163	26
Bachelor of Science (Mechanical Engineering) 1876–1951	2,983	143
Bachelor of Science (Medical Science) 1909–1951	1,644	71
Bachelor of Science (Medical Technology) 1939–1951	195	19
Bachelor of Science (Metallurgical Engineering) 1930–1951	221	32
Bachelor of Science (Mining Engineering) 1910–1951	265	9
Bachelor of Science (Naval Science) 1951	2	2
Bachelor of Science (Nursing) 1927–1951	265	23
Bachelor of Science (Occupational Therapy) 1945–1951	109	18
Bachelor of Science (Pharmacy) 1895–1951	811	103
Bachelor of Science (Physical Education) 1920–1951	1,183	45

Bachelor of Science (Physical Medicine) 1947–1951	51	12
Degrees and Courses Discontinued		
Bachelor of Arts (Ancient Classical) 1854–1903	470	
Bachelor of Arts (Commerce) 1904–1948	3,067	
Bachelor of Letters (Civil Historical) 1893–1903	383	
Bachelor of Letters (Commerce) 1902–1903	8	
Bachelor of Letters (English) 1887–1903	459	
Bachelor of Letters (Modern Classical) 1876–1903	548	
Bachelor of Metallurgical Engineering, 1876–1896	16	
Bachelor of Philosophy (Commerce) 1932–1949	564	
Bachelor of Philosophy (Normal) 1898–1932	1,151	
Bachelor of Science (Chemistry-Commerce) 1929–1949	48	
Bachelor of Science (Commerce) 1903	1	
Bachelor of Science (General Engineering) 1901–1910	96	
Bachelor of Science (General Science) 1886–1903	722	
Bachelor of Science (Geology) 1914	1	
Bachelor of Science (Industrial Education) 1922–1933	74	
Bachelor of Science (Manual Arts) 1921	2	
Graduate in Agriculture, 1910–1950	269*	
Graduate in Agriculture (2-Year Course in Home Economics) 1920–1922	8*	
Graduate in Music, 1898–1916	134	
Graduate in Music (2-Year Course for Supervisors) 1910–1925	173*	
Graduate in Music (3-Year Course for Supervisors) 1925	4*	
Graduate in Normal Course, 1865–1868	25	
Graduate in Nursing, 1927–1950	537*	24*
Graduate in Pharmacy, 1884–1940	558	

HIGHER DEGREES EARNED

Number of Higher Degrees Earned, 1875–1950	22,022	1,521
Present Degrees		
Doctor of Juridicial Science, 1934–1951	16	1
Doctor of Medicine, 1927–1951	1,373	71
Doctor of Philosophy, 1892–1951	4,500	269
Engineer, 1875–1951	520	2
Master of Arts, 1879–1951	6,667	233
Master of Business Administration, 1946–1951	131	43
Master of Laws, 1946–1951	10	..
Master of Music, 1938–1951	48	7
Master of Science, 1882–1951	6,173	792
Master of Science (Engineering) 1922–1951	856	103
Degrees Discontinued		
Doctor of Public Health, 1912 and 1915	2	
Master of Agriculture, 1893	1	
Master of Letters, 1882–1903	97	
Master of Pharmacy, 1894 and 1902	2	
Master of Philosophy, 1902–1948	1,622	
Master of Public Health, 1915–1916	4	

KINDS OF DEGREES EARNED

Number of First Degrees Earned, 1854–1951	71,024	3,418
Bachelor of Arts, 1854–1951	25,070	378
Bachelor of Business Administration, 1945–1951	2,400	380
Bachelor of Laws, 1869–1951	4,950	188
Bachelor of Letters, 1876–1903	1,398	..
Bachelor of Library Science, 1939–1951	395	15
Bachelor of Metallurgical Engineering, 1876–1951	16	..
Bachelor of Music, 1917–1951	680	27
Bachelor of Naval Science, 1947–1951	57	13
Bachelor of Philosophy, 1898–1951	4,347	11
Bachelor of Science, 1873–1951	30,994	2,406
Graduate in Agriculture, 1910–1950	277*	..
Graduate in Music, 1898–1916	134	..
Graduate in Music, (Courses for Supervisors) 1910–1925	177*	..
Graduate in Normal Course, 1865–1868	25	..
Graduate in Nursing, 1927–1951	537*	24*
Graduate in Pharmacy, 1884–1940	558	..
*Not included in totals because not considered degrees.		
Number of Higher Degrees Earned, 1875–1951	22,022	1,521
Engineer, 1875–1951	520	2
Doctor of Juridical Science, 1934–1951	16	1
Doctor of Medicine, 1927–1951	1,373	71
Doctor of Philosophy, 1892–1951	4,500	269
Doctor of Public Health, 1912–1915	2	..
Masters, 1879–1951	15,611	1,178
Grand Total of First and Higher Degrees Earned, 1854–1951	93,046	4,939

HONORARY DEGREES

Bachelor of Arts, 1885	1	
Bachelor of Mechanical Engineering, 1887	1	
Civil Engineer, 1877–1915	4	
Doctor of Engineering, 1939	1	
Doctor of Laws, 1866–1951	189	4
Doctor of Letters, 1910–1949	37	
Doctor of Medicine, 1856	1	
Doctor of Music, 1934 and 1949	2	
Doctor of Philosophy, 1883–1887	4	
Doctor of Science, 1910–1951	46	1
Master of Arts, 1867–1938	35	
Master of Science, 1877	1	
Mechanical Engineer, 1898–1928	2	
Total Honorary Degrees	324	5

THE UNIVERSITY OF

For the First and

	MEN			WOMEN			
	Old	New	Total	Old	New	Total	TOTAL
COURSE							
Letters and Science	3779	2274	6053	1407	1130	2537	8590
Agriculture	1039	415	1454	27	23	50	1504
Home Economics	1	3	4	449	252	701	705
Commerce	681	163	844	36	11	47	891
Education	577	253	830	610	276	886	1716
Engineering	1485	595	2080	4	2	6	2086
Pharmacy	231	86	317	28	11	39	356
Law	664	73	737	15	2	17	754
Library School	..	..	..	4	..	4	4
Medicine	278	10	288	23	..	23	311
Nursing	..	..	..	163	87	250	250
Specials and Unclassified	1	11	12	3	15	18	30
Total	8736	3883	12619	2769	1809	4578	17197
CLASS							
Graduates	1774	1205	2979	306	325	631	3610
Law	664	73	737	15	2	17	754
Medicine	278	10	288	23	..	23	311
Seniors	2452	54	2506	833	38	871	3377
Juniors	1815	527	2342	689	196	885	3227
Sophomores	1347	524	1871	758	240	998	2869
Freshmen	404	1463	1867	137	988	1125	2992
Specials and Unclassified	2	27	29	8	20	28	57
Total	8736	3883	12619	2769	1809	4578	17197
GRADUATES							
Letters and Science	977	628	1605	196	194	390	1995
Agriculture	365	201	566	19	22	41	607
Home Economics	..	..	..	19	22	41	41
Commerce	39	78	117	3	6	9	126
Education	147	126	273	63	77	140	413
Engineering	229	148	377	1	..	1	378
Pharmacy	17	24	41	5	4	9	50
Total	1774	1205	2979	306	325	631	3610
LAW	664	73	737	15	2	17	754
MEDICINE	278	10	288	23	..	23	311

WISCONSIN ENROLLMENT

Second Semesters, 1950-51

	MEN			WOMEN			TOTAL
	Old	New	Total	Old	New	Total	
SENIORS							
Letters and Science	891	20	911	348	19	367	1278
Agriculture	274	6	280	2	..	2	282
Home Economics	..	..	..	153	6	159	159
Commerce	404	20	424	20	1	21	445
Education	219	4	223	252	12	264	487
Engineering	566	4	570	1	..	1	571
Nursing	..	..	..	50	..	50	50
Pharmacy	98	..	98	7	..	7	105
Total	2452	54	2506	833	38	871	3377
JUNIORS							
Letters and Science	781	254	1035	305	114	419	1454
Agriculture	182	18	200	..	..	..	200
Home Economics	1	..	1	121	24	145	146
Commerce	238	65	303	13	4	17	320
Education	127	29	156	167	51	218	374
Engineering	413	141	554	1	..	1	555
Nursing	..	..	..	76	3	79	79
Pharmacy	73	20	93	6	..	6	99
Total	1815	527	2342	689	196	885	3227
SOPHOMORES							
Letters and Science	866	344	1210	464	141	605	1815
Agriculture	155	40	195	3	..	3	198
Home Economics	..	..	..	133	48	181	181
Education	60	22	82	113	31	144	226
Engineering	225	76	301	1	1	2	303
Nursing	..	..	..	34	12	46	46
Pharmacy	41	42	83	10	7	17	100
Total	1347	524	1871	758	240	998	2869
FRESHMEN							
Letters and Science	263	1012	1275	94	661	755	2030
Agriculture	63	150	213	3	1	4	217
Home Economics	..	3	3	23	152	175	178
Education	24	72	96	14	101	115	211
Engineering	52	226	278	..	1	1	279
Nursing	..	..	..	3	72	75	75
Pharmacy	2	..	2	..	..	..	2
Total	404	1463	1867	137	988	1125	2992
Specials and Unclassified	2	27	29	8	20	28	57
GRAND TOTAL	8736	3883	12619	2769	1809	4578	17197
Resident Students	6876	2804	9680	2144	1180	3324	13004
Non-Resident Students	1859	1080	2939	625	629	1254	4193

THE UNIVERSITY OF

For the First and

	MEN			WOMEN			
	Old	New	Total	Old	New	Total	TOTAL
COURSE							
Letters and Science	3269	1818	5087	1342	1098	2440	7527
Agriculture	838	392	1230	33	23	56	1286
Home Economics	1	1	2	480	221	701	703
Commerce	552	146	698	31	10	41	739
Education	420	211	631	541	261	802	1433
Engineering	1181	631	1812	2	1	3	1815
Pharmacy	229	53	282	35	8	43	325
Law	618	61	679	14	1	15	694
Library School	..	..	..	..	..	..	..
Medicine	288	12	300	14	1	15	315
Nursing	..	..	..	168	75	243	243
Specials and Unclassified	..	..	..	..	2	2	2
Total	7396	3325	10721	2660	1701	4361	15082
CLASS							
Graduates	1654	1041	2695	295	268	563	3258
Law	618	61	679	14	1	15	694
Medicine	288	12	300	14	1	15	315
Seniors	1867	56	1923	811	37	848	2771
Juniors	1444	344	1788	680	142	822	2610
Sophomores	1202	405	1607	673	226	899	2506
Freshmen	322	1403	1725	171	1019	1190	2915
Specials and Unclassified	1	3	4	2	7	9	13
Total	7396	3325	10721	2660	1701	4361	15082
GRADUATES							
Letters and Science	909	519	1428	187	161	348	1776
Agriculture	350	208	558	30	19	49	607
Home Economics	..	..	..	19	20	39	39
Commerce	60	63	123	..	6	6	129
Education	104	99	203	51	61	112	315
Engineering	204	141	345	..	..	..	345
Pharmacy	27	11	38	8	1	9	47
Total	1654	1041	2695	295	268	563	3258
LAW	618	61	679	14	1	15	694
MEDICINE	288	12	300	14	1	15	315

WISCONSIN ENROLLMENT

Second Semesters, 1951-52

	MEN			WOMEN			
	Old	New	Total	Old	New	Total	TOTAL
SENIORS							
Letters and Science	711	23	734	360	24	384	1118
Agriculture	178	7	185	..	..	..	185
Home Economics	..	..	..	154	4	158	158
Commerce	299	18	317	17	2	19	336
Education	171	4	175	221	5	226	401
Engineering	425	3	428	..	..	..	428
Nursing	..	..	..	53	2	55	55
Pharmacy	83	1	84	6	..	6	90
Total	1867	56	1923	811	37	848	2771
JUNIORS							
Letters and Science	626	151	777	280	84	364	1141
Agriculture	130	11	141	1	..	1	142
Home Economics	..	..	..	132	17	149	149
Commerce	193	65	258	14	2	16	274
Education	85	22	107	176	31	207	314
Engineering	338	79	417	..	..	..	417
Nursing	..	..	..	62	5	67	67
Pharmacy	72	16	88	15	3	18	106
Total	1444	344	1788	680	142	822	2610
SOPHOMORES							
Letters and Science	809	251	1060	402	140	542	1602
Agriculture	130	31	161	1	2	3	164
Home Economics	1	..	1	143	36	179	180
Education	43	9	52	79	39	118	170
Engineering	172	89	261	1	..	1	262
Nursing	..	..	..	41	5	46	46
Pharmacy	47	25	72	6	4	10	82
Total	1202	405	1607	673	226	899	2506
FRESHMEN							
Letters and Science	213	874	1087	113	688	801	1888
Agriculture	50	135	185	1	2	3	188
Home Economics	..	1	1	32	144	176	177
Education	17	74	91	12	121	133	224
Engineering	42	319	361	1	1	2	363
Nursing	..	..	..	12	63	75	75
Total	322	1403	1725	171	1019	1190	2915
Specials and Unclassified	1	3	4	2	7	9	13
GRAND TOTAL	7396	3325	10721	2660	1701	4361	15082
Resident Students	5658	2352	8010	1966	1132	3098	11108
Non-Resident Students	1738	973	2711	694	569	1263	3974

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