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BULLETIN
of the
UNIVERSITY *of* WISCONSIN

GENERAL ANNOUNCEMENT OF COURSES
1950-52
(CATALOG)

MADISON, WISCONSIN
JULY, 1951

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GENERAL ANNOUNCEMENT OF COURSES

1950-52

(CATALOG)

MADISON, WISCONSIN

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UNIVERSITY CALENDAR

Academic Year 1950-51

FIRST SEMESTER

Sept. 8	Friday	Last day for entrance examinations
Sept. 11-16	Mon.-Sat. (noon)	Registration week
Sept. 18	Monday	Instruction begins
Sept. 19	Tuesday	Examinations for removal of conditions
Sept. 23	Saturday	Placement examinations for late freshmen and transfers
Sept. 30	Saturday	Foreign language attainment examinations
Nov. 23, 24, 25	Thurs., Fri., Sat.	Thanksgiving recess
Dec. 2	Saturday	Examinations for removal of conditions
Dec. 16-Jan. 2	Sat. (noon)-Tue. (7:45 a.m.)	Christmas recess
Jan. 13	Saturday	Foreign language attainment examinations
Jan. 18-27	Thurs.-Sat.	Final examinations

SECOND SEMESTER

Jan. 31	Wednesday	Last day for entrance examinations
Jan. 29-Feb. 3	Mon.-Sat.	Registration week
Feb. 5	Monday	Instruction begins
Feb. 10	Saturday	Placement examinations for new students
Feb. 24	Saturday	Examinations for removal of conditions
Apr. 14-23	Sat. (noon)-Mon. (7:45 a.m.)	Spring recess
Apr. 28	Saturday	Examinations for removal of conditions
May 12	Saturday	Foreign language attainment examinations
May 30	Wednesday	Memorial Day: legal holiday
June 2-11	Sat.-Mon.	Final examinations
June 15	Friday	Commencement Day

SUMMER SESSION—1951

June 18	Monday	Law School classes begin
June 25	Monday	Eight-week classes begin
Aug. 17	Friday	Eight-week session closes
Aug. 25	Saturday	Law School closes

Academic Year 1951-52

FIRST SEMESTER

Sept. 17-22	Mon.-Sat. (noon)	Registration week
Sept. 24	Monday	Instruction begins
Dec. 22-Jan. 7	Sat. (noon)-Mon. (7:45 a.m.)	Christmas recess
Jan. 24-Feb. 2	Thurs.-Sat.	Final examinations

SECOND SEMESTER

Feb. 4-9	Mon.-Sat.	Registration week
Feb. 11	Monday	Instruction begins
Apr. 19-28	Sat. (noon)-Mon. (7:45 a.m.)	Spring recess
June 7-16	Sat.-Mon.	Final examinations
June 20	Friday	Commencement Day

Part I -- General Information

Because the material in this section is directed primarily to prospective students, emphasis has been placed on those matters which are of greatest concern to the student prior to the time he arrives on the campus. Prospective students should make early arrangements for such matters as admission, housing, finance, and selection of a course of study.

Less attention is given in this catalog to a great variety of important activities and services which are available to the student once he has enrolled and started his classwork. These activities and services are described in detail in the Student Handbook, which is given to each student at registration time. Although the Student Handbook is not ordinarily mailed out, copies are on file in public high-school offices in Wisconsin. However, after reading this catalog and before his arrival on the campus, the prospective student will want to get a copy of the bulletin of the school or college in which he plans to enroll. To assist in determining which bulletin to order, a brief description is given here of each course offered.

Special bulletins are available for the 8-Week Summer Session, the Graduate School, and for correspondence courses which can be taken through the Extension Division.

THE CAMPUS

The University of Wisconsin campus, situated in the city of Madison, extends for several miles along the wooded slopes of the hills bordering Lake Mendota, the largest of Madison's four lakes. The rolling grounds of the campus, of marked natural beauty, are covered with evergreens, rows of towering elms, and a willow drive which fringes the lake shore. The lake itself provides unexcelled facilities for swimming, boating, fishing, and ice skating, while the surrounding hills make possible two other forms of winter sports not everywhere common, skiing and tobogganning.

The grounds have a special archeological interest because of the presence of several Indian effigy mounds. These are small mounds of earth in the form of animals and other totems, made by the Winnebago and allied native tribes, unique in being found only in southern Wisconsin and along the boundaries of the states to the west and south.

The College of Letters and Science, the Law School, the Schools of Education, Commerce, and Pharmacy, and the Washburn Observatory are located on the upper campus on a high elevation overlooking Lake Mendota. The lower campus to the east contains the library buildings, the combined men's gymnasium and armory, and the Memorial Union which is a center of student life on the campus.

The lower western part of the campus is the site of the buildings of the College of Agriculture, its experimental farms and greenhouses, men's and women's dormitories, the Medical School and School of Nursing, hospitals, experimental laboratories and the United States Forest Products Laboratory. Further west Picnic Point, a picturesque wooded prominence, juts into Lake Mendota and helps to form University Bay. Nearby is the tent colony for summer session students.

South of the agricultural campus lies Camp Randall in which are located the athletic field house, stadium, and playing fields in the south end and the buildings of the College of Engineering in the north portion of the area.

The University Arboretum, Wild Life Refuge, and Forestry Preserve, a tract of 1200 acres, is located on the shore of Lake Wingra not far distant from the campus. It serves the University as an outdoor laboratory for the study of plants, birds, mammals, insects, aquatic life and soils, and their interrelation in nature.

The University operates extension centers in Milwaukee, Racine, Wausau, Green Bay, Kenosha, Manitowoc, Fond du Lac, Menasha, Sheboygan, and Marinette, and university courses are taught in a number of other cities in Wisconsin.

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 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 catalog.

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 *Athenaean,* 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, 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. In general, a student is assigned an adviser in the field in which he says he expects to specialize. 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 suited to his needs. A student, however, 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.

The Department of Student Health, established for the protection and care of the health of students enrolled at the University, consists of an excellently equipped Infirmary for those needing hospital care, and a student clinic for ambulatory cases requiring health advice or medical consultation.

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

VETERANS

In addition to all regular university services, certain special services are available to veterans. Four offices provide these various services: the Office of Veteran Affairs in Bascom Hall, the Business Office for Veterans at 730 University Avenue, the United States Veterans Administration Office at 448 State Street, and the State of Wisconsin Department of Veteran Affairs located in the State Capitol.

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.

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

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 10.) (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
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

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

COLLEGE OF AGRICULTURE

A. Agricultural Division

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

B. Home Economics Division

Clothing and Textiles
Foods, Nutrition and Administration
Related Art

LAW SCHOOL

MEDICAL SCHOOL

Anatomy
Hygiene
Medical Microbiology
Medicine
Pathology
Pharmacology and Toxicology
Physical Medicine
Physiology
Physiological Chemistry
Radiology
Surgery
Medical Technology

SCHOOL OF NURSING

Dietetics
Therapeutics
Medicine and Surgery
Nursing
Public Health Nursing

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 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 kindergarten work, 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—Three- and Five-Year Nursing Courses
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)
BACHEIOR OF ARTS (Journalism)
BACHELOR OF BUSINESS ADMINISTRATION
BACHELOR OF LAWS
BACHELOR OF MUSIC
BACHELOR OF SCIENCE—Granted in General Course
BACHELOR OF NAVAL SCIENCE
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 (Hygiene)—Five-Year Nursing Courses
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 (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 Arts in Journalism, Master of Laws, Master of Music, Master of Business Administration, Master of Science in Business Education, Master of Science, and Master of Science degrees in Child Development, Social Work and in any of the branches of engineering, e.g., chemical, civil, etc. Candidates 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.

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, 202 Mechanical Engineering Bldg.

Home Economics ..... Director of Home Economics, 119 Home Economics Bldg.

Letters and Science, Education, Commerce, 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; for others, appropriate statements of attainments, occupation, and purpose. 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-Engineering Building.

Applications will be received as follows:

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.)

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: For the past few years and at the present time the University of Wisconsin has been and 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

* 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.

admission to 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, physics, premedicine, psychology, social work, sociology, or zoology. If a student plans to major in one of these fields, he must secure 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 units 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 achieve a satisfactory mark in any of the subjects required for college entrance, (2) to earn the total 16 units required, or (3) 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 pro-

cedure 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 examinations administered by the University of Wisconsin.

3. For Admission As A Veteran Of World War II

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 deficiences 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, normal schools, and universities, who have pursued college courses equivalent to those which would have been taken at the University of Wisconsin, with an average standing of at least C on an *A - B - C - D - Fail* grading basis, and who have been granted honorable dismissal from their former institutions may be admitted to the University. Former students of such institutions cannot be received as freshmen on the basis of their high-school records.

Applicants for admission who have had any work whatsoever in another institution of college grade, regardless of whether they wish to receive credit for it, must submit complete credentials of both their high-school and college records 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.**

No more than one-fourth the number of credits required for a four-year course at the University of Wisconsin will be given for a single year's work at another institution. At least the senior year's work must be earned in residence at the University of Wisconsin.

NEW STUDENT WEEK

In order to acquaint new students with the educational, cultural, and recreational opportunities offered in the university community, a program for new students is planned 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 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:

College of Letters and Science

Course in Chemistry—2 units of French or Spanish; 2–4 units of German
Course in Hygiene—2–4 units of French, German, or Spanish
Pre-Medical training—2 units of Latin; 2–4 units of French or German
Medical Technology—2–4 units of French or German
Physical Medicine—0–4 units
General Course leading to the Bachelor of Arts degree—2–4 units
Course in Journalism—For the B.A. degree: 4 units of French, German, Latin, or Spanish, with a possible addition of 2–4 units of another language. For the B.S. degree, language is recommended but not required.
Course in Humanities—4 units of Latin, and 2–4 units of Greek, French or German
Course in Music (Bachelor of Music degree)—2–4 units of French, German, Italian, or Spanish.

College of Agriculture

Course in Home Economics — 2–4 units in one language or 5 units in two. (See the College of Letters and Science and the Course in 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

If a student has completed four years of one language in high school he may take an attainment examination, success in which will relieve him of certain other requirements for his degree. High-school work in a foreign language is accepted in satisfaction of the foreign language requirements for the various degrees at the rate of four univer-

sity 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 secure 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, board, books, supplies, laundry, cleaning, transportation in Madison, and recreation. The average total expense for these items during 1949–50 is estimated to be between $725 and $750 for the thirty-eight-week academic year. The actual expenditures of many students for these items will vary from this average by as much as $250. Charges for university fees, nonresident tuition, clothing, and transportation to and from Madison are not included in the above estimates. More information on charges for board and room is given 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	$ 60.00	$210.00
Law School	70.00	220.00
Medical School		
1st, 2nd, and 3rd years	140.00	290.00
4th year	95.00	245.00

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	$ 7.50	$26.00
Law School	Per credit	9.00	28.00
Graduate School	Per credit	10.00	35.00

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.

* Subject to change.

(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 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 part-time work while they are enrolled as resident students. The student should not expect to obtain a definite job, however, before he arrives to stay. The employer usually requires a personal interview. Help is often wanted on very short notice. It is then necessary to send a student who is available and ready for immediate work.

There are approximately two thousand students normally employed by departments of the University. Part-time teaching, technical and semi-professional positions in the University are usually filled by graduate students. Many positions which do not require special training or experience, however, are held by undergraduates.

The Student Employment Bureau is called upon to recommend students for housekeeping duties in private homes, as stenographers, baby sitters, typists, clerks, waiters, 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. Many students are able to secure work which makes better use of their particular talents when they have become established in the community.

It is highly desirable that students entering the University come with sufficient funds to finance at least their first semester. Part-time work schedules should be arranged with extreme caution. The student who carries 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 concerning 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. 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 encourged 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 Student Financial Aids Counselor, Student Personnel Office, Bascom Hall, or in the office of the dean of their school or college. Women students may also 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. 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 Student Financial Aids Counselor in the Student Personnel Office, 121 Bascom Hall. Full information about scholarships for undergraduate students is given in the bulletin, **Student Financial Aids,** which may be obtained from the Student Personnel Office. High-school seniors should consult their principal. Students at 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. A bulletin for graduate students, **Scholarships - Fellowships - Assistantships,** is available at the Graduate Office.

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 1949–50 meal service rates ranged from $1.50 to $2.10 a day in the respective housing units, and room rate from $3.50 to $7.50 a week. The cost of board in the Union cafeteria (3 meals) averaged $1.35 to $1.40 per day in 1949–50.

The cost of room and board for the academic year ranges from $560 to $880. 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 rooms.

WOMEN STUDENTS

FOR UNDERGRADUATE WOMEN

Women students live in the following types of houses: University Residence Halls (21 per cent), privately operated and University approved dormitories and houses (33 per cent), sororities (10 per cent), private home rooms (10 per cent), co-operative houses (2 per cent), parents' homes (16 per cent), and apartments (8 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 the 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 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 obligated 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 conceived as a part of the educational pattern of the University, and their operation is directed toward effectively filling this role. A House Fellow (or house counselor) staff of outstanding young women brings to halls residents leadership and counsel. In addition a Head Resident of faculty standing is available for counsel, and together with the House Fellows aids in fostering and promoting the welfare of residents and in providing a wealth of educational opportunities for them.

Recreational space for good leisure-time activities is provided and 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 furnished. Menus 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 and Chadbourne Halls, accommodating 156 and 178 respectively in single and double rooms, are located on the main campus near the library, Union, and classroom buildings. There is a dining room in each hall.

Elizabeth Waters Hall, accommodating 500 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 Chadbourne Hall dining room.

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

Rates are set with as clear a prediction of future costs as possible, and the University reserves the right to make adjustments during the year if necessary. Since rates are set to cover cost of operation, they vary somewhat from year to year. Charges for room and board are payable in advance by the quarter. Rooms are not rented without board except in the Stadium Dormitory for men. Rates for the 1949–50 academic year ranged from $537 to $600 for women, and from $491 to $585 for men, depending upon the room assigned. Rates for room only in the Stadium Dormitory ranged from $145 to $160 a year.

Room Application. (See application form on page 19.) To give equal opportunity to all applicants, the procedure for accepting room applications from new students 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 to determine 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 that are 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. Students applying late in the summer are often assigned before classes begin.

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 as payment 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.

Some misunderstanding has been encountered in the past due to the supposition that having an application on file constituted assurance of accommodations. This is not the

case. Each year more applications are accepted than there are accommodations available, so that those on the waiting list may have an opportunity for assignment when cancellations are received.

Room Assignments. Assignments for the academic year are mailed about July 1 on the basis of class quotas which have been established previously and approved by the University Regents. **For the women** these quotas are as follows: freshmen, 34 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). Quotas for men are based on vacant space available. For example, for 1950–51, 55 per cent of the vacancies (900 expected) will be assigned to freshmen, 20 per cent to sophomores, 15 per cent to juniors, and 10 per cent to seniors. Although preference is given to veterans, most new assignments will be made to non-veterans because few veterans are now entering the University.

New assignments are directly dependent, within quota limitations, upon the applicant's location on the waiting list. Wisconsin undergraduates have preference in assignments.

Rooms are rented for the entire academic year, and a student cannot 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.

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 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. & No.) (City) (Zone) (State) (Telephone No.)

.....
Name of Parent or Guardian (St. & 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 WWII 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 and the period 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 1500 women in 37 units. Houses which meet at least the minimum standards of the University and the city safety codes 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 board and room.

Das Deutsche Haus is operated by the German Department and is open to women for both board and room.

(Both men and women rooming outside may take their meals at the above houses.)

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

For full information write to the Housing Bureau or directly to the department of special interest.

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.

Co-operative Houses

Inexpensive accommodations are available in several co-operative houses where residents do a certain amount of work each day in order to reduce living costs. They are:

Tabard Inn and Anderson 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 unit, a combination co-operative and special interest house for 29 women, offers inexpensive interracial group living.

HOUSING FOR GRADUATE WOMEN

There are no university-operated houses for graduate women during the academic year, but there are six privately owned university-approved units. Food service and rooms are available in two private houses; two have kitchen privileges, and three 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 graduates only. Both graduates and undergraduates are accepted in some units. Whenever a graduate student elects to live in an undergraduate unit during the summer, she assumes senior status under the Women's Self–Government Association.

MEN STUDENTS

The following types of housing accommodate single men: University Residence Halls (18 per cent); privately operated lodging houses (33 per cent); fraternities (10 per cent); parents' homes (14 per cent); and private room rentals (25 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

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The halls are comfortably furnished and of modern, fireproof construction. Recreational space for good leisure-time activities is provided and 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.

Menus 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.

Tripp and Adams Halls are built in a quadrangle around a common court and 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.

Slichter Hall, the newest hall for men, adjacent to Tripp and Adams Halls, has 25 double rooms in each of its four houses. Residents eat their meals next door at Van Hise Hall.

Kronshage Houses, consisting of eight houses, each accommodating 80 men in double rooms, are located to the west along the lakeshore. Residents have their meals in the dining rooms of Kronshage Hall, the central unit.

Baumann and Schreiner Houses, located in the east wing of Camp Randall Stadium, each provide space for 70 men in rooms for two and for four. These are the only units where residents are not required to contract for board in addition to room. Residents may purchase meal tickets to eat at Van Hise Hall or they may eat their meals at the nearby Union Breese Terrace Cafeteria on an individual basis.

See Page 18 For Rate, Application, And Assignment Information.

2. OFF-CAMPUS ACCOMMODATIONS

Private Lodging Houses—About 6,000 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 private owner. Houses meeting the minimum standards of the University and the city building code requirements are classified 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 infrequent vacancies occur in these houses, they are listed with the Housing Bureau, and rental information is available there.

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 Associate Dean of the College of Agriculture, Madison 6, Wisconsin.

MARRIED COUPLES AND FAMILIES

1. TEMPORARY HOUSING PROJECTS

Temporary housing projects consist of those units which are operated by the Division of Residence Halls to help meet the demand for student housing during the present emergency. 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. A list of the temporary housing projects follows.

Randall and Monroe Trailer Parks—The 170 trailers in this camp, located on the campus, are for the use of married veterans and their families. There will be a waiting list for these units.

East Hill Trailer Parking Site—There are 123 trailer parking sites in this camp, located about one mile from the campus, which are available to veteran and nonveteran married students who own trailers. This park is located two blocks from a city bus line. Wisconsin residents are given preference for assignment.

University Badger Project—Accommodations for 700 married veterans and their families are provided at Badger, a university-operated project thirty-five miles from Madison. Schools and stores located here afford Badger residents the necessary conveniences for family living. Transportation is provided by university-operated buses at a nominal fee.

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 on the day they are listed. The turnover in apartments in the city is almost exclusively from friend to friend. Generally there is a fair number of light housekeeping units and sleeping rooms available for married couples, but there are not enough units of this type to meet the demand at the beginning of the semester. Married couples who have not made reservations for quarters are advised to arrive well in advance of the opening date for the semester. Here, as elsewhere in times of shortage, it is difficult to obtain housing for families with children. Students who need family housing are urged to apply for the emergency units. No semester contracts are required; tenants are free to move on two weeks' notice if other accommodations are found. Men who do not receive assignments 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 in the Union Breese Terrace Cafeteria on the west side of the campus. Four large rooms in the Union provide 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 10,000 meals are served daily. The average cost of meals in the Union cafeteria in 1949–50 was approximately 21c for breakfast, 55c for lunch, and 60c for dinner.

COLLEGE OF LETTERS AND SCIENCE

MARK H. INGRAHAM, DEAN

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JOHNSON, HAROLD LESTER, *Ph.D.*, Assistant Professor of Astronomy
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.*, Assistant Professor of Geology

KASTEN, LLOYD AUGUST WILLIAM, *Ph.D.*, Professor of Spanish and Portuguese
KIEKHOFER, WILLIAM HENRY, *Ph.D., LL.D.*, Professor of Economics
KIENITZ, JOHN FABIAN, *Ph.D.*, Professor of Art History
KING, ANNE RUTH, *Ph.D.*, Instructor in English
KING, EDWARD LOUIS, *Ph.D.*, Assistant Professor of Chemistry
KITTEL, PAULA MARGARETHA, *Ph.D.*, Assistant Professor of German
KJELDSTADLI, SVERRE, *Cand. Phil.*, Lecturer in Scandinavian Area Studies
KLEENE, STEPHEN COLE, *Ph.D.*, Professor of Mathematics
KLEIN, MICHAEL WILLIAM, *Ph.D.*, Associate Professor of Chemistry
KNAPLUND, PAUL ALEXANDER, *Ph.D.*, Professor of History and Scandinavian Area Studies
KOLISCH, RUDOLPH, Artist in Residence, Music
KRAMER, SOL, *Ph.D.*, Assistant Professor of Zoology
KROFF, ALEXANDER YALE, *Ph.D.*, Assistant Professor of French

LACY, EDGAR W., *Ph.D.*, Associate Professor of English
LAIRD, ARTHUR GORDON, *Ph.D.*, Emeritus Professor of Greek
LAMPARD, ERIC EDWIN, *B.S., F.R.E.S.*, Instructor in History
LANGER, RUDOLPH ERNEST, *Ph.D.*, Professor of Mathematics
LARSEN, EDWIN MERRITT, *Ph.D.*, Associate Professor of Chemistry
LAUDON, LOWELL ROBERT, *Ph.D.*, Professor of Geology
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
LUCKHARDT, HILMAR FRANCIS, *M.A.*, Associate Professor of Music
LUTTINGER, JOAQUIN MAZDAK, *Ph.D.*, Assistant Professor of Physics
LYON, ALBERT EDDY, *Ph.D.*, Assistant Professor of Spanish

MACDUFFEE, CYRUS COLTON, *Ph.D., Sc.D.*, Professor of Mathematics
MACK, JULIAN ELLIS, *Ph.D.*, Associate Professor of Physics
MACKENDRICK, PAUL L., *Ph.D.*, Associate Professor of Classics
MAGARET, GRETCHEN ANN, *Ph.D.*, Professor of Psychology
MARCH, HERMAN WILLIAM, *Ph.D.*, Emeritus Professor of Mathematics
MARK, ABRAHAM MORTON, *Ph.D.*, Instructor in Mathematics
MARQUARDT, WILLIAM FREDERICK, *Ph.D.*, Instructor in English
MASON, CHARLES THOMAS, JR., *Ph.D.*, Instructor in Botany
MATHEWS, JOSEPH HOWARD, *Ph.D.*, Director of Course in Chemistry; Professor of Chemistry
MAYOR, JOHN ROBERTS, *Ph.D.*, Associate Professor of Mathematics
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
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.*, Associate Professor of Zoochemistry
Mehl, Walter John, *B.S.*, *Ph.M.*, Assistant to the Associate Dean
Meiklejohn, Alexander, *Ph.D.*, *LL.D.*, Emeritus Professor of Philosophy
Meloche, Villiers Willson, *Ph.D.*, Professor of Chemistry
Mercier, Germaine Eugenie, *B.S.*, *M.A.*, Assistant Professor of French
Meyer, Mrs. Ineva R., *M.A.*, Assistant Dean
Meyer, Roland Kenneth, *Ph.D.*, Professor of Zoology
Miles, Arthur Parker, *Ph.D.*, Professor of Social Work
Milham, Mary Ella, *Ph.D.*, Instructor in Integrated Liberal Studies and Classics
Miller, Edward Ernst, *Ph.D.*, Assistant Professor of Physics
Miller, Eric Rexford, *M.S.*, Emeritus Lecturer in Meteorology
Milligan, Edward Elgin, *Ph.D.*, Assistant Professor of French
Milofsky, Bernard, Artist in Residence, Music
Mitchell, Ronald Elwy, *M.A.*, Professor of Speech; Theater Director
Monschein, Robert Winfield, *M.M.*, Instructor in Music
Morgan, J. Theodore, *Ph.D.*, Associate Professor of Economics
Morrison, Peter Reed, *Ph.D.*, Assistant Professor of Zoology
Morton, Walter Albert, *Ph.D.*, Professor of Economics
Mote, Frederick Albert, *Ph.D.*, Associate Professor of Psychology
Mulvihill, Edward Robert, *Ph.D.*, Associate Professor of Spanish
Murphy, George Washington, *Ph.D.*, Assistant Professor of Chemistry
Mussen, Paul Henry, *Ph.D.*, Assistant Professor of Psychology

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, Edwardo Alvaro, *Ph.D.*, Professor of Spanish
Newcomb, Eldon Henry, *Ph.D.*, Assistant Professor of Botany
Noland, Lowell Evan, *Ph.D.*, Professor of Zoology

Ogg, Frederic Austin, *Ph.D.*, Emeritus Professor of Political Science
Olmstead, Clarence Walter, *M.S.*, 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

Palmeri, Joseph, *Ph.D.*, Associate Professor of French and Italian
Patau, Klaus Adolf, *Ph.D.*, Lecturer in Botany
Patterson, Helen Marguerite, *M.A.*, Associate Professor of Journalism
Perlman, Selig, *Ph.D.*, Professor of Economics
Petrovich, Michael B., *M.A.*, Instruction in History
Pfankuchen, Llewellyn Ernest, *Ph.D.*, Professor of Political Science
Phillips, Burr Wendell, *M.A.*, Professor of History
Pochman, Henry August, *Ph.D.*, Professor of English
Pooley, Robert Cecil, *Ph.D.*, Professor of English and Integrated Liberal Studies
Portuondo, Jose A., *Ph.D.*, Assistant Professor of Spanish and Portuguese
Post, Gaines, *Ph.D.*, Professor of History
Powell, John Leonard, *Ph.D.*, Assistant Professor of Physics
Presson, Robert K., *Ph.D.*, Instructor in English

Quintana, Ricardo Beckwith, *Ph.D.*, Professor of English

RAHIER, ALBERT NICOLAS, Artist in Residence, Music
RAMSPERGER, ALBERT GUSTAV, *Ph.D.*, Professor of Philosophy
REID, F. LUCILLE, *M.A.*, Instructor in French
REYNOLDS, ROBERT LEONARD, *Ph.D.*, Professor of History
RICHARDS, HUGH TAYLOR, *Ph.D.*, Associate Professor of Physics
RIEGEL, SIEGHARDT MICHAEL, *Ph.D.*, Assistant Professor of German
RIEMER, SVEND, *Ph.D.*, Associate Professor of Sociology
RIS, HANS, *Ph.D.*, Associate Professor of Zoology
RITTER, HOWARD LESTER, *Ph.D.*, Assistant Professor of Chemistry
ROBINSON, ARTHUR HOWARD, *Ph.D.*, Associate Professor of Geography
RODGERS, FRANKLIN ALANSON, *Ph.D.*, Instructor in Physics
RODMAN, GEORGE BUSH, *Ph.D.*, Associate Professor of English
ROE, FREDERICK WILLIAM, *Ph.D.*, *Litt.D.*, Emeritus Professor of English
ROEBUCK, JOHN RANSOM, *Ph.D.*, Emeritus Professor of Physics
ROESELER, ROBERT OSWALD, *Ph.D.*, Milwaukee Seminar Professor of German
ROGERS, SAMUEL GREENE ARNOLD, *M.A.*, Professor of French
ROLLEFSON, RAGNAR, *Ph.D.*, Professor of Physics
ROSA, ALBERTO M., *M.A.*, Acting Instructor in Spanish and Portuguese
ROSALDO, RENATO IGNACIO, *Ph.D.*, Associate Professor of Spanish and Portuguese
ROSS, EDWARD ALSWORTH, *Ph.D.*, *LL.D.*, Emeritus Professor of Sociology
ROSSI, JOSEPH, *Ph.D.*, Associate Professor of French
ROTWEIN, EUGENE, *Ph.D.*, Assistant Professor of Economics
RUBINSTEIN, WILLIAM CRANDALL, *M.A.*, Instructor in English
RUEDISILI, CHESTER HENRY, *Ph.D.*, Lecturer in Psychology; Associate Dean
RUSSELL, AMUAL ARTELT, *M.S.W.*, Instructor in Social Work
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.*, Assistant Professor of Spanish
SANDERS, MARY ELIZABETH, *Ph.D.*, Instructor in Integrated Liberal Studies
SCHAEFFER, ALBERT CHARLES, *Ph.D.*, Professor of Mathematics
SCHENK, RACHEL KATHERINE, *M.L.S.*, Assistant Professor of Library Science; Acting Director of the Library School
SCHLATTER, EDWARD BUNKER, *Ph.D.*, Emeritus Professor of Romance Languages
SCHOENFELD, CLARENCE, *M.A.*, Lecturer in Journalism
SCHUETTE, HENRY AUGUST, *Ph.D.*, Professor of Chemistry
SEIFERT, LESTER WILHELM, *Ph.D.*, Assistant Professor of German
SELLERY, GEORGE CLARKE, *Ph.D.*, *LL.D.*, Emeritus Dean and Emeritus Professor of History
SHAFER, JOHN IRWIN, JR., *Ph.D.*, Instructor in Botony
SHOEMAKER, FRANK CRAWFORD, *Ph.D.*, Instructor in Physics
SHUDOFSKY, MAURICE MITYA, *Ph.D.*, Assistant Professor of English
SINGLETON, MACK HENDRICKS, *Ph.D.*, Associate Professor of Spanish
SKOOG, FOLKE KARL, *Ph.D.*, Associate 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
SORUM, C. HARVEY, *Ph.D.*, Professor of Chemistry
SPECHT, ROBERT DICKERSON, *Ph.D.*, Assistant Professor of Mathematics
STANLEY, J. HELEN, *B.A.*, Lecturer in Speech
STANLEY, RAYMOND J., *Ph.M.*, Assistant Professor of Radio Education
STAUFFER, JOHN FREDERICK, *Ph.D.*, Associate 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
STEEL, ROBERT GEORGE DOUGLAS, *Ph.D.*, Assistant Professor of Mathematics
STEENSLAND, DOUGLAS M., *M.A.*, Instructor in Music
STEFFENS, LEO JOSEPH, *M.M.*, Assistant Professor of Music
STERLING, CLARENCE, *Ph.D.*, Instructor in Botany
STERLING, HENRY SOMERS, *Ph.D.*, Associate Professor of Geography
STEVE, WILLIAM FREDERICK, *M.A.*, Emeritus Professor of Physics
STOKES, WILLIAM SYLVANE, *Ph.D.*, Associate Professor of Political Science
STONE, KIRK HASKIN, *Ph.D.*, Assistant Professor of Geography
SUOMI, VERNER EDWARD, *B.E.*, Assistant Professor of Meteorology
SWINNEY, EDWARD EARLE, *M.B.*, Associate Professor of Music

TAYLOR, ROBERT, *B.A.*, Assistant Professor of Journalism
TAYLOR, WARNER, *M.A.*, Emeritus Professor of English
TETER, JOHN WINFRED, *Ph.D.*, Assistant Professor of Social Work
THAYER, FRANK, *M.A., J.D.*, Professor of Journalism
THOMAS, EDNAH SHEPARD, *M.A.*, Instructor in English
THOMPSON, JAMES DAVID, *M.A.*, Assistant Professor of Journalism
THOMPSON, MARCUS LUTHER, *Ph.D.*, Professor of Geology
THOMSON, JOHN SEABURY, *M.A.*, Instructor in Political Science
THOMSON, JOHN WALTER, JR., *Ph.D.*, Associate of Botany
THWAITES, FREDERIK TURVILLE, *M.A.*, Assistant Professor of Geology
TOWELL, ARTHUR, *LL.B.*, Lecturer in Journalism
TREWARTHA, GLENN THOMAS, *Ph.D.*, Professor of Geography
TRIPP, L. REED, *Ph.D.*, Lecturer in Economics
TRUMBOWER, HENRY ROSCOE, *Ph.D.*, Professor of Economics and Commerce
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

USHER ABBOTT PAYSON, *Ph.D.*, Visiting Professor of History and Economics

VANCE, CHARLES M., *M.A.*, Instructor in Spanish
VAN TAMELIN, EUGENE EARLE, *Ph.D.*, Instructor in Chemistry
VASILIEV, ALEXANDER ALEXANDER, *Ph.D.*, Emeritus Professor of History
VISCHER, CHRISTINE DORA, *Ph.D.*, Instructor in German
VOEGELI, DONALD J., *B.M.*, Instructor in Music
VORDTRIEDE, WERNER, *Ph.D.*, Assistant Professor of German

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
WALES, MICHAEL, *Ph.D.*, Assistant Professor of Chemistry
WALLERSTEIN, RUTH COONS, *Ph.D.*, Professor of English
WATROUS, JAMES SCALES, *Ph.D.*, Professor of Art History
WEAVER, ANDREW THOMAS, *Ph.D., L.L.D.* Professor of Speech
WEINBERG, JULIUS RUDOLPH, *Ph.D.*, Associate Professor of Philosophy
WESTLEY, BRUCE HUTCHINSON, *M.S.*, Assistant Professor of Journalism
WHITE, ALISON GENEVIEVE, *Ph.D.*, Instructor in English
WHITE, HELEN CONSTANCE, *Ph.D., Litt.D., LL.D., L.H.D.*, Professor of English
WHITEHEAD, PEARL CLAUS, *Ph.D.*, Assistant Professor of Zoology
WHITESELL, FREDERICK R., *Ph.D.*, Assistant Professor of German

WHITFORD, ALBERT EDWARD, *Ph.D.*, Professor of Astronomy and Director of Washburn Observatory
WHITLEY, ALVIN, *M.A.*, Instructor in English
WILCOX, EMORY CHARLES, *M.A.*, Lecturer in Geography
WILDE, LARISSA IVANOVNA, *Ph.D.*, Instructor in Slavic Languages
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, 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
WITTE, EDWIN EMIL, *Ph.D.*, Professor of Economics
WOLFE, HAROLD RECLUS, *Ph.D.*, Professor of Zoology
WOOD, CHARLOTTE ROBERTSON, *M.A.*, Assistant Professor of English
WOODRING, CARL RAY, *Ph.D.*, Instructor in English
WOOLLARD, GEORGE PRIOR, *Ph.D.*, Associate Professor of Geology
WOOLLEN, ROBERT L., *M.A.*, Instructor in Music
WORKMAN, JOHN DAVID, *Ph.D.*, Professor of German
WOYSKI, MARGARET SKILLMAN, *Ph.D.*, Instructor in Geology
WOYSKI, MARK M., *Ph.D.*, Assistant Professor of Chemistry

YOUNG, FRANK CHANDLER, *M.A.*, Assistant to the Associate Dean
YOUNG, HUGH EDWIN, *M.A.*, Instructor in Economics
YOUNG, LAURENCE CHISHOLM, *Sc.D.*, Professor of Mathematics
YOUNG, WILLIAM HENRY, *Ph.D.*, Associate Professor of Political Science

ZAWACKI, EDMUND IGNACE, *Ph.D.*, Associate Professeor of Slavic Languages
ZDANOWICZ, CASIMIR DOUGLASS, *Ph.D.*, Professor of French

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 or 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 57
Course in Journalism, page 65, (School of Journalism)
Premedical Course, page 63

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

General Course, page 48
Course in Chemistry, page 54
Course in Hygiene, page 58
Course in Journalism, page 65, (School of Journalism)
Premedical Course, page 63
Course in Medical Technology, page 59
Course in Applied Mathematics and Mechanics, page 52
Course in Physical Medicine, page 62
Course in Naval Science, page 60

LEADING TO THE DEGREE OF BACHELOR OF MUSIC

Course in Music, page 71, (School of Music)

II. GENERAL REGULATIONS

1. 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 of 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. 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 unable to graduate. At the beginning of the junior year, when the student has selected his major study, an appro-

priate member of the department in which he is majoring becomes his adviser. The beginning freshman student makes out his program of studies in a general course assembly. At the opening of each subsequent 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.

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.

2. 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, or its equivalent in other forms of instruction, 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 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 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 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. 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. 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 carefully before selecting his subjects. 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 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. During the semester two or three one-hour written tests are ordinarily held in all but the most advanced courses.

3. MATHEMATICAL PREPARATION

Students who are mathematically prepared are admitted to all courses, majors, and fields of specialization. Minimum mathematical preparation is *one* unit of high-school algebra and *one* unit of high-school plane geometry.

Students who do not have the minimum mathematical preparation may major in Hispanic studies, art history and criticism, the classics, comparative literature, English, foreign languages, geography, history, philosophy, political science, or speech. They may also enroll in the journalism and music courses.

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, medical tech-

nology, nursing, or physical medicine; nor may he major or specialize in American institutions, biological aspects of conservation, bacteriology, botany, chemistry, economics, geology, humanities, international relations, mathematics, physics, premedicine, psychology, social work, sociology, or zoology. If a student plans to major in one of these fields, he must secure credit for the high-school mathematics before he will be accepted as a major student in these departments. This must be done before the start of the junior year.

The University does not offer residence courses in elementary mathematics. Hence, students who are 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.

4. TRANSFERS

Students transferring from special courses, e.g., Chemistry or Premedical, 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 all standings are *B* 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.

5. 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* average and who have been granted honorable dismissal may be admitted to this college subject to current policy on nonresident students.

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 normally culminates 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 has maintained a good scholastic record, to take not to exceed 6 credits by correspondence to complete the requirements for his degree. Under special circumstances (see page 62) premedical 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 this college are required to complete the additional studies regularly prescribed for that degree, involving at least one year's additional residence and the earning of at least 30 additional credits.

7. 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 cannot 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 is 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 some numerical standing between 60 and 69. A condi-

tion must be made good by passing 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 in case they left the University in good standing. No grade-points are awarded for conditions made good by examination or by special laboratory work. The student is, however, entitled to the grade which his completed work in the course finally justifies.

The usual way of removing a condition is by a successful 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 on account 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 been compelled to quit work on account of illness or other cause beyond his control, leaving the final examination, or the final examination and some limited amount of term work, undone. 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 (one or more credits).

8. HONORS IN SCHOLARSHIP

Sophomore Honors and High Honors are awarded at the completion of the work 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 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 the work offered for his major. Students doing all their work in 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.

The names of students awarded sophomore honors are bulletined in Bascom Hall; those of students awarded senior and thesis honors and honors in major are published in the Commencement Register.

9. 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 as long as 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 average for this semester and subsequent semesters does not fall below 1.5. (See definition for grade-point average in the Student Handbook.)

10. 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." A student admitted on this basis will not receive credit for courses taken and no grades or credits will be recorded. Such individuals 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.

11. PLACEMENT AND ATTAINMENT EXAMINATIONS

When he commences his college course, each freshman is required to take a *placement* examination in English and in any foreign language which he has taken in high school and expects to continue in college. Advanced standing students and students in residence heretofore who are, for the first time, resuming a language which was started elsewhere must also take the placement test in foreign language. The results of these examinations determine the classes in which the student is permitted or required to enroll. If, as a result of such placement, a student should be required to repeat in college the substantial equivalent of a subject taken in high school, he would receive no college credit for such equivalent. But in the case of English no such non-credit course will be offered (see Section 24a). 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 upon appeal to a committee, through the chairman of the department concerned.

Any student who so desires may take *attainment* examinations in English, history, mathematics, biology, chemistry, physics, and the foreign languages, with the object in view of proving his mastery of certain subjects required for graduation in his college course and thus of absolving the requirements altogether. The examination in any of these sciences will be approximately the equivalent of the final examination in the corresponding freshman semester survey course (the so-called "17" course) and success in passing the examination entitles the student to the same privileges as if he had taken the course, except for credit. Success in passing an attainment examination entitles the student to substitute some subject of his own choice for the required subject, but does not reduce the total number of credits required for graduation.

In English there are several tests taken during the New Student Week and the first week in residence which determine further the question of his exemption from the subject. (See Section 24.)

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.

Foreign Language Attainment Examinations are designed to determine either (1) *proficiency,* i.e., advanced knowledge, or (2) *intermediate knowledge,* i.e., reading knowledge.

The test of *proficiency* in a language presupposes adequate preparation based on the equivalent of 24 credits secured in college (e.g., four years in high school and one in college, or two years in high school and 16 credits in college, etc.); the test for *intermediate knowledge* is based on approximately half this amount of preparation. Superior students with less than this amount of study and those who have lived abroad or who have acquired a knowledge of foreign language in some other way are encouraged to take the examination. (See calendar for dates on which attainment examinations are held.)

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.

Foreign language attainment examinations are given soon after the opening of the first semester and also near the close of each semester.

12. 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 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 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 or air 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 in the armed forces, and (d) students who for other reasons are exempted or excluded by the Departments of Military Science and Air Science. Students who complete four semesters of Naval Science will be regarded as having satisfied this requirement.

Although no academic credit is given for the basic course in military science or air 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.

13. QUALITY OF WORK

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, (in effect, 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), and thereafter must secure 60 grade-points and at least 60 credits, obtaining during his senior year a grade-point average of 1.0 on all credits taken, whether passed or not. A student in any course requiring more than 120 academic credits for graduation must also secure the same ratios for the additional credits required in each half of his four-year course.

Letters and Science students electing law in their senior year may satisfy the above requirement as to the last two years by securing a grade-point average of 1.0 on all credits taken in the last half of the four-year course.

14. 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.

15. 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 these 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.

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 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, p. 95.) A few majors which cut across departmental lines are announced under Part XX, page 78.

The general requirements of the major are as follows: (a) A maximum of 60 credits may be prescribed by the 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), and 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 ap-

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* 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.

proval by the student's adviser and the faculty member in general charge of the field of concentration (who is 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 credits toward the requirements of the major and toward graduation.

16. ADVANCED INDEPENDENT WORK

In many divisions and departments Advanced Independent Work, leading to the B.A. 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 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.

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 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 the 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 71.

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 23 and 26, pages 45 and 48.

(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 either 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 will ordinarily 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, 140, 160 and 168, Commerce 43, 121, 138, 168, 169, 171, 178 and 195, Library Science 171 and 174, and all courses in biochemistry, forest products, genetics, plant pathology, and soils, although falling under the Twenty-Credits Rule, do not require the permission of the dean, providing the students meet the specific prerequisites for them. A student may receive credit for no more than 9 credits in drawing courses and in 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, 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 agricultural 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.

Preventive Medicine 1.

Library Science 172 and 173.

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 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.

MEDICAL SCHOOL. Candidates for the B.A. and for the B.S. degree in medical science are permitted to major in medical science; they may register in the Medical School in their senior year and 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 regular premedical requirements as outlined on pages 63 and 64.

NAVAL SCIENCE. Students in the B.A. and B.S. General Courses 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 transferring from N.R.O.T.C. to civilian status are allowed to count all Naval Science credits in excess of 6 credits, but not to exceed a maximum of 18 credits towards the B.A. or B.S. General degrees. These courses will count under the Twenty-Credits Rule.

18. TRANSFER TO THE LAW SCHOOL; PRE-LEGAL STUDIES

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 with a grade-point average of at least 1.3 (World War II veterans may satisfy this requirement with a grade-point average of 1.0), 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 13), with a grade-point average of 1.3.

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.

19. ELECTION OF STUDIES IN THE LAW SCHOOL

Juniors in the B.S. General Course or in any of the B.A. courses who satisfy the requirements of Section 17 may elect a course or courses in the Law School under the provisions of that section. However, only those Law School courses will count toward a law degree which have been carried *after* the student has met the entrance requirements of three years of Letters and Science studies outlined in the preceding section; retroactive credit is not allowed.

20. 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 49.

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.

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

21. 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. Auditors must register and pay fees, but receive no credit. 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 Office of Admissions 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 room 263 Bascom Hall, to assist in the counseling and orientation of foreign students.

III. B.A. GENERAL COURSE

Presented below is the curriculum for the B.A. General Course.

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 p. 50.

22. OUTLINE OF CURRICULUM

(1) ENGLISH LANGUAGE AND LITERATURE, 12 credits as follows:
(a) Use of English, 6 credits (with possible exemptions)

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

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

(3) 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, 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),

* 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.

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, 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;
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 12, page 38.

(5) MILITARY TRAINING as specified in Section 12, page 38.

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

23. 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 22 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 must be fulfilled.
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.

* 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.

24. FRESHMAN STUDIES

(a) ENGLISH. Unless they are refused admission or are exempt on the basis of their placement tests, all first-year students are required to take English 1 (Freshman composition) for 3 credits per semester.

A student refused admission to English 1a on the basis of the English placement test (see Section 11, page 37) must henceforth make up his deficiency by tutoring, correspondence study, Extension night classes, or otherwise. His schedule will automatically be reduced to 12 credits, in order that he may prepare to pass the test which is given at the beginning of each semester. If he fails to pass the test by the beginning of his third semester, he must withdraw from the University until he does so.

Those Letters and Science freshmen, however, who pass the exemption examination in Freshman English are not required to take English 1 in the University. (This examination is given at the beginning of the second week in residence.) They may, as freshmen, elect in its place English 30, 32, 33, or 40 (the sophomore literature courses), or English 2 or 3 (the intermediate composition courses), or they may postpone further work in English to the sophomore year. Freshmen who are exempt from one semester of English 1 will take English 11.

Students earning a grade of *A* in the first semester of English 1 may, if they so desire, omit the second semester of it.

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 1, 2—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

SCIENCE—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.

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:

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 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
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 11) 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 the 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.

IV. B.S. GENERAL COURSE

Presented below are the curriculum requirements for the B.S. General Course. The general requirements for the B.S. degree are also satisfied by the program of Integrated Liberal Studies, see p. 49.

25. OUTLINE OF CURRICULUM

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

(a) Use of English, 6 credits (with possible exemptions)

(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) 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. 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

(3) PHYSICAL EDUCATION, as specified in Section 12, page 38.

(4) MILITARY TRAINING, as specified in Section 12, page 38.

(5) 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.

* 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.

27. FRESHMAN STUDIES

For a list of the studies of the freshman year, see Section 24. This section applies to both the B.A. and B.S. General Courses.

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 p. 159 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 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. TRANSFER TO THE SCHOOL OF EDUCATION

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.

Students who plan to become teachers of academic subjects will meet the general requirements of the first two years of 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.

Applicants for transfer are advised to meet the speech proficiency requirement of the School of Education before applying for admission. A student may meet this requirement either (1) by enrolling in a special non-credit speech course until such time as his pro-

ficiency 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 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.

VII. 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 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 Bulding Industry). See the School of Commerce.

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).

Students lacking Economics 1a, Commerce 8, and Commerce 9 may be admitted conditionally, 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 101a.
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).

VIII. TRANSFER TO THE SCHOOL OF PHARMACY

Under recent action of the Regents the School of Pharmacy will be organized, beginning July 1, 1950, as an 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 the School of Pharmacy.

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

IX. 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.

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.

PROFESSIONAL ELECTIVES

In order to facilitate the planning of a coordinated program of studies for students with special interest in the fields indicated below, the following suggestions for professional electives are made:

1. Mathematics

	Credits
115a—Theory of equations	3
115b—Determinants and matrices	3
117—Vector analysis	3
118—Introduction to the theory of probability	3
119—Differential geometry	3
133—Finite differences and interpolation	3
137a—Elem. math. statistics	3
137b—Elem. math. statistics	3

2. Mechanics (See also M.E. & C.E.)

53—Materials of construction	2
101—Advanced statics	2
102—Advanced dynamics	3
109—Graphics	2
112—Airplane stress analysis	3

3. Physics

104b—Electricity and electronics.	3
106—Atomic physics	6
113—Atomic and molecular structure	3
115—Thermodynamics	2
118—Kinetic theory of matter	3
124—Math. 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

5. Civil Engineering

	Credits
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)

5—Fundamental electronics	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
154—Communication engineering	3
156—Communication circuits and networks	4

7. Mechanical Engineering

25—Machine practice	3
41—Mechanism	3
43—Machine elements	4
44—Advanced machine design	4
64—Heat-power engineering	3
74—Elementary testing	2
109—Internal combustion engines	3
141—Dynamic problems in design	3
142—Advanced kinematics of machinery	3
143—Advanced mechanics of machinery	3
160—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 3a—Elementary analysis	5-4	Math. 52 or 3b—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—Calculus	4	Math. 102b—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. 63—Thermodynamics	3
E.E. 8—Electrical machinery	3	E.E. 9—Electrical machinery	3
*Electives		C.E. 71—Hydraulics	3
		Electives	

SENIOR YEAR

Math. 116a.—Higher analysis	3	Math. 116b—Higher analysis	3
Math. 104a—Theoretical mechanics	3	Math. 104b—Theoretical mechanics	3
Physics 104a—Electricity and magnetism	3	Physics 116—Circuit analysis and advanced electronics	3
Mechanics 106—Advanced mechanics of materials	3	Mechanics 107—Mechanical vibrations	3
Mechanics 111—Aerodynamics, or C.E. 173—Advanced hydraulics, or C.E. 177—Mechanics of fluids	3	Electives	

X. COURSE IN CHEMISTRY

J. H. MATHEWS, DIRECTOR, PROFESSOR OF CHEMISTRY

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.

The Course in Chemistry also provides a good preparation for the subsequent study of medicine. Also, by election of certain commercial subjects, an excellent preparation for administrative and executive positions in industries which are based on chemistry may be obatined. Most industries now have chemical control laboratories and many maintain their own research staffs. Particular 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, and because of the decrease in the number of students studying chemistry during the war period there is now a shortage of trained chemists at all levels.

In order to broaden the educational program, the course provides for a substantial amount of elective and required work outside the field of chemistry. Four options are offered—a general option, an option for industrial chemists, an option for food or sanitary chemists, and an option for fermentation chemists.

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

The work of the freshman year is identical in each of the four options, and in the first three of them a year each of general inorganic, analytical, organic, and physical chemistry is required. The equivalent of at least courses 10a and 10b in German and courses 1a and 1b in French is required, but high-school work in these languages may be counted toward this requirement. Courses 1a and 1b in either Spanish or Portuguese may be substituted for French 1a and 1b, if desired. A thesis, embodying the results of a detailed experimental investigation, is required in the senior year.

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

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. 1a or 3a	4	Math. 1b or 3b	4
German	4	German	4
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	16		16

GENERAL OPTION

SOPHOMORE YEAR

Chem. 11a—Quantitative analysis	5	Chem. 11b—Quantitative analysis	5
German	3-4	German	3-4
Physics 31—General physics	5	Physics 31—General physics	5
Math. 101a—Calculus	4	Math. 101b—Calculus	4
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	17-18		17-18

JUNIOR YEAR

Chem. 120, 121—Organic chemistry	5	Chem. 122, 123—Organic chemistry	5
Chem. 130, 131—Physical chemistry	5	Chem. 130, 131—Physical chemistry	5
French	4	French	4
Elective	3	Elective	3
	17		17

SENIOR YEAR

Chem. 100—Thesis	3	Chem. 100—Thesis	3
Chem. Engr. 41—Elementary chemical engineering principles	3	Chem. Engr. 42—Chemical engineering unit operations	3
Electives	10	Agr. Bact. 2—Survey of bacteriology	4
		Electives	6
	16		16

Of the 22 elective credits, at least 10 must be taken in subjects other than chemistry.

OPTION FOR INDUSTRIAL CHEMIST

SOPHOMORE AND JUNIOR YEARS

Same as sophomore and junior years of General Option

SENIOR YEAR

Chem. 100—Thesis	3	Chem. 100—Thesis	3
Chem. Engr. 41—Elementary chemical engineering principles	3	Chem. Engr. 42—Chemical engineering unit operations	3
Chem. Engr. (elective)	2	Chem. Engr. (electives)	4
Electives	8	Electives	6
	16		16

Of the 20 elective credits, at least 10 must be taken in subjects other than chemistry or chemical engineering.

OPTION FOR FOOD CHEMIST OR SANITARY CHEMIST

SOPHOMORE YEAR

Chem. 11a—Quantitative analysis	3	Chem. 11b—Quantitative analysis	4
German	3	German	3
Physics 31—General physics	5	Physics 31—General physics	5
Botany 1—General botany	5	Agr. Bact. 2—Survey of bacteriology	4
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	16		16

JUNIOR YEAR

French	4	French	4
Chem. 120, 121—Organic chemistry	5	Chem. 122, 123—Organic chemistry	5
Chem. 119—Organic analysis	3	Chem. 146, 147—Chemistry of foods	5
Electives	5	Elective	3
	17		17

SENIOR YEAR

Chem. 100—Thesis	3	Chem. 100—Thesis	3
Chem. 130, 131—Physical chemistry	5	Chem. 130, 131—Physical chemistry	5
Chem. 113—Water analysis	1	Electives	7
Agr. Bact. 125—Food bacteriology	3		
Electives	4		
	16		15

Of the 19 elective credits, at least 8 must be taken in subjects other than chemistry.

OPTION FOR FERMENTATION CHEMIST

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Chem. 4a—General chemistry	5	Chem. 4b—General chemistry and qualitative analysis	5
Math. 1a or 3a	4	Math. 1b or 3b	4
German	4	German	4
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Physical Education	0	Physical Education	0
Military Science	0	Military Science	0
	16		16

SOPHOMORE YEAR

Chem. 11a—Quantitative analysis	5	Math. 101b—Calculus	3-4
Math. 101a—Calculus	3-4	Physics 31—General physics	5
Physics 31—General physics	5	German	3
German	3	Electives	4
Physical Education (women only)	0	Physical Education (women only)	0
Military Science	0	Military Science	0
	16-17		15-16

JUNIOR YEAR

Chem. Engr. 41—Elementary chemical engineering principles	3	Chem. Engr. 42—Chemical engineering unit operations	3
Chem. 120, 121—Organic chemistry	5	Chem. 122, 123—Organic chemistry	5
Chem. 119—Organic analysis	3	Agr. Bact. 103—General survey	4
Electives	6	Electives	5
	17		17

SENIOR YEAR

Biochem. 105, 106—Principles of biochemistry	5	Agr. Bact. 226—Physiological	4
Chem. 130, 131—Physical chemistry	5	Chem. 130, 131—Physical chemistry	5
Thesis*	3	Thesis*	3
Electives**	4	Electives**	4
	17		16

* To be done in Department of Biochemistry or Agricultural Bacteriology on a chemical problem.

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

XI. COURSES IN HUMANITIES

COMMITTEE IN CHARGE OF MODERN HUMANITIES: ASSOCIATE PROFESSORS ZAWACKI, *chairman*, FARMER, MACKENDRICK, WILEY; ASSISTANT PROFESSORS GLAUSER, MCGARY, VORDTRIEDE. COMMITTEE IN CHARGE OF CLASSICAL HUMANITIES: PROFESSOR AGARD, *chairman;* ASSOCIATE PROFESSOR MACKENDRICK; ASSISTANT PROFESSOR HEIRONIMUS; INSTRUCTOR 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 21 (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.

e. 10 credits in natural 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.

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 natural science.

d. 6 credits in history, preferably History 10.

e. 6 credits in philosophy.

f. A final comprehensive examination.

XII. COURSE IN HYGIENE

The five-year course leading to the degree of Bachelor of Science is offered in the College of Letters and Science and in the School of Nursing. Two curricula are offered. One combines three years of academic work with a major in Letters and Science and 27 months of resident professional instruction. The second combines 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 in the Nurses' Dormitory.

Requirements for graduation:

I. CURRICULUM WITH A MAJOR IN LETTERS AND SCIENCE

1. English: 12 credits as follows: Freshman English, 6 credits; sophomore English, 6 credits.
2. Foreign language: Either French, German or Spanish through 10b, or the passing of the appropriate intermediate attainment examination. Another foreign language may be substituted on recommendation of the Director of the School of Nursing with the written approval of the dean.
3. History: 6 credits in a continuous year course, or Mathematics, 8 credits.
4. Science: Chemistry 1, 10 credits; Physiology 4, 4 credits; Medical Microbiology 4, 3 credits; Nursing 1, 3 credits; Dietetics 1, 2 credits.
5. Social Studies or Science option: Psychology 1 and Sociology 1 or 2. Either Economics 1a and 6 credits in other social studies; or 16 additional credits of science, including 10 credits in biology and 4 credits in organic chemistry.
6. Electives: A sufficient number to bring the total to 94 credits in the College of Letters and Science.
7. Major: A major chosen from those offered in the College of Letters and Science. The program of studies should be planned so that substantial progress will have been made towards the major by the beginning of the junior year.
8. Resident Professional Instruction (fourth and fifth years): This includes 27 months of ward practice and four semesters of nursing courses amounting to 35 credits as follows: Therapeutics 1, 3 credits; Medicine and Surgery 1, 2, 3, 4, 5, 6, 7, 19 credits; Principles of Nursing 2, 3, 4, 5, 10 credits; Psychology 105, 3 credits.
9. A total of 129 credits and 129 grade-points.

II. CURRICULUM WITH A MAJOR IN PUBLIC HEALTH NURSING OR WARD MANAGEMENT AND WARD TEACHING

1. English: 12 credits as follows: Freshman English, 6 credits; sophomore English, 6 credits.
2. Foreign language: Either French, German or Spanish through 10b, or the passing of the appropriate intermediate attainment examination. Another foreign language may be substituted on recommendation of the Director of the School of Nursing with the written approval of the dean.
3. History: 6 credits in a continuous year course, or Mathematics, 8 credits.
4. Science: Chemistry 1, 10 credits; Physiology 4, 4 credits; Medical Microbiology 4, 3 credits; Nursing 1, 3 credits, and Dietetics 1, 2 credits (these two courses are not Letters and Science courses, but should be taken in the second year).
5. Economics, Sociology, and Psychology: Economics 1a, 4 credits; Sociology 1 or 2, 3 credits; Psychology 1, 4 credits.
6. Electives: Letters and Science electives to bring the total to at least 60 credits and 60 grade-points.
7. Resident Professional Instruction (third and fourth years): This includes 27 months of ward practice and four semesters of nursing courses amounting to 35 credits as follows: Therapeutics 1, 3 credits; Medicine and Surgery 1, 2, 3, 4, 5, 6, 19 credits; Principles of Nursing 2, 3, 4, 5, 10 credits; Psychology 105, 3 credits.
8. Major: The completion of a fifth year of closely related subjects which constitute a major in either Public Health Nursing or Ward Management and Ward Teaching, 30–32 credits: (a) Major in Public Health Nursing: Public Health Nursing 1, 2, 3, 4 and 5, 17 credits; Sociology 145, 2–3 credits; Electives 14–15 credits to be chosen from the social studies, education, and home economics (education and home economics limited to 6 credits); the completion of four months' field work, 8 credits. (b) Major in Ward Management and Ward Teaching: Nursing 10a, 10b, 11, 9 credits; Public Health Nursing 2 and 3, 6 credits; Electives from the social studies and education (education limited to 6 credits), 15–17 credits.
9. A total of 133 credits and 133 grade-points.

For information about the Graduate Nurse Course and the combined course in Home Economics see bulletins of the School of Nursing and the Department of Home Economics.

XIII. COURSE IN MEDICAL TECHNOLOGY

A four-year course leading to the degree of Bachelor of Science (Medical Technology) has been established. The first three years consist of at least 90 credits of required and elective work and the fourth year is devoted entirely to the major, Medical Technology. High-school mathematical preparation is required. In the first three years students will take, in addition to 10 to 13 credits of elective work, a year each of general chemistry, physics, history or mathematics, physiological chemistry and medical microbiology, two years of English, 4 credits of physiology, 4 credits of organic chemistry, 4 credits of quantitative analysis, 8 credits of zoology, and they should have a reading knowledge of French or German which may be satisfied by the completion of the fourth semester of French or German at the University of Wisconsin or at an 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.

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, Assistant 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	1
Med. Tech. 103—Special hematology	3	Med. Tech. 113—Clinical chemistry	5
Med. Tech. 104—Applied bacteriology	4	Med. Tech. 114—Microtechnique	3
		Med. Tech. 115—Electrocardiography	2
	16		15

XIV. 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 are commissioned in the regular Navy or Marine Corps and are obligated to serve on active duty as officers for two 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 commis-

*Limited to 20 students

sion 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, 3-year pre-legal, or 3-year pre-medical. 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, Education, or Pharmacy 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 Far Eastern), political science (foreign policy, American government, Far Eastern politics), geography (United States, European, Far Eastern).
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

English 30a, 32a, 33a, or 40a	3	English 30b, 32b, 33b, 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. 121a Introduction to international relations	3	Social Studies	3
Advanced physics	2-4	Pol. Sci. 121b—Introduction to international relations	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

XV. COURSE IN PHYSICAL MEDICINE

A four-year course leading to the degree of Bachelor of Science (Physical Medicine) has been established in the College of Letters and Science and in the Medical School. Mathematical preparation is required. 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.
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. 39), 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. (Course as specified for the Certificate in Physical Medicine in the Medical School.) 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—General chemistry	5	Chemistry 1b—General chemistry	5
English 1a—Freshman English	3	English 1b—Freshman English	3
Language 1a or Social Studies	4	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
	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 114	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 126—Advanced speech correction	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)

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 & 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

XVI. PREMEDICAL COURSE

The premedical course comprises the college work required prior to admission to the Medical School. It may be combined with the preclinical part of the medical course so that a college degree may be obtained at the end of the first year of medicine. Premedical work may also be included in any one of the general Letters and Science four-year courses. High-school mathematical preparation is required for admission to the premedical course.

The following courses plus enough electives to make a total of 90 credits are required for admission to the University of Wisconsin Medical School. English composition, 6 credits; English or American literature, 6 credits; general chemistry, 8–10 credits; organic chemistry, 6–8 credits; quantitative chemistry, 3–4 credits; zoology, 5 credits; embryology, 3–5 credits; physics, 8–10 credits; mathematics, 3–4 credits; a reading knowledge of either French or German which may be satisfied by the completion of the fourth semester of French or German at the University of Wisconsin or an accredited college, with a grade of *C*, or by passing a reading knowledge or attainment examination in either language to be given by the appropriate department at the University of Wisconsin; and Classics 38 (Origins of Greek and Latin medical terms), 3 credits, required of those who have not had two years of Latin in high school.

Candidate for the B.S. degree in Medical Science must complete at least 90 credits including those indicated in the preceding paragraph, complete a major in Medical Science, and secure a total of 120 credits for graduation.

Candidates for the B.A. or B.S. degree in the General Course must complete the specific courses mentioned above, the special requirements of the B.A. or B.S. degree in the General Course, complete a major in Medical Science, and secure a total of 120 credits for graduation.

The major in Medical Science consists of a minimum of 25 credits in closely related medical subjects. This major is open only to students who have been admitted to the Medical School. In their senior year such students register in the first year of the Medical School as well as in the College of Letters and Science. Premedical students who transfer to another institution 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 in Medical Science of the University of Wisconsin except for the requirement of residence in the senior year.

The Assistant Dean of the Medical School is adviser for all premedical students.

PREMEDICAL CURRICULA

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

RECOMMENDED SEQUENCE FOR THE THREE-YEAR COURSE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b—Freshman English	3
Chemistry 1a or 5—General chemistry	3-5	Chemistry 1b—Genl. chem. and qual. analysis	5
French 1a or German 1a	4	French 1b or German 1b	4
Mathematics	4	Mathematics	4
Physical Education	0	Physical Education	0
Military Science	0	Military Science	0
	14-16		16

SOPHOMORE YEAR

English 30a, 32a, 33a, or 40a	3	English 30b, 32b, 33b, or 40b	3
Chemistry 120—Organic chemistry	2	Chemistry 122—Organic chemistry	2
Chemistry 121—Organic chemistry	2	Chemistry 123—Organic chemistry	2
Zoology 1—Animal biology	5	French 10b or German 10b	3
French 10a or German 10a	3	French or German conversation	2
French or German conversation	2	Zoology 105—Vertebrate embryology	5
Physical Education (women only)	0	Physical Education (women only)	0
Military Science	0	Military Science	0
	17		17

JUNIOR YEAR

*General Classics 38—Origins of Greek and Latin medical terms	3	Physics 1b—General physics	5
Physics 1a—General physics	5	Foreign language	3
Foreign language	3	Social Studies	3
Social Studies	3	Electives	5
Chemistry 15—Quantitative analysis	4		
	18		16

The B.A. Medical Science Course can be completed in three years only by electing Group C requirements and 24 credits in one language, unless the student has had language in high school.

PREMEDICAL CURRICULA

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

RECOMMENDED SEQUENCE FOR THE THREE-YEAR COURSE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b—Freshman English	3
Chemistry 1a or 5—General chemistry	3-5	Chemistry 1b—General chemistry	5
Mathematics 1a or 3a	3-4	French 1b or German 1b	4
French 1a or German 1a	4	Electives	3-4
Physical Education	0	Physical Education	0
Military Science	0	Military Science	0
	13-16		15-16

*Required of those who have not had two years of Latin in high school.

SOPHOMORE YEAR

Chemistry 120—Organic chemistry	2	Chemistry 122—Organic chemistry	2
Chemistry 121—Organic chemistry	2	Chemistry 123—Organic chemistry	2
Zoology 1—Animal biology	5	Zoology 105—Embrylogy	5
French 10a or German 10a	3	French 10b or German 10b	3
English 30a, 32a, 33a, or 40a	3	English 30b, 32b, 33b, or 40b	3
Physical Education (women only)	0	Physical Education (women only)	0
Military Science	0	Military Science	0
	15		15

JUNIOR YEAR

Physics 1a or 31	5	Physics 1b or 31	5
*General Classics 38—Origins of Greek and Latin medical terms	3	Electives	10-12
Chemistry 15—Quantitative analysis	4		
Electives	3-5		
	15-17		15-17

XVII. 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, but foreign languages are not required. It is recommended that candidates for the B.S. degree have some language courses, either in college or in high school, but the absence of the language requirements gives students more opportunity to elect courses leading to the equivalent of a second major in another field. 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 under the supervision of a Graduate School committee.

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, history, 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.

* Required of those who have not had two years of Latin in high school.

The scope of journalism teaching is indicated in the list of courses on page 161. Additional information may be obtained by writing to the Director, 301 South Hall, Madison 6, Wisconsin.

PRACTICAL EXPERIENCE. Students preparing for journalism are given regular news assignments in Madison. The editors of a number of Wisconsin daily and weekly papers give students experience on community newspapers during the spring recess. 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, 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.

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.

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.

ADMISSION REQUIREMENTS. 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 18 grade-points in English 1a, 1b, 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 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

Journalism 2—Newspaper reporting	3	Journalism 2—Newspaper reporting	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 Advanced Standing Office, Bascom Hall, before coming to the University.

REQUIREMENTS FOR GRADUATION: (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 required Journalism subjects, except in the advertising-management 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 advertising-management 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.); Journalism 141a (3 cr.); and at least two chosen from the following courses: Journalism 108 (2 cr.); Commerce 116 (3 cr.); Journalism 117 (2 cr.); Journalism 141b (3 cr.); Journalism 142 (3 cr.).

The above requirements become effective for juniors entering the School of Journalism in the fall of 1950. Students who are now juniors or seniors in journalism may elect the new or the former requirements for graduation.

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.

Candidates for the B.A. degree must meet the foreign language requirement of the B.A General Course (see Section 22). 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).

REQUIRED COURSES IN THE SOCIAL SCIENCES

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 at least three of the following groups:

1. History

Courses over 100, preferably:

111—History of the West, 1763-1893	3
113—American thought and culture	3
117—American constitutional history	3
120—American foreign relations	3
122—American economic life	3
124—Recent history of the United States	3
137—Origins and history of World War II	3
138-139—Europe since 1815	3
147—Modern Britain, since 1760	3
149—History of Russia	3
178—Recent German history	3

2. Political Science

Courses over 100, preferably:

112—Constitutional law	3
121—Foundations of international relations	3
122—Political parties and public opinion	3
123—Admin. of U.S. foreign policy	3
131—United States & Latin America	3
134—Rural local government	3
135—Municipal administration	3
137—International organization	3
139—State government	3
140—Far Eastern politics	3
143—Public administration	3
148—Proseminar in political parties	2
165—History of American political thought	3

3. Economics

Courses over 100, preferably:
119—Evolution of industry 3
122—Labor problems 3
124—Taxation 3-4
134—Economic history of the United States 3
136—Transportation problems 3
142—Public utilities 3
144—Capitalism and socialism 3
145—American labor history 3
146—Government and labor 3
156—International trade 3

4. Sociology

Preferably chosen from these:
10—General aspects of social relations .. 3
60—Marriage and the family 3
132—Introductory social statistics 3
139—Social psychology 3
141—Poverty and dependency 3
160—Marriage and family 3
161—Criminology and penology 3
164—Racial and minority groups 3
165—Scientific identification of criminals.. 2
197—Personality and social adjustment ... 3

5. Psychology and Philosophy

Preferably chosen from these:
Psych. 106—Abnormal psychology 3
Psych. 108—Human emotions 3
Psych. 144—Psychology of learning 3
Phil. 120—Philosophy of science 3

6. Geography

Courses over 100, preferably:
101—Geography of Europe 3
102, 103, 111—The three Americas 3
104—Geography of Wisconsin 2
107—Mediterranean lands 3
108—Geography of Soviet Union 3
110—Geography of the Far East 3
121—Introduction to international relations 3
123—Agricultural geography 3
125—World political geography 3
127—Geography of manufacturing 3
128—Conservation of natural resources ... 3

7. Contemporary Trends

103—Contemporary trends 3

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 p. 81.) 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 p. 49.)

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 College of Agriculture.)

Further explanation of optional areas of specialized study are:

DAILY NEWSPAPER

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

JOURNALISM MAGAZINE

See sample sequences above.

ADVERTISING

Students may prepare for advertising positions by combining courses in journalism with those in advertising. The normal arrangement of these courses is indicated in the Journalism-Advertising Field. Such students must earn even grade-points in Economics 1a and 1b, and usually must earn a grade of *B* in Journalism 141a.

COMMUNITY JOURNALISM

Because of the growing opportunities in community journalism, including the 10,000 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.

SAMPLE SEQUENCES IN JOURNALISM

Course No.	Title of Course		Optional Groups				
		Yr. and Sem.	Daily Newspaper	Community Newspaper	Journalism Advertising	Journalism Magazine	Communications Media & Public Opinion
2	Newspaper reporting ...	2 or 3	6 cr.	6 cr.	6 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	3	.....	6	3
106	Critical writing	4-II	.....	.....	.....	2	.....
107	Community newspaper..	3-I,II	.....	4	.....	.....	.....
108	Business management ..	3-II	.....	2	2	.....	.....
109	Law of the press	3-I,II	2	2	2	2	2
110	History of journalism ..	3-I	3	3	3	3	3
111	Press and society	4-II	3	3	.....	3	3
112	Reporting of law courts.	3-I	2	.....	.....	.....	.....
Com. 112	Marketing methods (See Commerce 112)		.....	.....	3	.....	.....
113	Reporting of public affairs	4-II	3	3	.....	.....	.....
114	Communications and public opinion	4-I	.....	.....	.....	.....	3
Com. 116	National advertising...	4-II	.....	.....	3	.....	.....
117	Periodical journalism ..	3-I,II	.....	.....	.....	2	.....
120	International communications & foreign press	4-I	.....	.....	.....	.....	3
128	Communication media analysis	4-II	.....	.....	.....	.....	3
141	Advertising copy and layout	3-I,II	.....	3	6	.....	.....
142	Advertising media	4-II	.....	.....	3	.....	.....
	Electives including one or more of the following journalism courses: 10, 104, 114, 120, 122, 125, 128, 191		•	•		•	•

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 66.) 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.

JOURNALISM WOMEN'S FIELDS

A sequence of journalism courses, including a special section of Journalism 105b, to which are added Home Economics electives to provide background for writing on foods, clothing fashions, textiles, household equipment, and child training. Through co-operation with the Department of Home Economics, women students preparing to edit women's sections in newspapers or magazines may elect courses on household furnishings, costume design, textiles, dietetics, child training, etc.

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,

and 125 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 suppement each other. See 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, and supporting work in the social studies.

XVIII. LIBRARY SCHOOL

The Library School is a professional school offering a program of training in librarianship leading to a Master of Arts or Master of Science degree in Library Science. It also offers certain undergraduate courses to meet pre-professional requirements for the graduate program and to meet certain minimum certification requirements for public and school libraries in Wisconsin.

UNDERGRADUATE PREPARATION. Eight semester hours of pre-professional training, including Library Science 171, 172, 173 and 174 or their equivalent is one of the admission requirements to the graduate program. The prospective library school student should elect these courses during his junior and senior years. Courses 172 and 173 may be taken for credit without special permission, but courses 171 and 174 fall under the Twenty-Credits Rule and are subject to the regulations governing the election of courses outside the college (see Section 17, page 40). 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 171, 172, 173, 174 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.

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 171, 172, 173 and 174. He must also have a reading knowlege of a foreign language (see Section 11).

Two application forms are necessary. The application form for admission to the Graduate School should be sent with official transcripts of all undergraduate and graduate work to the Dean of the Graduate School. Forms may be secured by writing to the Dean of the Graduate School. Applicants should also secure a special Library School application form from the Director of the Library School, 811 State Street, Madison. This form is to be filed with the Director of the Library School.

RECOMMENDED PRELIMINARY PREPARATION. 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.

APPOINTMENTS TO POSITIONS. 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 makes every effort to place graduates in suitable 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 first- and second-grade certificate, namely "a one-year course in an accredited library school."

XIX. SCHOOL OF MUSIC

LELAND A. COON, CHAIRMAN, PROFESSOR OF MUSIC

CURRICULA. Courses in the School of Music, leading to the degree of Bachelor of Music, are associated in three curricula, one preparing the student for applied music teaching and performance, one for school music teaching, and the third for musical composition or the teaching of the materials and principles of musical composition. Students in all three categories 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).

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 three curricula offered in the junior and senior years. Students who do not satisfy this requirement will be advised to withdraw or to transfer to another course.

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.

LETTERS AND SCIENCE MAJOR IN MUSIC. The following regulations apply:

1. The student shall complete the general requirements set forth in one of the sequences for the B.A. degree; except that if the sequence chosen is Group A (Humanities), requirement "A" (6 credits) shall be waived.
2. Admission to the major shall be obtained from the School of Music, and shall presuppose successful passage of such tests in rhythm, dictation, music fundamentals and background, sight singing, and instrumental performance as are currently used to determine admission to the School.
3. A minimum curriculum in the major shall be completed as follows:

	Credits
Music 9—Quartets of Haydn and Mozart	2
Music 12—Elementary theory	4
Music 22—Advanced theory	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

4. The Twenty-Credits Rule shall not be applied to the election of music subjects by B.A. music majors.

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; 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 76 (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 or 5, 4 credits.

MUSIC COURSES FOR OCCUPATIONAL THERAPY MAJORS. The following courses are recommended:

	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 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 and consult with Dr. S. T. Burns, School of Music.

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 music 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 must be well grounded in correct position, intonation, tone, and bowing, and must have mastered the equivalent of David's *Violin School,* Part 1, and the easier pieces of Dancla, Alard and others.

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.

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 does not satisfy music requirements.

FEES AND TUITION

Students studying for a degree in music and others taking music courses are required to pay the general university fee.

ORGANIZATIONS

A student in the School of Music may elect a maximum of two organizations in any one semester, only one of which may be taken for credit. 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 Second 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 over three hundred men divided into a Concert Band, a Regimental Band, a Freshman Band, and a Transcription Band. The Regimental Band and Freshman Band 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 co-operate with the Athletic Department at games. Each organization rehearses three 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 (except freshmen not in the School of Music) may receive 1 credit by registering in Music 87. Mr. Dvorak and Mr. Fleury, 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.

PARTICIPATION AND ATTAINMENT REQUIREMENTS

Majors in School Music—Vocal

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 (Intermediate voice).

Majors in School Music—Instrumental

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 (Intermediate string, or other orchestral instrument).
4. Music 72b (Intermediate voice).

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.

MAJOR FIELDS IN MUSIC

The major in School Music is 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 in the paragraph just below.

GENERAL REQUIREMENTS FOR THE DEGREE OF BACHELOR OF MUSIC AND FOR THE TEACHERS' CERTIFICATE

Subject to the rule of the College of Letters and Science relating to quality of work (see Section 13) for the degree alone, omitting the Teachers' Certificate, 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.

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 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.

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.

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*.

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.

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

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

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
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	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 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	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
Speech 1a	3	Education 5	4
Electives	4	L & S electives	3
		Electives	2
	16		16

MAJOR IN SCHOOL MUSIC—INSTRUMENTAL

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—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
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 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	Electives	2
Education 74	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 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
Speech 1a	3	**Electives**	5
L & S electives	3		
	16		15

XX. SPECIAL MAJORS

MEDICAL SCIENCE

A major in Medical Science is authorized for students in the General Course who pursue the regular three-year premedical sequence and meet both their premedical and special degree requirements. In their senior year such students register in the Medical School as well as in the College of Letters and Science. For a detailed outline of the premedical work, see pages 63 and 64.

BACTERIOLOGY

Students who wish to prepare themselves for positions in the field of bacteriology may major either in Medical Microbiology or in Agricultural 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 28 credits in the major including the following: Medical Microbiology 1 and 2, or 102 and 104; Zoology 119; Physiological Chemistry 104 and 117; and suitable courses in either Agricultural Bacteriology or Medical Microbiology to complete the required 28 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 Agricultural 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 Agricultural Bacteriology, or in a combination of Agricultural Bacteriology and Medical Microbiology. If such a combination is used, the student shall present at least 15 credits in Agricultural Bacteriology. Additional courses in biological sciences, chemistry, and other fields of study may be assigned to meet the needs of the student.

DIVISION OF LANGUAGE 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. Inter-departmental 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.

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 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) two years of college Spanish or a reading knowledge of Spanish as evidenced by the intermediate examination; (c) 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 1–2 or 5 or 17 (Physical geography); Geography 3 (Geography of the Americas); Geography 4 (Geography of the eastern hemisphere); Geography 7 (Economic geography); 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 basic courses for this major:

	Credits
Anthropology 115—The Indians of Central and South America	3
Art History 157—Patterns and principles of Spanish art (or equivalent work in Spanish or Spanish-American art offered by this department)	2
Economics 151—Economic problems of Latin America	2
Geography 102—Geography of South America or Geography 111—Geography of Middle America	3
History 119—Latin American history or History 130—Spain and the Spanish empire	6
Journalism 121—Interpreting Hispanic affairs	2
Political Science 130—Governments of Latin America or Political Science 131—The United States and Latin America	3
Spanish 47—Spain of today	3
Spanish 48—Spanish America of today	3
Spanish 112—Composition and conversation	2
Spanish 117—Commercial and industrial language practice in Hispanic countries	2

Spanish 150—Spanish civilization or Spanish 151—Spanish-American civilization	4
Spanish courses above 100 in the field of literature	4
Total	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.

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 managment
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
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 47	3	Spanish 25 or 27	2
(Other B.A. requirements)	2-3	(Other B.A. requirements)	4-5
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	15-16		15-16

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

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 49.) Consult requirements for graduation in the announcement of the School of Education.

MAJOR IN AMERICAN INSTITUTIONS

This major in the Division of Social Studies is designed for (a) students in the College of Letters and Science desiring to study American culture, (b) students in the School of Education,* (c) students planning to enter the Law School. It is open only to students whose major interest is essentially interdepartmental in scope.

A Divisional Committee consisting of Professors Hart (Chairman), Brandeis, Harrington, Loomer, McGary, Olmstead, and Riemer administers the major. The chairman will assign one of the members of this committee as adviser to each student electing this 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.

I. REQUIREMENTS FOR THE MAJOR

The 40 credits required by the major include:

a. 19 credits of the following foundation courses:

History 4a–b–History of the United States, 1776–1951 (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). — 6 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).

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). — 4 cr.

Geography 103—Geography of Anglo-America. — 3 cr.

Sociology 185—Contemporary American social organization. — 3 cr.

* Students planning to take the American Institutions major in the School of Education should as early as possible take note of the additional requirements including a minor and certain special required courses. These are explained in the School of Education bulletin; additional information for prospective teachers may be secured from Professor Burr W. Phillips.

b. 18 credits elected from the list of American Institutions courses (see III below), not more than nine of which may be in one department. At least 12 of the 18 hours must be in studies approved by the adviser as relevant to a theme elected by the students within the general field of American Institutions. Themes with representative courses meeting this requirement are listed in II below.

c. 3 credits in American Institutions 110—Evaluation of American institutions.

At least half of the 40 hours of work required for the major shall be in courses numbered above 100.

Students will consult with advisers, and shall, not later than the beginning of the junior year, submit a program of study for the approval of an adviser representing the Committee. The program will indicate the student's plan to meet requirements a and b above. It will include such work as in the opinion of the adviser best fits the preparation, interests, and needs of the student.

II. THEMES OF INTEREST

A theme not listed may be approved by the Committee provided it is essentially interdepartmental in scope.

Courses are listed as representative to indicate the scope and type of work which will be approved by the adviser to meet the 12-hour prerequisite in paragraph Ib. Approval of courses for each student will, however, be made from the list of courses in III below.

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.

   Representative course offerings: Geography 129—Urban geography; Soc. 71—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.

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 and complex 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; Pol. Sci. 152—Government and 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. 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 Eng. 170—Contemporary American literature; Philosophy 150—A philosophy of democracy; Pol. Sci. 165—History of American political thought; History 124—Recent history of the U. S., 1890–1951.

7. 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 may elect this theme 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 requirement I.b. above by courses on foreign areas or international affairs outside the list of American Institutions courses.

8. 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.

   In this theme, students may, with the approval of the adviser, satisfy part of requirement 1. b. above by courses on foreign governments or cultures outside the list of American Institutions courses.

9. 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.

10. A Period Illustrative of American Development. An intensive study of a historical period, approached via several of the social studies, lends itself particularly well to an appreciation of the interrelation of institutions, and 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.

III. COURSES WHICH MAY BE CREDITED TOWARD THE MAJOR

A carefully planned sequence of courses from this list may be approved for each student by American Institutions Major Committee to meet requirement I.b. above.

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, and 153
History—109, 111, 112, 113, 114, 115, 116, 117a, 117b, 118, 120, 121, 122a, 122b, 124, and 137

History of Science—170

Journalism—110, 111, and 114

Philosophy—54, 120, 139, 144, 147, 150, 158, and 162

Political Science—13, 110, 112a–b, 115, 120, 121a–b, 122, 123, 126, 131,134, 135, 139, 143, 148, 152, 159, 163, 165, 166, 170, 171, and 172

Psychology—105

Social Work—145

Sociology and Anthropology—25, 71, 101, 114, 125, 126, 127, 129, 130, 131, 133, 134, 136, 139, 144, 145, 150, 154, 156, 159, 161, 163, 164, 169, 171, 173, 174, 193, 198, and 199

Speech—116, 130, 131, and 156

COURSES OUTSIDE THE COLLEGE OF LETTERS AND SCIENCE

Upon checking with the Office of the Dean their compliance with Section 16a,b,c,d of the General Regulations, students in the major in American Institutions who have the proper prerequisites will be given permission under the Twenty–Credits Rule to take the courses listed below. Such permission is not needed for the starred courses.

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

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. Although 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; who are interested in securing positions with exporting and importing firms, shipping companies, international banking houses, or foreign press services; or 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 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, they 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 must be taken early, preferably by the end of the sophomore year: Political Science 7 (American government and politics) and Economics 1a (General economics). 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); Anthropology 114 (Indians of North America), 116 (Peoples of Asia), 117 (Peoples of Europe), and 118 (Peoples of Africa); Sociology 136 (Public opinion), and 163 (Modern population problems).

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		Credits
History 4a-b, History of the United States	6	Geography 7, Economic geography	3
Political Science-Geography 121a-b, Foundations of international relations	6	Economics 156, International trade	3

II. RECOMMENDED COURSES

Commerce

		Credits
109a	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 reconstruction	3
*143	Structure of the American economy	3
*144	Capitalism and socialism	3
153	International finance	3
157	International economic policy	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
111	Geography of Middle America	3
*125	Political geography	3
132	Use and appreciation of maps	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
119	Latin-American history	6
*120	American foreign relations	6
124	Recent history of the U. S., 1890-1948	6
129a	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

		Credits
120	Interpreting foreign news	2

Political Science

101	Introduction to political theory	3
112	Constitutional law	6
*118a	International law: survey	3
119	International law: problems	3
*123	Administration of U. S. foreign policy	3
127	Comparative government: Great Britain	3
128	Comparative government: Continental Europe	3
129	Government of Canada	3
130	Governments of Latin America	3
131	The United States and Latin America	3
*137	International organization	3
138	Contemporary problems in international relations	3
140	Far Eastern politics	3
155	The United States and the Far East	3

Social Studies

*159	Problems of the United States foreign policy	3

Sociology and Anthropology

134	Democratic and totalitarian societies	3
136	Public opinion	3
*163	Modern population problems	3
177	Sociology of military institutions	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 121a and b, Foundations of international relations	6
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 124, Recent history of the U. S., 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	Elements 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
*166	Economics of population	3
181	Business cycles	3
182	Economic stabilization	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

*118	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 (Comparative govt.: Great Britain), 128 (Comparative govt.: Continental Europe), 129 (Government of Canada), 131 (The U. S. and Latin America), 132 (Africa in world politics), and 133 (The Near and Middle East in world politics), 135 (Eastern Europe in World Politics), and 140 (Far Eastern politics).

History

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

The history of special regions of interest to certain students is treated in courses such as History 143 (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), 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

88	European social structure: south and west	3
89	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 119a–b, Latin-American history	6
Journalism 121a, Reporting Hispanic affairs (Latin America)	1
Political Science 130, Governments of Latin America	3
Political Science 131, The United States and Latin America	3

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

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
120	American foreign relations	6
122a	American economic life (1789-1860)	3
122b	The age of big business (1861 to present)	3
124	Recent history of the United States	6
	Journalism	
120	Interpreting foreign news	2
	Political Science	
25	Survey of world politics	3
118	Principles of international law	3
119	Problems of international law	3
*121a-b	Foundations of international relations	6
123	Administration of United States foreign policy	2
127	Comparative government: Great Britain	3
128	Comparative government: Continental Europe	3
	Social Studies	
159	Social studies	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 or 25a (Elementary composition, conversation and grammar review *or* intermediate composition and conversation) ..... 2 cr.
Spanish 21 or 24 (Elementary survey of Spanish literature *or* modern Spanish American literature) ..... 6 cr.
Spanish 27 (Spanish commercial letter writing) ..... 2 cr.
Spanish 48 or 112 (Spanish America of today *or* composition and conversation) 2–3 cr.
Spanish 117 (Commercial and industrial language practice in Hispanic countries), with a grade of *B* ..... 2 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.

** 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.)

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	Other B.A. requirements	4-5
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 or 24a	3	Spanish 21b or 24b	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	Spanish 117	2
Spanish 112	2	Political Science 130 or 131	3
Political Science 123	2	Economics 151	2
Electives	3-4	Economics 105	3
	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	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

First Semester	Credits	Second Semester	Credits
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 27	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

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

JUNIOR YEAR

Spanish 21a or 24a	3	Spanish 21b or 24b	3
History 4a	3	History 4b	3
Economics 151	2	Anthropology 115	3
Political Science 123	3	Political Science 131	3
Political Science 130	3	Electives	3-4
Journalism 121	1		
Electives	1		
	16		15-16

SENIOR YEAR

Spanish 112	2	Spanish 117	2
Spanish 151	2	Spanish 151	2
Economics 156	3	Economics 157	3
History 119a	3	History 119b	3
Portuguese 1a	4	Portuguese 1b	4
*Thesis	2	*Thesis	2
	16		16

SPECIALIZATION IN FRENCH AREA STUDIES

ADVISER, PROFESSOR JULIAN HARRIS

To meet the language requirement in the major in International Relations with Specialization in French Area Studies students must pass the Oral Proficiency Test in French and offer the following courses or the equivalent:

French 21	Elementary survey of French literature	6 cr.
French 25 or 124	Composition and conversation	4 cr.
French 20 or 120	French for translators or Advanced French translation	3–4 cr.
French 150	French civilization, or 48, France of today	4 cr.

Oral practice acquired by residence or meals at the French House 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 required of 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):

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

Commerce

		Credits
† 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

Geography

*101	Geography of Europe	3
	or	
*107	Geography of the Mediterranean and Near East	3

Journalism

		Credits
120	Interpreting foreign news	2

Political Science

101	Introduction to political theory	3
118	Principles of international law	3
*121a, 121b	Foundations of international relations	6
123	Administration of U. S. foreign policy	3
128	Comparative govt.: Continental Europe	3
137	International organization	3

Social Studies

159	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

SOPHOMORE YEAR

French 21a	3	French 21b	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 121a	3	Political Science 121b	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

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

MAJOR IN COMMUNITY LEADERSHIP IN RECREATION

Under recent faculty action the major in Community Leadership in Recreation has been placed in the School of Education. Letters and Science students who are now taking this major have the option of continuing with the major in the College of Letters and Science or of transferring to the School of Education. Students who enter the major beginning with the first semester of the academic year 1950–51 will be required to register in the School of Education.

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, Jr., 209 Biology Building. 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 1 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.
   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 counsellor 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.

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.

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 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 (Chairman), Clarenbach, and Ratcliff. 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.

Students will consult with advisers, and shall, not later than the beginning of the junior year (preferably earlier), submit a program of studies for the approval of an adviser representing the Committee. The program shall include such work as may in the opinion of the adviser best fit the preparation, interests, and needs of the student.

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 58; in Sequence B, 59. These course sequences are to be available in mimeographed form in the offices of the members of the Divisional Committee named above.

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 81.

ANTHROPOLOGY

For an undergraduate major in Anthropology, see Sociology and Anthropology, page 204.

For courses in Anthropology, see page 207.

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; and 12 credits in the history department as a minimum.

It is recommended, especially for those who expect to teach history of art, that they take some work in the courses in techniques offered by Mr. Watrous.

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 1950–51.)

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. Prerequisites: Sophomore standing and consent of instructor. 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 PRESENT. I; 2 cr. The history of theatrical architecture and stage craft, 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: Art History 106. 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.

133. HISTORY OF CHINESE PAINTING. I; 3 cr. 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: Senior 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. ELEMENTARY HISTORY OF ART TECHNIQUES. 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.

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.

152. Northern Painting of the Renaissance. II; 3 cr. Painting in the Netherlands, France and Germany from the Van Eycks to Brueghel. Prerequisite: Sophomore standing. Mr. Watrous.

153. Representative Painters of the Seventeenth Century. II; 3 cr. Caravaggio, Rubens, Rembrandt, Velasquez and Poussin. Prerequisite: Sophomore standing. 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.

206. Seminar. Modern European painting, sculpture and architecture. Yr; 2 cr. Mr. Kienitz.

210. Seminar. Yr; 2 cr. Mr. Hagen.

ASTRONOMY

Professors Huffer, Whitford, *chairman;* Assistant Professor Johnson.

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, 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. The transfer of radiation through matter; the continuous spectrum. Ionization equilibrium in stellar atmospheres. Prerequisites: Physics 210a and Physics 113, or consent of instructor. Mr. Johnson.

202b. THEORETICAL ASTROPHYSICS. II; 3 cr. Formation of absorption lines in stellar atmospheres. Transfer of radiation through interstellar matter and planetary atmospheres. Prerequisite: Astronomy 202a, or consent of instructor. Mr. Johnson.

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 College of Agriculture and the Medical School. Requirements for a major in bacteriology may be found on page 78.

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 93.

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, FASSETT, HUSKINS; ASSOCIATE PROFESSORS CURTIS, EVANS, FISK, SKOOG, STAUFFER, *chairman*, THOMSON; ASSISTANT PROFESSORS ALLEN, CLARKE, COTTAM, GERLOFF, NEWCOMB; INSTRUCTORS MASON, SHAFER, STERLING; LECTURER PATAU; 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. Newcomb, 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. Thomson.

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 1950–51 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. Prerequisite: Botany 1 or 17. (Offered 1951–52 and in alternate years.) Mr. Evans.

113. Pteridophytes. Sem; 3 cr. Prerequisite: Botany 1 or 17.

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 ever-green 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 1950–51.) 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. Mr. Patau.

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. Lecture, 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 seed germination and vegetative propagation. (Offered 1950–51 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 1951–52.) 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.

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; 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. (Offered 1951–52 and in alternate years.) Mr. Allen.

178. Physiology of Plant Reproduction. II; 2 cr. Induction of flowers, physiology of gametophytes and fruit production in angiosperms. Prerequisite: Botany 146.

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.

220. ADVANCED MYCOLOGY. Yr; 2 or 3 cr. Lectures, laboratory, and field work. Prerequisite: Botany 104 or equivalent. Mr. Backus.

245. GROWTH OF PLANTS. II; 1 cr. Prerequisite: Consent of instructor. (Not offered 1950–51.) Mr. Skoog.

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 and 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, FERRY, HALL, HIRSCHFELDER, HOLT, JOHNSON, MCELVAIN, MATHEWS, *chairman,* MELOCHE, SCHUETTE, SORUM, WILDS, WILLARD, WILLIAMS; ASSOCIATE PROFESSORS ALBERTY, BENDER, IHDE, KLEIN, LARSEN; ASSISTANT PROFESSORS AYCOCK, BLAEDEL, BOYD, CURTISS, KING, MURPHY, RITTER, WALES, WOYSKI; INSTRUCTORS COOPER, COULSON, GOERING, VAN TAMELEN.

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. Any student who majors in chemistry cannot count toward graduation more than 40 credits in chemistry and biochemistry combined.

COURSE NO.	TITLE OF COURSE	OPTIONAL FIELDS OF CONCENTRATION					
		Organic	Physical	Food	Inorganic	Pre-med.	Teaching
*	General chemistry and qualitative analysis	8-10 cr.	8-10 cr.	8-10 cr.	8-10 cr.	8-10 cr.	8-10 cr.
11	Quantitive analysis	6	8	7	8	6	8
120,122	Organic—lectures	4	4	4	4	4	4
121,123	Organic—laboratory	6	4	3	4	4	3
130	Physical—lectures	4	4	4	4	4	4
131	Physical—laboratory	4	6	3	4	4	3
100	Thesis	4	4	4	4	4	—
123	Characterization of organic compounds	2	—	—	—	—	—
146-7	Food chemistry	—	—	5	—	—	—
104,117	Physiological chemistry	—	—	—	—	8	—
———	Adv. technical elective	—	—	—	2	—	—
	TOTAL CREDITS	38-40	38-40	38-40	38-40	42-44	30-32

A minimum of 80 credits in subjects outside the major subject is required for graduation.
* It is preferred that chemistry 4 or its equivalent be taken to satisfy this requirement.

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. Mr. Ihde, Mr. Larsen and staff.

5. General Chemistry. I, II; 3 cr. Introductory college chemistry. Prerequisites: 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. Mr. Willard, Mr. Ritter, Mr. King and 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. Mr. Ihde, Mr. Ritter, Mr. Willard, Mr. Woyski, Mr. Larsen, Mr. King and 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, 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: 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. 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; 3–5 cr. For agricultural students and others in fields requiring one semester of quantitative analysis. Prerequisite: Chemistry 1b or equivalent. 2 hrs. lect., 3–9 hrs. lab. Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche and staff.

14. Elementary Quantitative Analysis. II; 4–5 cr. For engineering students. Prerequisite: Chemistry 2b or equivalent. 2 hrs. lecture, 6–9 hrs. lab., Mr. Blaedel, Mr. Cooper, Mr. Hall, Mr. Meloche and staff.

15. Elementary Quantitative Analysis. I, 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.

99. Special Chemical Problems. I, II; 2–4 cr. Staff.

100. Senior Thesis. Yr; 2–3 cr. Staff.

106. Advanced Analytical Practice. I, II; * cr. Special analytical techniques including microscopic and other instrumental methods. Prerequisite: Chemistry 11b. Mr. Meloche, Mr. Coulson.

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; 2 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. Aycock.

121. Organic Chemistry. Sem; 2–3 cr. Introductory laboratory course. Prerequisite: Credit or concurrent registration in Chemistry 120. Lab. 6–8 hrs. Mr. Klein, Mr. Aycock, Mr. Van Tamelen and staff.

122. Organic Chemistry. Sem; 2 cr. Intermediate lecture course. Prerequisite: Chemistry 120. Courses 122 and 123 should be taken concurrently. Mr. McElvain, Mr. Aycock, Mr. Van Tamelen, Mr. Goering.

123. Organic Chemistry. Sem; 2–3 cr. Intermediate laboratory course. Prerequisite: Credit or concurrent registration in Chemistry 122. Lab. 6–8 hrs. Mr. Klein. Mr. Aycock, Mr. Van Tamelen and staff.

124. Advanced Organic Chemistry. I; 3 cr. Prerequisite: Chemistry 122. Mr. Johnson and 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. Aycock.

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; 2 cr. Prerequisites: Chemistry 1 and 11; Physics 1 or 31, calculus, or consent of instructor. Courses 130 and 131 should be taken concurrently. Mr. Mathews, Mr. Daniels, Mr. Williams, Mr. Alberty, Mr. Bender, Mr. Murphy, Mr. Ferry.

131. Physical Chemistry. Yr; 1–3 cr. Prerequisite: Credit or concurrent registration in Chemistry 130. Lab. 3–9 hrs. Mr. Bender, Mr. Murphy, Mr. Alberty and staff.

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.

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. Advanced Instrumental Analysis. I, II; * cr. Prerequisite: Chemistry 131. Mr. Meloche, Mr. Coulson.

155. Advanced Quantitative Analysis. I; 2 cr. Mr. Hall.

157. Advanced Inorganic Chemistry. I; 2 cr. The compounds and reactions of the common elements. Prerequisite: Senior standing. Mr. Holt.

158. Theoretical Inorganic Chemistry. II; 2 cr. Prerequisites: Chemistry 130 and 157 or consent of instructor. Mr. Hall, Mr. Woyski.

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 1b, 2b or 4b. Staff.

161. The Phase Rule. II; 2 cr. Prerequisite: Chemistry 130. Mr. Sorum.

165. Radiochemistry. II; 3 cr. Prerequisite: Chemistry 130. Mr. Willard.

180. Advanced Independent Study. I, II; * cr. Open only to superior students. (See Section 16, p. 41.)

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. Prerequiste: Chemistry 223. Mr. Klein, Mr. Link, Mr. Goering.

225. Advanced Organic Chemistry. II; 3 cr. Prerequisite: Chemistry 223. Mr. Wilds, Mr. Aycock, Mr. Johnson, Mr. Van Tamelen.

230. Advanced Physical Chemistry. Yr; 4 cr. Prerequisite: Chemistry 130b. Mr. Hirschfelder, Mr. Ferry, Mr. Daniels, Mr. Bender, Mr. Alberty.

232. Chemical Thermodynamics. II; 3 cr. Prerequisites: Chemistry 130 and 131. Mr. Murphy.

234. Statistical Mechanics. II; 3 cr. Prerequisite: Chemistry 230 or consent of instructor. Mr. Hirschfelder, Mr. Curtiss.

235. The Transport Properties and the Equation of State of Fluids. Yr; 2 cr. Prerequisites: Elementary thermodynamics, differential equations. Mr. Curtiss.

236. Chemical Kinetics. I; 2 cr. Prerequisite: Chemistry 130. Mr. Daniels.

238. Advanced Quantum Chemistry. II; 3 cr. Prerequisite: Chemistry 230a or Physics 212a. 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. Aycock.

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; 1 cr. General Chemistry Staff.

265. Advanced Topics in General Chemistry. I, II; 2 or 4 crs. Mr. King, Mr. Ritter.

TEACHERS' COURSE

The Teaching of Chemistry. See School of Education.

CLASSICS

PROFESSOR AGARD, *chairman;* ASSOCIATE PROFESSORS FOWLER, MACKENDRICK; ASSISTANT PROFESSOR HEIRONIMUS; INSTRUCTOR HOWE.

ATTAINMENT EXAMINATIONS. See Section 11, page 37. The normal preparation for the intermediate examination in Greek includes Greek 1 and 10; 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. Mr. Howe.

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 credits. 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.

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.

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 41.

191. Greek Dialects. 2 cr. Mr Fowler. Offered I, 1951–52 and in alternate years.

200. Individual Research. Yr; *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, 1950–51 and in alternate years.

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. Mr. Heironimus, staff.

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. Mr. Heironimus, staff.

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 begins with a quick review of grammar, and then passes on to the reading of selections from several authors, especially those who have influenced later literature. Mr. Howe.

10. Vergil. I; 4 cr. Selections from the *Aeneid.* Prerequisite: Latin 1b or two years of high-school Latin. Open to students who have read Cicero, but not to students who have read Vergil. Mr. Heironimus.

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. Mr. Heironimus.

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 1950–51: *Pro Sestio, Pro Milone, De Lege Agraria* I–III, *Pro Marcello*. 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: Alexandrienism, 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.

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. MacKendrick.

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-Europe, exclusive of Latin. Oscan and Umbrian; grammar; detailed study of inscriptions. Brief survey of the other dialects. Offered II, 1950–51 and in alternate years. Mr. Fowler.

200. Individual Research. Yr; * cr. Staff.

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, 1951–52 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, MITCHELL, HAUGEN; ASSOCIATE PROFESSORS ALBERSON, MACKENDRICK.

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) 20 credits in courses in the 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. 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; Scandivanian 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.

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 1949–50 and in alternate years. Prerequisite: Sophomore standing. Mr. Mitchell.

68. CONTEMPORARY NOVEL. Yr; 2 cr. The English, Continental, and American novel, 1875–1930 in translation. Offered 1948–49 and in alternate years. Prerequisite: Sophomore standing. Mr. Fulcher.

In the following courses, 100 to 184, junior standing is required (with the exception of 109, which is graduate standing); for majors, 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.

109. 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.

111. The Historical Novel. I; 3 cr. A study of typical historical novels.

112. Classical Backgrounds of English Literature. II; 3 cr. 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.

165. Literary Criticism. Yr; 3 cr. The search for a critical theory and a study 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. Offered 1948–49 and in alternate years.

171. Comedy. II; 3 cr. Critical study. Prerequisite: At least one foreign language required. Offered 1948–49 and in alternate years.

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. II, 3 cr. Fom Rousseau to Goethe and Chateaubriand. Ability to read German or French necessary.

178. The Contemporary Scene. Yr; 3 cr. A study of the literary movements in Europe and America since the First Great War. Offered 1949–50 and in alternate years. Ability to read at least one foreign language required.

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 41.

181. Proseminar. Yr; 2 or more cr. Individual studies for seniors. Prerequisite: Consent of instructor. Mrs. Alberson.

184. German-American Literary Relations. (See English 184.)

189. Literary Criticism in the Renaissance. II; 3 cr. Mr. Hughes.

200. Independent Studies. Yr; *cr.

201. Seminar, Aspects of Recent Literary Criticism. 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. Principal works of Russian literature from Tolstoy to the Soviet period. Prerequisite: Sophomore standing. Mr. Zawacki.

40a. Survey of Russian Drama. I; 2–3 cr. Principal dramas in Russian literature preceding Chekhov; their social function and their literary significance. Prerequisite: Sophomore standing. Mrs. Gasiorowski.

40b. Survey of Russian Drama. II; 2–3 cr. Principal dramas in Russian literature from Chekhov to the present, their function and significance in contemporary Russian life. 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. Representative works of Russian literature since 1917. Prerequisite: Sophomore standing. Mrs. Gasiorowski.

48b. Contemporary Russian Literature. II; 2–3 cr. 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.

71. Literature of the Vikings. (See Scandinavian Languages 71.) 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 1948–49. Prerequisite: Sophomore standing. Mr. Naumann.

77. Norwegian Literature from Renaissance to Realism. (See Scandinavian Languages 77.) Mr. Haugen.

143. Cervantes and the Spanish Golden Age. Yr; 3 cr. Life and works of Cervantes; sources; historical developments in sixteenth- and seventeenth-century Spain relating to literature; influence of Cervantes in foreign literatures. Offered 1950–51 and in alternate years. Mr. Singleton.

COMPARATIVE PHILOLOGY AND LINGUISTICS

Professors Hanley, Harris, Haugen, Heffner, Joos, Kasten; Associate Professors Bottke, Cassidy, Fowler, *chairman*, Zawacki.

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. Sem; 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. Sem; 3 cr. Exercises in phonemic analysis followed by ten hours of practical work with a native speaker of a foreign language. (To be given II, 1951–52 and in alternate years.) Mr. Fowler.

LINGUISTICS 122. MORPHEMICS. Sem; 3 cr. Prerequisite: Linguistics 121. Exercises in morphemic analysis followed by concerted work on a descriptive statement of the structure of English. (To be given II, 1950–51 and in alternate years.) Mr. Fowler.

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 paper. Prerequisites: English 185 or German 191, and consent of instructor. Mr. Joos.

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, 1951–52, omitted 1950–51.) 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, 1951–52, omitted 1950–51.) 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, 1950–51, 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, 1951–52 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, 1951–52 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, 1951–52 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 120. 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. Mr. Harris.

FRENCH 240. OLD FRENCH. Yr; 2 cr. Introductory seminar. Historical grammar and reading of Old French texts. Mr. Harris.

FRENCH 244. OLD PROVENCAL. Yr; 2 cr. Mr. Harris.

FRENCH 273. ROMANCE PHILOLOGY. Yr; 2 cr. Mr. Kasten.

ITALIAN 171. INTRODUCTION TO ITALIAN PHILOLOGY. Sem; 2 cr. Derivation of the Italian language from Vulgar Latin; elementary phonology and morphology. 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.

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. Phonological and morphological consideration of High German. Mr. Heffner.

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. A survey of linguistic development from the earliest known records to the present, with illustrative readings in the various languages. Prerequisite: Reading knowledge of a non-English Germanic language. Mr. Haugen.

SLAVIC LANGUAGES

RUSSIAN 170. OLD CHURCH SLAVONIC. Sem; 2 cr.

SPANISH AND PORTUGUESE

SPANISH 128. SPANISH HISTORICAL GRAMMAR. Yr; 2 cr. An introduction to Spanish philology. (To be given 1951–52.) Mr. Kasten.

SPANISH 210. PHILOLOGICAL SEMINAR: OLD SPANISH. Yr; 2 cr. (To be given 1950–51.) Mr. Kasten.

SPANISH 258. HISTORICAL SPANISH SYNTAX AND LEXICOGRAPHY. Sem; 2 cr. Chronological study of representative texts. (Omitted 1950–51.) Mr. Kasten.

SPANISH 273. ROMANCE PHILOLOGY. Yr; 2 cr. Mr. Kasten.

CONSERVATION (See Biological Aspects of Conservation, page 93.)

CONTEMPORARY TRENDS

103. CONTEMPORARY TRENDS. II; 3 cr. A non-technical 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.

ECONOMICS

PROFESSORS CENTER, EARLEY, ELLSWORTH, FOX, FRAINE, GAUMNITZ, GLAESER, GROVES, HOBSON, KIEKHOFER, LESCOHIER, MCNALL, MORTON, PARSONS, PENN, PERLMAN, RATCLIFF, SCHAARS, TRUMBOWER, WITTE, *chairman;* VISITING PROFESSOR USHER; ASSOCIATE PROFESSORS BAKKEN, BRONFENBRENNER, LOOMER, MORGAN; LECTURERS BRANDEIS, TRIPP; ASSISTANT PROFESSORS EBLING, GRANER, HALVORSON, ROTWEIN; INSTRUCTORS BRIDGMAN, GIESE, WILMOT, YOUNG.

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 requirement 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. Economics 1a and 1b cannot be included in this minimum of three courses within one field.

   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, see below or consult 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-credit 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 Professor Robben W. Fleming, 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 41 of this bulletin for requirements and procedures. Staff.

200. Graduate Thesis. Yr; *cr. Staff.

280. Independent Work. I, II, or Yr; *cr. Prerequisites: Graduate standing and consent of major professor. Staff.

I. ECONOMIC THEORY

1a. General Economics. I, II; 4 cr. Fundamental economic principles and the problems of modern economic society; production; the modern exchange system; value and price. Prerequisite: Sophomore standing. Mr. Kiekhofer, Mr. Wilmot.

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. Kiekhofer.

102. Historical and Institutional Economists. I; 3 cr. (Given alternately with Economics 118.) Prerequisites: Senior standing and two courses in economics. Mr. Glaeser.

118. Institutional Economics. I; 3 cr. (See Group III, Economic History and Institutions.) Prerequisites: Senior standing and two courses in economics. Mr. Glaeser.

131. Wages and Prices. 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 reading assignments, take different examinations, and when enrollment of each group justifies, are met separately. Prerequisites: For undergraduates, two courses in economics. Mr. Earley, Mr. Rotwein.

173. Economics of Consumption. I; 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. For undergraduates. Prerequisite: Economics 1a; Economics 105 recommended. Mr. Morgan.

182. Economic Control. II; 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. II; 3 cr. Theory of wages, interest, rent, and profits under pure and imperfect competition. Statistical data on distribution. "Exploitation" and "maldistribution" problems. Prerequisites: For undergraduates, junior standing and upper-group status. 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. II; 3 cr. (See Group IV, Finance.)

194. Wealth and Income. I; 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. Prerequisite: Graduate standing. Mr. Earley.

204. Economic Method. Yr; 2 cr. The structure of economic thought; its logic, psychology, 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, particularly value, distribution, and price, together with reports on recent or contemporary theories and theorists. Prerequisite: Graduate standing. Mr. Kiekhofer.

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.

296. Econometrics. 3 cr. (See Group VIII, Statistics.)

II. AGRICULTURAL ECONOMICS

106. Basic Economic Data in Agriculture. I; 3 cr. Agricultural data available from various sources, their origins, characteristics, and uses. Prerequisite: Economics 1b. Mr. Ebling.

107. Agricultural Data Methods. II; 3 cr. Methods used in collection, organization, and presentation of agricultural data. Prerequisite: Economics 106 or equivalent. Mr. Ebling.

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. Penn, Mr. Loomer.

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. International Trade in Agricultural Products. I; 3 cr. Theories of foreign trade; foreign exchange; history and analysis of agricultural exports and imports; governmental aids and restrictions to trade. Prerequisite: Economics 1a. Mr. Schaars.

127. Cooperation. I, II; 3 cr. Analysis of marketing organizations, methods and theory underlying producer and consumer cooperatives 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. Froker, Mr. Schaars.

129. Cooperative Management Problems. II; 2 cr. Consideration of business structure of cooperative associations; problems involving organization, membership relations, financing, trade and sales practices, administrative policies. Prerequisite: Economics 127 or consent of instructor. Mr. Hobson.

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. Hobson.

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: 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. Hobson.

177. RURAL LAND USE PLANNING AND ZONING. II; 3 cr. The development, principles and techniques of rural land use planning; zoning and other measures used to effectuate these plans. Prerequisite: Economics 117 or consent of instructor. Mr. Penn.

179. URBAN LAND ECONOMICS. I, II; 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.

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; Prices and agricultural data, Mr. Halvorson, Mr. Ebling.

210. ECONOMICS OF AGRICULTURAL PRODUCTION. I; 2 cr. Organization of agricultural production, economic theory in relation to the farm business, and critical evaluation of research. Mr. McNall.

211. SEMINAR: FARM MANAGEMENT PROBLEMS. II; 2 cr. Special problems in the research field, individual student work on specific problems.

221. LAND ECONOMIC THEORY. II; 2 cr. Economics of land utilization, theories of rent, principles of land valuation and taxation. Mr. Penn, Mr. Loomer.

225. SEMINAR: AGRICULTURAL MARKETING. I; 2 cr. Basic problems; organization and methods of marketing research; review of economic literature in marketing; marketing legislation. Offered in 1950–51 and alternate years. Mr. Schaars.

226. SEMINAR: LAND PROBLEMS. Yr; 2 cr. Land tenure and utilization research and policy problems. Mr. Penn, Mr. Loomer.

227. SEMINAR: CO-OPERATIVE MARKETING II; 2 cr. The relationship of economic and legal problems in co-operative organization, stressing similiarities to and differences with general corporation law. Mr. Bakken, Mr. Bunn.

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. Mr. Bakken.

229. SEMINAR: ADVANCED AGRICULTURAL ECONOMICS. II; 3 cr. The field of agricultural economics with respect to its origins and main issues. Mr. Parsons.

255. SEMINAR: PRICE ANALYSIS. II; 2 cr. Application of statistical and other methods involved in analyzing agricultural price and related problems. Prerequisite: Economics 130 or consent of instructor. Mr. Halvorson.

III. ECONOMIC HISTORY AND INSTITUTIONS

118. INSTITUTIONAL ECONOMICS. I; 3 cr. Historical development of the institutional organization of economic society. Special attention given to bearing of constitutional law upon the changing structure. Prerequisites: Graduate standing or senior standing and two courses in economics. 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. Prerequisites: Economics 1a and senior standing. Mr. Perlman.

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. Development of agriculture, industry, commerce, and transportation from colonial times to the present. Problems raised by economic evolution in the United States. 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. Prerequisite: Two courses in economics. Mr. Usher.

143. STRUCTURE OF THE AMERICAN ECONOMY. I; 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. Prerequisite: Economics 1b or consent of instructor. 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. Prerequisites: Economics 137 or Economics 1b and consent of instructor. Mr. Wilmot.

187a and b. RECENT ECONOMIC DEVELOPMENTS IN SCANDINAVIA. Yr; 3 cr. Prerequisite: Junior standing and Economics 1a or consent of instructor. (Given 1949–50.) Mr. Dich.

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.

240. SEMINAR: MODERN EUROPEAN ECONOMIC HISTORY. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Usher.

246. ROLE OF GOVERNMENT IN THE ECONOMY. II; 2 cr. Basic problems in the relations between government and business. Prerequisite: Graduate standing. Mr. Witte.

258. IMPERFECT COMPETITION AND THE LAW. II; 2 cr. Related legal and economic problems on the control of monopoly, business practices, and prices. Prerequisites: Graduate standing and consent of instructor. Mr. Bunn, Mr. Earley, Mr. Rotwein.

IV. 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.

108. FINANCIAL INSTITUTIONS. I or II; 3 cr. Including savings banks, trust, building and loan companies, etc.; consumption finance, agricultural finance, government credit institutions. Interrelationships. Market structure. Economic functions. Adequacy. Prerequisite: Economics 105. Mr. Earley.

110. INVESTMENT PRINCIPLES. I, II; 3 cr. Designing of investment programs to meet particular needs. Principles of selection of investment media. Exploration of various channels of investment. Emphasis on problems of small-scale investor. 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; postwar fiscal policy. Prerequisite: Economics 124a or consent of instructor. Mr. Groves.

133. FINANCIAL HISTORY OF THE UNITED STATES. I; 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. Prerequsite: Economics 1a. Mr. Graner.

153. INTERNATIONAL FINANCE. I; 3 cr. (See GROUP V, INTERNATIONAL ECONOMICS.)

158. LARGE-SCALE ENTERPRISE. I; 3 cr. (See GROUP III, ECONOMIC HISTORY AND INSTITUTIONS.)

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. 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 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 108, 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.)

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 cooperation, 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.

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 in alternate years; offered 1950–51. 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. Deals with all aspects of social security, including old-age security, health insurance, workmen's compensation, unemployment insurance, social assistance. Prerequisite: Economics 1b or consent of instructor. Mr. Witte.

122. Labor Problems. I, II; 3 cr. The efficiency-consciousness of management and the job-consciousness of unionism. The labor movement as a "going government." Types of "industrial government": "Welfare capitalism," compulsory arbitration, and management-union agreements. Prerequisites: Economics 1a and junior standing. Mr. Young.

123. Labor Legislation. II; 3 or 4 cr. Protective legislation dealing with wages, hours, child labor, old-age benefits, accident and unemployment compensation. Legal status of trade unions. Prerequisite: Economics 1b or consent of instructor. Miss Brandeis.

131. Wages and Prices. II; 3 cr. Wage facts, wage theories; the wages factor in economic development. Prerequisites: Senior standing and economics 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. I; 3 cr. Labor movements of Great Britain and Western Europe. Historical and descriptive. Prerequisites: Economics 1a and senior 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. Economics of 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. Employment and unemployment. Theories of unemployment, facts and problems. Prerequisite: Economics 1a. Mr. Lescohier.

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. Witte, Mr. Miles.

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. Mr. Fleming, Miss Brandeis, Mr. Feinsinger, Mr. Lescohier, 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. Witte, Mr. Tripp.

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. Trumbower.

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. Trumbower.

142. Public Utilities. I, II; 3 cr. 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.

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. Trumbower.

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, Mr. Trumbower.

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; 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; 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. Cooperative 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.

296. 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.

See also:

MATHEMATICS 118. INTRODUCTION TO THE THEORY OF PROBABILITY.
MATHEMATICS 133. FINITE DIFFERENCES AND INTERPOLATION.
MATHEMATICS 134. MATHEMATICS OF ELEMENTARY STATISTICS.
MATHEMATICS 137. ELEMENTARY MATHEMATICAL STATISTICS.

IX. SPECIAL COURSES

139. PRINCIPALS 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. I; 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. II; 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.)

The following courses, formerly listed as economics, are now listed as commerce and may be taken for credit by Letters and Science students under the Twenty-Credits Rule (see Section 17, page 40) without special permission of the dean. These courses do not count toward the major in economics.

COMMERCE 43. BUSINESS ETHICS.
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.

EDUCATION

Education 106, 108, 119, 120, and 123 are accepted as regular Letters and Science courses. For description of these courses see the School of Education section of this announcement and also the semester time tables.

ENGLISH

PROFESSORS CLARK, ECCLES, FULCHER, HANLEY, HUGHES, POCHMANN, POOLEY, QUINTANA, *chairman*, WALLERSTEIN, H. WHITE; LECTURER GLICKSMAN; ASSOCIATE PROFESSORS BUCKLEY, CASSIDY, DORAN, DOREMUS, HOFFMAN, LACY, RODMAN, WILEY; ASSISTANT PROFESSORS SHUDOFSKY, WOOD; INSTRUCTORS CLEVELAND, ENCK, GREENFIELD, KING, MARQUARDT, PRESSON, RUBINSTEIN, THOMAS, A. WHITE, WHITLEY, WOODRING.

MAJOR: A minimum of 33 credits including (a) Freshman English; (b) two semesters to be chosen from 30, 32, 33, 40 (30 and 33 may not be combined; of the thirty-three credits required for the English major, not more than *six* may be in sophomore literature); (c) one, and only one of the following: 37, 136, 137; (d) two of the following, one of which must be either Chaucer or Milton: 57, 129, 131, 156, 157, 160, 161, 162; (e) 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 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.

TEACHING MAJOR AND MINOR. See School of Education.

COMPOSITION COURSES

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. NON-CREDIT COURSE IN PRACTICAL ENGLISH FOR FOREIGN STUDENTS. I, II. For further information consult the instructor. 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.

20. INTERMEDIATE COMPOSITION. II; 3 cr. Prerequisite: Completion of Freshman English requirement and sophomore standing in the Department of Men's Physical Education.

103. CREATIVE WRITING. Yr; 2 or 3 cr. Prerequisite: Consent of instructor.

105. CREATIVE WRITING. Yr; 2 or 3 cr. Prerequisite: Consent of instructor. Miss H. 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. Glicksman.

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. Pre-

requisite: Completion of Freshman English requirement. Miss H. White, Mr. Glicksman, 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 Freshman English requirement. Mr. Quintana, Mr. Cassidy, 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. Offered yearly. Mr. Cassidy.

37. SHAKESPEARIAN DRAMA. Yr; 3 cr. A broad course for undergraduates. Miss H. 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. Quintana.

68. THE NOVEL IN THE MODERN WORLD. Does not give credit in English. (See COMPARATIVE LITERATURE 68.) Offered 1950–51 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. 1660–1825. Sem; 3 cr. Plays, playwrights and theaters from Restoration to sentimental comedy, from heroic to gothic tragedy, from Dryden to Shelley. Offered yearly. Mr. Mitchell.

109. BRITISH DRAMA 1825 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. Offered yearly. 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. Offered yearly. 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. Offered yearly. Mr. Eccles.

120. 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. Offered yearly. 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. Offered yearly. 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. Offered yearly. 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. Not offered 1950–51. Mr. Quintana.

130. METRICAL PRINCIPALS 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. Offered yearly. Miss Wallerstein.

131. CHAUCER. Sem; 3 cr. *The Canterbury Tales, Troilus and Criseyde.* Study of changing literary, linguistic, and intellectual traditions. Offered yearly. Mr. Hughes.

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. Offered yearly. 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. Offered yearly. 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. Offered yearly. Mr. Buckley.

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. Offered yearly. Mr. Buckley.

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 1950–51.

139. THE ENGLISH NOVEL. Yr; 3 cr. Richardson to Hardy. Offered 1951–52 and in alternate years. Mr. Fulcher.

140. SPOKESMEN OF AMERICAN IDEALS. Sem; 3 cr. The ideas and ideals of those who were spokesmen, during the 19th century, of the distinctively American and democratic way of life. Offered 1951–52 and in alternate years. 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. Offered yearly. Miss Wallerstein.

157. MILTON. Sem; 3 cr. Either 157 or 57 (see which) 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. Offered yearly. 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. Offered yearly. 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. Offered yearly. Mr. Quintana.

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. Not offered 1950–51. 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. Offered from time to time.

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 writing. Mr. Pochmann.

169. MAJOR AMERICAN POETS. Sem; 3 cr. The genetic development, range of ideas, and poetic theory of Freneau, Bryant, Whittier, Emerson, Poe, Longfellow, Lowell, Holmes, Dickinson, Lanier, Whitman, Lindsay, and Robinson. Offered yearly. 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 in 1951–52 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 1951–52 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. Offered yearly. 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 41. 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 1948–49 by Miss Wallerstein as "A study of W. B. Yeats." Offered 1949–50 by Mr. Fulcher as "George Bernard Shaw." Offered 1950–51 by Mr. Wiley as "Conrad and Henry James.")

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. Offered 1951–52. 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.

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.

234. Seminar in Nineteenth-Century English Literature. Yr; 2 cr. Mr. Buckley.

235. Introductory Seminar: English Language in America. Yr; 2 cr. Studies using the Linguisitc 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 95.)

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 1951–52 and in alternate years. Staff.

119. Fungus Deterioration of Forest Products. I; 2 cr. (Same as Plant Pathology 119.) Offered 1950–51 and in alternate years. Miss Richards.

200. Research in Forest Products. Yr; *cr. Staff.

FRENCH AND ITALIAN

Professors Bandy, Harris, *chairman*, Leveque, Rogers, Zdanowicz; Associate Professors Bottke, Palmeri, Rossi, Tucker; Assistant Professors Galpin, Glauser, 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 37).

French 15 and Italian 15 are practice courses which may 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 21 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 37.

MAJOR. In French, 28 credits in advance of 1b. These must include French 21a and b (6 cr.) or equivalent introductory course in literature, and at least nine 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.

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 91).

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 21, Elementary survey, 6 credits; 8 credits of composition 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 6, Human geography, or 7, Economic geography; 107, Geography of the Mediterranean region.)

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. Léveque 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. Léveque, Mr. Milligan and staff.

10a. THIRD-SEMESTER FRENCH. I, II; 3–4 cr. Intensive and extensive reading, grammar review, and, for those electing the course for 4 credits, two hours of oral practice in small groups each week. 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. M. Léveque and staff.

15b. CONVERSATION AND COMPOSITION (Elementary Level). I, II; 2 cr. Continuation of 15a. Not open to students who have completed French 10b or passed the intermediate attainment test, except by special permission. M. Léveque and staff.

25a. CONVERSATION AND COMPOSITION (Intermediate Level). I, II; 2 cr. Development of facility in oral and written French based on cultural material. Prerequisite: French 10b with grade of *B*, one semester of French 15, or other conversational training. M. Léveque and staff.

25b. CONVERSATION AND COMPOSITION (Intermediate Level). I, II; 2 cr. Continuation of 25a. Prerequisite: French 25a or grade of *A* in French 15. M. Léveque and staff.

48. FRANCE OF TODAY. Yr; 2 cr. Interpretation of contemporary France through reading and discussion of French newspapers and reviews. Recommended for students

in journalism and international relations. Open to others with permisson 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 their major professor and have the approval of the Chairman of the French Department 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. ADVANCED CONVERSATION AND COMPOSITION. I, II; 2 cr. Rapid review of sentence structure. Practice in narrative and descriptive styles. Oral and written themes. Prerequisite: French 25a or b or consent of instructor. Mlle Mercier.

127. ADVANCED CONVERSATION AND COMPOSITION. I, II; 2 cr. Oral and written discussions based on current events, periodicals and books. Prerequisite: French 124 or consent of instructor. Mlle Mercier.

190. FRENCH PHONETICS. I, II; 2 cr. Theory of French sounds, with practice in pronunciation. Required of teaching majors and minors. Prerequisite: Three years of college French. Mr. Bottke.

191. FRENCH DICTION. II; 2 cr. Practical interpretative reading. Study of stress, rhythm, articulation, voice, intonation. Prerequisite: French 190 or consent of instructor. Mlle Mercier.

227. GRADUATE COURSE IN COMPOSITION. Yr; 1 cr. Open to students who have had French 127 or equivalent. Conducted in French. M. Léveque.

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 and assigned reading. Prerequisite: French 21. Mr. Harris.

240. OLD FRENCH. Yr; 2 cr. Introductory seminar. Historical grammar and reading of Old French texts. Mr. Harris.

244. OLD PROVENCAL. Yr; 2 cr. Mr. Harris.

273. ROMANCE PHILOLOGY. Yr; 2 cr. Mr. Harris.

LITERATURE

Six credits in French 21, or equivalent, are prerequisite to all other courses in French literature.

21a. ELEMENTARY SURVEY (19th Century). I, II; 3 cr. Outstanding examples of the novel, drama, essay, and lyric. Lectures, readings, class discussion, translation exercises. Section 4 given entirely in French. Prerequisite: French 10b or four years of high-school French. Mr. Michell and staff.

21b. ELEMENTARY SURVEY (17th and 18th Centuries). I, II; 3 cr. May be taken before 21a. Prerequisite: French 10b or four years of high-school French. Mr. Michell and staff.

50. FRENCH MASTERPIECES IN TRANSLATION. Does not give credit in French. (See COMPARATIVE LITERATURE 50.)

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 166, but may be taken separately. Mr. Bandy.

132. FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Yr; 2 cr. Especially Voltaire, Diderot, Rousseau. Mr. Tucker.

133. VICTOR HUGO. I; 2 cr.

134. BALZAC. II; 2 cr. Offered 1949–50; not offered 1950–51.

*136a. FRENCH NOVEL OF THE NINETEENTH CENTURY BEFORE 1850. Sem; 3 cr. Mr. Rogers.

*136b. FRENCH NOVEL OF THE NINETEENTH CENTURY AFTER 1850. Sem; 3 cr. Mr. Rogers.

137. MOLIERE. I; 2 cr. Mr. Zdanowicz. Offered 1950–51, and in alternate years.

139. LA LITTERATURE FRANCAISE DU XVIIe SIECLE. Yr; 3 cr. M. Léveque.

143. LE THEATRE FRANCAIS DU XIXe SIECLE. I; 3 cr. Mr. Kroff.

144. LE THEATRE FRANCAIS DU XXe SIECLE. II; 3 cr. Mlle Mercier.

145. FRENCH LITERATURE OF THE SIXTEENTH CENTURY. Yr; 2 cr. Offered in 1949–50 and in alternate years. Mr. Zdanowicz.

*148. THE FRENCH NOVEL OF THE TWENTIETH CENTURY. Sem; 3 cr. Mr. Rogers.

150. HISTOIRE DE LA CIVILISATION FRANCAISE. Yr; 2 cr. M. Léveque.

157. LA POESIE FRANCAISE DU XIXe ET DU XXe SIECLE. Yr; 2 cr. Mr. Glauser.

165. REPRESENTATIVE WORKS OF FRENCH LITERATURE, 1100–1715. I; 2 cr. Mr. Tucker.

166. REPRESENTATIVE WORKS OF FRENCH LITERATURE, 1716–1900. II; 2 cr. 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 Department of French and Italian, and by 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. LA CRITIQUE LITTERAIRE EN FRANCE. Yr; 2 cr. Mr. Glauser.

233. SEMINAR: CHATEAUBRIAND AND HIS CONTEMPORARIES. Yr; 2 cr. Mr. Galpin.

239. SEMINAR: LES MORALISTES DU DIX-SEPTIEME SIECLE. Yr; 2 cr. (1949–50). M Léveque.

242. OLD FRENCH EPIC POETRY. Yr; 2 cr. The history of the Chanson de Geste traced, and several representative poems read during the year. Mr. Harris.

243. SEMINAR: OLD FRENCH LITERATURE. Yr; 2 cr. Studies in Arthurian literature: Tristan, Marie de France, or Chrétien de Troyes. Mr. Harris.

250. 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. (1949–50). Mr. Bandy.

* Note: French 136a and 136b and 148 will be given in successive semesters, beginning 1950–51.

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. Prerequisite: Italian 1b or two years of high-school Italian. Mr. Rossi.

10b. Fourth-Semester Italian. II; 3 cr. Prerequisite: Italian 10a or three years of high-school Italian. 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 their major professor and have the approval of the dean and of the professor of Italian.

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. Offered in 1950–51. Mr. Bottke.

172. Early Italian Writers. II; 2 cr. The Italian literature before Dante. Offered in 1950–51. 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. Offered in 1952–53. Mr. Galpin.

122. Risorgimento. Yr; 3 cr. A study of the authors who inspired the struggle for the rebirth of Italy. Offered in 1951–52. Mr. Rossi.

123. Italian Drama. Yr; 3 cr. The development of Italian drama from its origins to the present. Offered in 1950–51. Mr. Rossi.

131. General Survey of Italian Literature. Yr; 3 cr. Lectures, reports, and reading of representative works from the 13th century to the present. Offered in 1952–53. Mr. Rossi.

136. Italian Novel. Yr; 2 cr. A study of the short story and the novel from the *Novellino* to Pirandello. Offered in 1949–50. Mr. Galpin.

152. Italian Renaissance. Yr; 3 cr. From Petrarch to the *Arcadia*. Humanism and classicism; particular emphasis on the poems of chivalry, Machiavelli and Guicciardini. Conducted in Italian. Offered in 1949–50. 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. TRECENTO. Yr; 2 cr. The literature of the 14th century, excluding the *Divine Comedy*. Conducted in Italian. Offered in 1951–52. 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 Department of French and Italian, 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 discussing current problems and opportunities in many fields. Open only to freshmen. Staff.

GEOGRAPHY

PROFESSORS FINCH, HARTSHORNE, TREWARTHA, *chairman;* ASSOCIATE PROFESSORS GERLACH, ROBINSON, STERLING; ASSISTANT PROFESSORS ALEXANDER, OLMSTEAD (also Education), STONE; LECTURER WILCOX; INSTRUCTOR HAMMOND.

Courses in geography provide knowledge and understanding of earth features in their variations and interrelations from place to place. The complex of interrelated earth features includes climate, soil, landforms, farms, minerals, factories, cities, states, etc. Some are of natural, some of human origin. Geography therefore involves elements of both the natural and the social sciences. The courses are grouped below as (1) those dealing primarily with elements of the natural environment or Physical Geography, and (2) those in which the emphasis is on cultural features or Cultural Geography. Courses in geographic techniques and methodology (3), and special courses (4) are also grouped separately.

Courses in physical geography may be taken to satisfy the natural science requirements for the bachelor's degree, but only courses 1–2 and 17 include laboratory work necessary for the requirement in laboratory science. Courses in cultural geography may be taken to satisfy the social studies requirements for the bachelor's degree.

The courses in physical geography are concerned with the natural features of the earth (particularly climate and landforms, but also soils, mineral resources and natural vegetation) which determine the potentialities of the earth's regions for human use. They are designed to provide a foundation not only for cultural geography, but for all the other social sciences as well. For a general survey of physical geography students may take one, and only one, of the elementary courses: 1–2, or 5, or 17. Geography 1–2 is the more complete survey; Geography 17 is a briefer survey of the same field; Geography 5 is identical with Geography 17 except for the omission of laboratory work.

The courses in cultural geography are concerned with man's utilization of earth resources. For a general survey of the cultural geography of the world, students may take Geography 3–4 and 7. Students planning to take any of the regional courses in cultural geography (101–119) are not required to take any previous course in geography but are advised to take one of the introductory courses in physical or cultural geography.

Geography courses giving laboratory science credit are 1, 2 and 17. Those giving non-laboratory science credit are 5, 140, 141, 144, 160 and 161.

MAJOR. An undergraduate major requires a minimum of 30 credits. The elementary courses in physical (1–2, 5, 17) or cultural (3–4 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 79 and 81.

I. PHYSICAL GEOGRAPHY (NATURAL ENVIRONMENT)

Included within the Division of Physical Sciences

1. PHYSICAL GEOGRAPHY: THE NATURAL ENVIRONMENT. I; 5 cr. Characteristics, significance and location of types of climate and vegetation; interpretation of weather phenomena and use of maps. Open to freshmen. Mr. Gerlach, Mr. Hammond, Staff.

2. PHYSICAL GEOGRAPHY: THE NATURAL ENVIRONMENT. II; 5 cr. Materials and processes of the earth's surface; characteristics, significance, and location of landforms, soils, minerals, and water resources. Open to freshmen. Geography 1 is not prerequisite to Geography 2. Students who have taken or take later the first semester of Geology 1 will be granted only 3 credits for Geography 2, because of certain duplications in subject matter. Mr. Gerlach, Mr. Hammond, Staff.

5. PHYSICAL EARTH AND ITS RESOURCES. I, II; 3 cr. Characteristics, significance, and location of types of climate, vegetation, landforms, soils, minerals and water resources. Open to freshmen. Mr. Robinson, 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, staff.

NOTE: Students who have credit for course 1 or 2 may not take for credit course 5 or 17. Those who have credit for either 5 or 17 may not take for credit any other of the above courses. Those with credit for ILS 32 (Earth Science) may not receive credit for Geography 1, 2, 5, or 17.

140. CLIMATOGRAPHY. 3 cr. The elements of climate; weather types and storms; classification of climates and the distribution of climatic types over the earth. Prerequisite: Junior standing or consent of instructor. Mr. Trewartha.

141. CLIMATES OF THE CONTINENTS. 3 cr. Descriptive and explanatory analysis of the climatic characteristics which prevail in the various parts of each of the continents. Prerequisite: Geography 140 or consent of instructor. Mr. Trewartha.

144. OCEANOGRAPHY. (See METEOROLOGY 144.) Mr. Bryson.

160. LANDFORM ANALYSIS WITH APPLICATION TO NORTH AMERICA. I; 3 cr. A study of those aspects of landforms which are especially significant in affecting the utility of the land. The principles are applied to the North American Continent as an example. Prerequisites: Junior standing and consent of instructor. Mr. Hammond.

161. LANDFORMS OF THE WORLD. II; 3 cr. An analysis of the landforms of the continents other than North America, emphasizing the terrain as the stage for human activities. Prerequisites: Junior standing and Geography 160 or consent of instructor. 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 and utility. Utilization practices and their effects. Attention centered upon North America. Prerequisite: Junior standing. Mr. Hammond.

291. SEMINAR IN PROBLEMS IN CLIMATOLOGY. 2–3 cr. Mr. Trewartha.

II. CULTURAL (HUMAN) GEOGRAPHY

Included within the Division of Social Studies

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. Staff.

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. Mr. Trewartha and staff.

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.

121a–b. INTRODUCTION TO INTERNATIONAL RELATIONS. (Same as POLITICAL SCIENCE 121 a–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. Recommended to be taken as a full year's course. Mr. Hartshorne and Mr. Pfankuchen.

123. AGRICULTURAL GEOGRAPHY. I; 3 cr. A study of the world distribution and environmental associations of selected crops and forms of agricultural industry. Prerequisite: Junior standing. Mr. Finch.

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. Gerlach, Mr. Alexander.

129. URBAN GEOGRAPHY. 3 cr. Survey of the principles and theories of urban development; descriptive analysis of representative American and foreign cities. Prerequisite: Junior standing. Mr. Gerlach.

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 PROBLEMS. 2–3 cr. Mr. Trewartha.

272. SEMINAR IN PROBLEMS OF SETTLEMENT. 2–3 cr. Staff.

273. SEMINAR IN PROBLEMS OF AGRICULTURAL GEOGRAPHY. 2–3 cr. Mr. Finch.

275. SEMINAR IN PROBLEMS OF POLITICAL GEOGRAPHY. 2–3 cr. Mr. Hartshorne.

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. Gerlach.

REGIONAL COURSES

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. Not offered 1950–51. 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. Prerequisite: Sophomore standing. Mr. Finch, Mr. Olmstead.

104. GEOGRAPHY OF WISCONSIN. 2 cr. Prerequisite: Sophomore standing. Mr. Wilcox.

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. Offered 1950–51. Mr. Sterling.

119. GEOGRAPHY OF THE NORTHERN LANDS. 2 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: Junior 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.

201. NORTHWESTERN OR CENTRAL EUROPE. Mr. Hartshorne.

202. LATIN AMERICA. Mr. Sterling.

203. NORTH AMERICA. Mr. Finch.

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.

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. INTER-DEPARTMENTAL 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. Offered 1949–50. Mr. Sterling and members of other co-operating departments.

III. COURSES IN GEOGRAPHIC TECHNIQUES AND METHODOLOGY

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. 2 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: Sophomore 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.

235. GEOGRAPHIC FIELD TECHNIQUES. II; 3 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. Mr. Finch and staff.

238. HISTORY OF GEOGRAPHIC THOUGHT. 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.

NOTE: See also GEOLOGY 11—Mapping.

IV. SPECIAL COURSES

90. (See EDUCATION 90. TEACHING OF GEOGRAPHY. 2–5 cr. in Education.)

100. SENIOR THESIS. Yr. Staff.

180. SPECIAL WORK IN GEOGRAPHY. Yr; 1–3 cr. Open only to upper-group majors in department by consent of instructor. See Section 16, page 41. Staff.

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.)

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 CLINE, EMMONS, *chairman*, LAUDON, THOMPSON, TYLER; ASSOCIATE PROFESSORS CAMERON, WOOLLARD; ASSISTANT PROFESSORS JUDSON, THWAITES; INSTRUCTOR GATES.

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 nonprofessional 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, and formal course work in field training provided by the department or equivalent training elsewhere. 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.

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 take both Geology 1 and Geography 2 are given full credit for Geology 1 but are given 3 credits for Geography 2 by decision of the Department of Geography. Students who have taken Geology 17 may receive but 2 credits for the work of the first semester. Lecture, laboratory, and fields 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. Mr. Woollard.

11. Mapping. II; 1, 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 more 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. 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. Prerequisite: 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 or consent of instructor. 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 1950–51 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 cr. A conducted field trip to selected mining districts 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. Minerals as a Public Problem. 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 or 9, 6, and 8 (or 108 concurrently); concurrent: 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. Prerequisite: Geology 114 or consent of instructor. 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, 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. Seminar in Non-Metallic Ore Deposits. Yr; *cr. Mr. Cameron.

260. Seminar in Metallic Ore Deposits. Yr; *cr. Mr. Cameron.

HISTORICAL GEOLOGY, STRATIGRAPHY, PALEONTOLOGY, SEDIMENTATION

22. Short Course in 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. Mr. Cline.

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. 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. Mr. Cline.

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. Mr. Cline.

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 1950–51 and in alternate years. Prerequisite: Geology 108. Mr. Tyler.

256. Seminar in Stratigraphy. Yr; *cr. Subject area to be selected each semester. Mr. Cline.

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.

7. Short Course in Mineralogy. I; 3 cr. Open to all students. (May be taken for science credit.) Mr. Gates.

8. Lithology. II; 3 cr. The megascopic study of igneous, metamorphic and sedimentary rocks. Prerequisite: Geology 1, 9 or 17. Open to graduate students but does not carry graduate credit. Mr. Emmons, Mr. Cline.

106. Gems and Precious Stones. II; 1 cr. Prerequisite: Junior standing. Mr. Emmons.

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 the igneous petrogeny of the area. Mr. Emmons.

139. Universal Stage Studies. II; 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. Mr. Cameron.

253. Seminar in Igneous Petrogeny. Yr; *cr. A discussion of current thought in the evaluation of igneous and igneous-appearing rocks. Mr. Emmons.

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; ASSISTANT PROFESSORS KITTEL, NAUMANN, RIEGEL, SEIFERT, VORDTRIEDE, WHITESELL; INSTRUCTOR VISCHER.

The *Attainment Tests* in German are described on page 37. *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 p. 37).

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 or who demonstrate the necessary command of the spoken language at the German House. 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.

DEUTSCHES HAUS. The German House, which is intended primarily for the benefit of students who wish to maintain or to improve their command of spoken German, is open to women students for room and board, and to both men and women residing outside the house for meals. German is spoken at meals and is the official language of the house. Students who desire practice in hearing and speaking German are eligible to full membership in the house group and are welcome as table boarders. A few undergraduate German House scholarships are available for students majoring or minoring in German who should not otherwise be able to live or board at the house. For further information apply to: German House, 508 North Frances Street, Madison, Wis.

ELEMENTARY COURSES

1a. FIRST-SEMESTER GERMAN. I, II; 4 cr. For students with no previous knowledge of German. Two groups of sections (see page 144). *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.

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.

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. Selections from *Kudrun, Iwein, Parzival, Tristan, Meier, Helmbrecht,* and the lyric poetry of Walther von der Vogelweide.

* The subjects of these seminars vary from semester to semester and are announced by bulletin board and in the time table.

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.

HEBREW

At present these courses are administered by the Department of Comparative Philology and Linquistics.

1a and 1b. FIRST- AND SECOND-SEMESTER HEBREW. I, II; 4 cr. each semester. Elements of the language. Prerequisite: Consent of instructor. Mr. Shudofsky.

10a. THIRD-SEMESTER HEBREW. I; 3 cr. Grammar review. Reading includes a Biblical text. Emphasis is on development of reading facility, though some attention is paid to composition and conversation. Prerequisite: Hebrew 1b or equivalent. Mr. Shudofsky.

10b. FOURTH-SEMESTER HEBREW. II; 3 cr. Continuation of Biblical text. Brief selections from modern Hebrew literature. Prerequisite: Hebrew 10a. Mr. Shudofsky.

HISTORY

PROFESSORS BEALE, CURTI, EASUM, *chairman,* EDSON, HARRINGTON, HESSELTINE, HIGBY, HILL, JENSEN, KNAPLUND, PHILLIPS, POST, REYNOLDS, SACHSE, USHER (visiting); ASSOCIATE PROFESSORS CARSTENSEN, FARMER; ASSISTANT PROFESSOR BOARDMAN; INSTRUCTOR PETROVICH; LECTURER KJELDSTADLI.

When history is offered as one of the required studies in the general course leading to the degree of Bachelor of Arts (see page 43), the requirement must be satisfied by a continuous 3-credit course extending through two semesters.

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 79).

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* The subjects of these seminars vary from semester to semester and are announced by bulletin board and in the time table.

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.

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, Sociology 110, 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 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. Hill, 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; the imperial expansion. Period covers pre-historic

* Students who take History 3 cannot elect History 2; they may take History 5 for 2 credits a semester.

** Upperclass students may take this course for only 2 credits; others may take it for only 2 credits if they have had another freshman history course at Wisconsin.

times to the present. Either History 5a–b or History 5a–6 may constitute a continuous year course. Mr. Knaplund, Mr. Sachse, and staff.

6. EARLY AMERICAN INSTITUTIONS. II; 3 or 2 cr. The founding of the English colonies in America and the transplanting of English institutions in the colonies, the changes wrought by frontier conditions and problems, the rise of American institutions and the conflict between the colonies and the mother country. 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 and staff.

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.

4a–b. HISTORY OF THE UNITED STATES, 1776–1949. Yr; 3 cr. Survey of American social, political, and economic development. Special conference sections on the relations of literature, science, and education to political and social events. Prerequisite: Sophomore standing. Mr. Harrington and staff.

12. REPRESENTATIVE AMERICANS. I; 3 or 4 cr. A biographical approach to American history based on an evaluation of the careers of typical American leaders in statecraft, industry, and thought. Offered concurrently with History 112. 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 1950–51. 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 16, page 40.

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 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, the School of Education.

PRACTICE TEACHING IN HISTORY ON THE COLLEGE LEVEL. See EDUCATION 186, the School of Education.

ADVANCED COURSE IN THE TEACHING OF HISTORY AND THE SOCIAL STUDIES. See EDUCATION 185, 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 insructor. Mr. Edson.

127. A HISTORY OF GREEK CIVILIZATION. Yr; 3 cr. Greek history from pre-historic times to the end of the Hellenistic Age. Prerequisite: Junior standing or consent of instructor. Not offered 1950–51. Mr. Edson.

131. MEDIEVAL CIVILIZATION. I; 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. Not offered 1950–51. 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. Offered alternately with History 148. Prerequisite: History 10, 3a, or consent of instructor.

136. HISTORY OF MEDIEVAL FRANCE. I; 3 cr. Rise of the national state and its civilization under the monarchy, 987–1481. Prerequisite: Junior standing or consent of instructor. Offered 1951–52. 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 1951–52 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. Offered 1950–51. 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 in 1951–52 and in alternate years. Mr. Boardman.

210. INTRODUCTION TO GREEK EPIGRAPHY. I or II; 2 cr. Introduction to the language and content of Greek inscriptions and to the technique of Greek epigraphy as a dis-

cipline. Prerequisites: Graduate standing or consent of instructor and reading knowledge of ancient Greek. Mr. Edson.

253. Latin Paleography. I or II; 2 cr. Elements of paleography, with practical exercises in reading of manuscripts. Prerequisite: Graduate standing. Offered 1951–52. 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, and German. Mr. Reynolds.

268. Seminar in the History of the Far East. (See IV, Modern History.)

275. Seminar in Byzantine History or the Crusades. Yr; 2 cr. Will be given in rotation or as occasion arises. Prerequisites: Graduate standing and consent of instructor.

IV. MODERN HISTORY

130. Spain and the Spanish Empire. II; 3 cr. Evolution of the political, social, economic, and cultural life of the Spanish people from the reconquest to the collapse of the Spanish Empire. Prerequisite: Junior standing or consent of instructor. Offered 1950–51 and in alternate years. Mr. Post.

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 1950–51; not offered simultaneously with nor 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 1951–52. 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 1951–52. 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 1950–51. Mr. Higby.

139b. Recent and Contemporary European History, 1918–1949. 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 1950–51. 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 1950–51 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 1950–51 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 1950–51. 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 1950–51. 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 1950–51 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. Offered second semester 1950–51; not offered 1951–52. 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 1951–52. 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, the "eastern question," Pan-Slavism, internal developments and external pressures, from the end of the Byzantine Empire to the present. Prerequisite: History 2, 3b, 135, 149, or consent of instructor. Offered alternately with History 135.

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 1951–52 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 1951–52 and in alternate years. Mr. Farmer.

164. History of Exploration and Geographical Discoveries, 1200–1700. (See III, Ancient and Medieval History.)

166. Proseminar in the History of the Old Regime in Europe Until 1789. Yr; 2 cr. Study of sources and literature. Prerequisites: Reading knowledge of French, German, Italian, or Spanish, and consent of instructor. Not offered 1950–51. Mr. Higby.

167. Proseminar in European History Since 1789. Yr; 2 cr. Study of sources and literature. Prerequisites: Reading knowledge of French, German, Italian, Spanish, or Dutch, and consent of instructor. Not offered 1950–51. Mr. Higby.

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.

172. JAPAN SINCE THE MEIJI RESTORATION. II; 3 cr. Foreign relations, political, social, and economic developments during the period 1868–1949. Prerequisite: History 2, 3b, or junior standing. Offered 1950–51. Mr. Boardman.

175a. HISTORY OF MODERN FRANCE: THE OLD REGIME. I; 3 cr. Evolution of French institutions and civilization, 1481–1789. 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 1950–51. 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. Kjeldstadli.

207. GRADUATE COURSE IN 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 RUSSIAN OR SOUTHEAST 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

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 1950–51. Mr. Carstensen.

111. HISTORY OF THE WEST, 1763–1893. (See VI, ECONOMIC AND SOCIAL HISTORY.)

112. REPRESENTATIVE AMERICANS. I; 3 or 4 cr. A biographical approach to American history based on an evaluation of the careers of typical American leaders in statecraft, industry, and thought. Offered concurrently with History 12. Prerequisite: Junior standing or an introductory course in American history. Offered 1950–51. Mr. Hesseltine.

113. History of American Thought and Culture. (See VI, Economic and Social History.)

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 1950–51. Mr. Hesseltine.

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.

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.

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 1951–52. Mr. Hesseltine.

117b. The Constitution in American Development (1835–1949). 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 1951–52. Mr. Hesseltine.

118. Reconstruction and the New Nation. II; 3 cr. Aftermath of the Civil War; reconstruction; economic consequences of the war; the Grant era; the New South; the continuance and decline of sectionalism. Prerequisite: Junior standing. Offered 1950–51. Mr. Hesseltine.

119. Latin American History. Yr; 3 cr. Survey of political, economic, and cultural institutions and developments in the pre-Columbian Indian period, age of conquest, colonial and revolutionary eras, and republican period. Prerequisite: Junior standing. Offered 1951–52. Mr. Harrington.

120. American Foreign Relations, 1775–1951. 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.

121. 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.)

124. Recent History of the United States, 1890–1951. Yr; 3 cr. Economic, social, and political history of the United States. Prerequisite: Junior standing. Mr. Beale.

201. The United States at the End of the Eighteenth Century. I; 3 cr. Prerequisites: Master's degree and consent of instructor. Mr. Jensen.

202. Studies in American Intellectual History. I; 3 cr. Prerequisites: Master's degree and consent of instructor. Not offered 1951–52. Mr. Curti.

203. Studies in American Sectionalism. I; 3 cr. Prerequisites: Master's degree and consent of instructor. Mr. Hesseltine.

204. American Expansion Overseas. I; 3 cr. Prerequisites: Master's degree and consent of instructor. Mr. Harrington.

205. The Progressive Era. II; 3 cr. 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, consent of instructor, and reading knowledge of Spanish or Portuguese. Mr. Griffin.

208. Proseminar 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.

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 1865. 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. Inter-departmental 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. Offered second semester 1949–50. Mr. Griffin 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 1951–52. Mr. Carstensen.

113. 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 1951–52. Mr. Curti.

121. 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. Not offered 1950–51 and 1951–52. 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. Offered 1950–51. 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 1950–51. 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. Usher.

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 1950–51. Mr. Reynolds.

240. Seminar in Modern European Economic History. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Usher.

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; Assistant Professor R. Stauffer, *chairman*.

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 and Mr. Stauffer.

*105. PROSEMINAR. I, II; 2 cr. (Ancient, Medieval or Early Modern Science.) Prerequisites: Senior standing. Mr. Clagett.

*110. PROSEMINAR. I, II; 2 cr. (Early Modern or Modern Science.) Prerequisites: Senior standing; History of Science 1 or 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, 1789–1939. 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.

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* These proseminars will vary in subject matter, and they may be taken more than once for credit.

INTEGRATED LIBERAL STUDIES

PROFESSORS AGARD, EARLEY, HARTSHORNE, HOWELLS, HUSKINS, NOLAND, PFANKUCHEN, POOLEY, *chairman*, POST, REYNOLDS; ASSOCIATE PROFESSORS GERLACH, MACKENDRICK, IHDE, WILEY; 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 49.)

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 Greco-Roman civilization to modern European civilization. Mr. Post.

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.

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.

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. Gerlach.

33. BIOLOGY. Sem; 3 cr. The adaptation of plant and animal life to environments and the development of functional variations.

34. BIOLOGY. Sem; 4 cr. Continuation 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 ILS COURSES WITH THOSE OF L & S FOR TRANSFER PURPOSES, AND COURSES WHICH ILS TRANSFERS MAY NOT ELECT

ILS COURSE	L & S EQUIVALENT	MAY NOT TAKE
11 Greek & Roman Culture 4 credits	Humanities elective 3 credits	Classics 41, 42, 51
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 ILS 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 1 or 17 3 credits (Lab. Science 3 credits)	Geography 1, 2, 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 (Economics 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

INTERNATIONAL RELATIONS

The College of Letters and Science offers an undergraduate major in International Relations. Students who take this major may specialize in one of four fields: American foreign service, economic phases of international relations, Latin-American region, and French area studies. The requirements for this major are given on page 85.

JOURNALISM

PROFESSORS NAFZIGER, *director*, HYDE, SMITH, THAYER; ASSOCIATE PROFESSORS CUTLIP, HAWKES, PATTERSON; ASSISTANT PROFESSORS HOVEY, TAYLOR, WESTLEY; 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, 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 those 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 65.

★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 communications. Mr. Westley.

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. Mr. Hyde, Mr. Smith, Mr. Westley, and staff.

2b. REPORTING. I, II; 3 cr. Emphasis on the gathering of news, rather than on style. Required of Journalism School students. Mr. Hovey, Mr. Smith, and staff.

★3. NEWSPAPER EDITING. I, II; 4 cr. Training in editing and making up the newspaper. Prerequisite: Nine grade-points in Journalism 2. Required in School of Journalism. Mr. Cutlip, Mr. Westley, and staff.

★4. NEWSPAPER TYPOGRAPHY. I, II; 2 cr. Formerly incorporated with Journalism 3. 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 Advertising Group. 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. Required in School of Journalism. Miss Patterson, Mr. Schoenfeld.

105b. Magazine Article Writing. II; 2 cr. Practice in preparing periodical articles on technical, scientific, engineering, and economiq subjects. A special section emphasizes women's fields in journalism. Each student specializes in one field. Miss Patterson.

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. Westley.

108. Newspaper Business Management. II; 2 cr. Business problems of smaller newspapers. Print-shop laboratory work. 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; 3 cr. Evolution of the newspaper in England and the United States. Required in the School of Journalism. Mr. Hyde, Mr. Smith.

110. Radio Speaking. (See Speech 110.)

111. The Newspaper and Society. 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. Hyde, Mr. Smith.

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. Staff.

★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.

120. International Communications and the Foreign Press. I; 3 cr. A study of the news communications systems, including news-gathering agencies, the role of foreign

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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.

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.

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. II; 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.

128. COMMUNICATION MEDIA ANALYSIS. II; 3 cr. Methods for investigating the control, content, audience, and effects of press, radio, and motion pictures. Prerequisite: Consent of instructor. Mr. Nafziger.

★141a. ADVERTISING COPY AND LAYOUT. I; 3 cr. Principles and practice of writing national and local advertising for newspapers, magazines, and radio. Staff.

141b. ADVERTISING COPY AND LAYOUT. II; 3 cr. Continuation of Journalism 141a, research and a study of advertising media. Prerequisite: Journalism 141a.

142. ADVERTISING MEDIA. II; 3 cr. The mass media industry. Staff.

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.

200. MASTER'S 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.

LATIN

(See CLASSICS, page 105.)

LIBRARY SCIENCE

ASSISTANT PROFESSORS SCHENK, *Acting Director,* WINGER; INSTRUCTORS CAVANAGH, GIBSON.

Courses 171, 172, 173 and 174 are required for admission to the graduate program. They may be taken as undergraduate electives, see Sections 17 and XVIII.

* Does not count towards the requirements for graduation from the College of Letters and Science except for students in the School of Journalism. Starred courses 112 and 116 count in the School of Commerce.

171. 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. Miss Schenk.

172. INTRODUCTION TO REFERENCE. II; 2 cr. The nature and use of reference books and reference service. Study of core reference collections. Miss Cavanagh.

173. 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.

174. 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.

191. THE SCHOOL LIBRARY. I; 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. The principles of library administration; methods and procedures practiced in library administration and their application to various types of libraries. Mr. Winger.

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. Miss Schenk.

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. Miss Schenk.

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. I; 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. II; 3 cr. Survey and evaluation of library resources in various subject fields with emphasis on the sciences, social sciences and humanities. Mr. Winger.

242. 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.

244. READING INTERESTS OF ADOLESCENTS. II; 3 cr. Criteria for the selection of books for adolescents. Techniques of reading guidance for young people in and out of school. Miss Cavanagh.

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. Miss Schenk.

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.

280. INDEPENDENT READING AND RESEARCH. II; 2–4 cr. Concentrated study in a subject or problem in line with the student's need or interests. Student must submit a typewritten report or paper covering the work accomplished. Staff.

MATHEMATICS

PROFESSORS EVANS, INGRAHAM, KLEENE, LANGER, *chairman*, MACDUFFEE, SCHAEFFER, YOUNG; ASSOCIATE PROFESSORS BING, BRUCK, BUCK, MAYOR; ASSISTANT PROFESSORS ARNOLD, COLVIN, EBERLEIN, FULLERTON, OWENS, E. SOKOLNIKOFF, STEEL; INSTRUCTOR MARK.

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 1a 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 units of high-school algebra may enroll in either Mathematics 1a or Mathematics 3a. The sequence consisting of Mathematics 3a followed by Mathematics 3b is recommended for students who expect to continue with the study of mathematics at least through a year of the calculus. Students presenting two units of high-school algebra should enroll in Mathematics 3a. Mathematics 1a 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 1b or Mathematics 3b 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, 137. (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	3a	3a	3a
	II	3b	3b	3b
Sophomore	I	101a	101a	101a
	II	101b, 106	101b, 106	101b, 106
Junior	I	115a, 120a	115a, 120a	115a, 120a
	II	112, 120b	115b, 120b	115b or 120b
Senior	I	104a, 116a	118, 137a	118 or 137 or 104a, 108
	II	104b, 115b	133, 137b	119 or 122

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 available at the departmental office. These programs meet the degree requirements and include courses offered by other departments which integrate significantly with one or the other 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

1a. 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; variation; progressions; the binomial theorem. Prerequisites: One or one and one-half units of high-school algebra and one unit of geometry. Not open, for credit, to students who have had two units of high-school algebra, or who have passed Mathematics 3a.

1b. TRIGONOMETRY AND ANALYTIC GEOMETRY. I, II; 4 cr. Plane trigonometry, with emphasis on analytical aspects; graphing of equations; straight lines and circles; polar coordinates; conic sections; transformations of coordinates. Prerequisites: Mathematics 1a; or four units of high-school mathematics, including two units of algebra and one unit of geometry. Not open, for credit, to students who have passed Mathematics 3b.

3a. COLLEGE ALGEBRA AND TRIGONOMETRY. I, II; 4 cr. Number systems and postulates; functions and graphs; theory of equations; progressions; logarithms; plane trigonometry, with emphasis on analytical aspects. Prerequisites: Two and one-half to four units of high-school mathematics, including at least one and one-half units of algebra and one unit of geometry.

3b. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY. I, II; 4 cr. Complex numbers; determinants; permutations and combinations; mathematical induction; inequalities; graphing of equations; straight lines and circles; polar coordinates; conic sections; transformations of coordinates. Prerequisites: Mathematics 3a; or, with consent of department, four units of high-school mathematics including two units of algebra, one unit of geometry, and one-half unit of trigonometry. Not open, for credit, to students who have passed Mathematics 1b.

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 1a or 3a. 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.

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

Under existing conditions only a selected set of the following courses are given in any one year. The student is referred to the time table for more specific information. Courses

101 or 102 may not be taken for graduate credit by students majoring in mathematics, engineering, or other fields requiring these courses in the undergraduate sequence.

101a. CALCULUS. I, II; 4 cr. The fundamental concepts of differential and integral calculus with application to the elementary functions. Illustrative examples from geometry and physics. Prerequisite: Mathematics 1b or 3b.

101b. CALCULUS. I, II; 4 cr. Continuation of Mathematics 101a. Technique of integration; further applications of derivatives and of definite integrals; Taylor's theorem; indeterminate forms; improper integrals; partial derivatives, multiple integrals. Prerequisite: Mathematics 101a.

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. (Required of all sophomores in engineering.) 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. (Required of all sophomores in engineering.) Prerequisite: Mathematics 102a.

104. THEORETICAL MECHANICS. Yr; 3 cr. Statics and dynamics of a particle and of a rigid body. Prerequisite: A year of calculus.

105. STATICS. Sem; 3 cr. The composition of forces, moments and couples. Conditions of equilibrium, with applications. All students will benefit by a knowledge of the principles of statics. Prerequisite. A semester of calculus or concurrent registration.

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.

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.

111. HIGHER MATHEMATICS FOR ENGINEERS. I, II; 3 cr. Ordinary and partial differential equations; Fourier series. Prerequisite: A year of calculus. (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: 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.

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 one semester of Mathematics 120.

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: A year af calculus.

118. INTRODUCTION TO THE THEORY OF PROBABILITY. I; 3 cr. Addition and multipli-

cation of probabilities; permutations and combinations. Theorems of Bayes, Tchebycheff, Bernoulli, and Laplace. Probabilities in continuum. Applications to geometry, physics and statistics. Prerequisite: A year of calculus.

119. Differential Geometry. II; 3 cr. The theory of curves and surfaces by differential methods. Prerequisite: 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: 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: One 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. 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: 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: A year of calculus.

134. Mathematics of Elementary Statistics. Sem; 3 cr. An introduction. Frequency distributions, least squares, correlation and regression, contingency tables, sampling, collection and presentation of data. Prerequisite: One semester of calculus.

135. Introduction to Statistical Methods in the Natural Sciences. Sem; 3 cr. For natural science students. An introduction to statistical inference and application to research data and to control of experimental techniques. Prerequisite: Analytic geometry.

136. Basic Principles of Process Control and Acceptance Inspection. Sem; 3 cr. Elementary probability and statistical inference in process control and acceptance inspection. Control charts; single, multiple, and sequential sampling inspection; characteristic curves. Prerequisite: Analytic geometry.

137a. Elementary Mathematical Statistics. I; 3 cr. Algebra of probabilities; mathematical expectation; binomial, Poisson, normal, chi-square, t, and F distributions; estimators and confidence intervals; statistical tests and decision functions; operating characteristic curves. Prerequisite: A year of calculus.

137b. Elementary Mathematical Statistics. II; 3 cr. Multinomial, non-central chi-square, non-central t, Hotelling's and Tang's distributions; goodness of fit; contingency tables; correlation and regression; analysis of variance; discriminant functions. Prerequisite: Mathematics 137a or 118.

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.

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. Enrollment in any graduate course requires the consent of the instructor.

200. READING AND RESEARCH.

201. TOPICS IN APPLIED MATHEMATICS. Sem; 3 cr. A problem course dealing with topics in tensor analysis, linear integral equations, and group theory.

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.

208. PROBABILITY AND ANALYSIS. Sem; 3 cr. Analytic probability and related analysis. Fourier integrals, Stieltjes integrals, residues, probability functions, characteristic functions and limit theorems. Prerequisite: A year of advanced calculus.

215. TOPOLOGICAL ALGEBRA. Yr; 3 cr. Topological algebras and their applications to modern analysis. Prerequisite: Functions of a real variable and modern algebra.

216. TOPOLOGICAL GROUPS. Sem; 3 cr. Introduction to topological groups. Groups, topological 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. TOPOLOGY. Sem; 3 cr. Properties of sets in the plane and other topological spaces. Operations with these sets.

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. COMBINATORIAL TOPOLOGY. Sem; 3 cr. The study of the arithmetical structure of topological phenomena without the use of metrical concepts.

225. DIVERGENT SERIES. Sem; 3 cr. A course dealing with the classical methods of summation, their generalizations, and their many applications.

229. NON-EUCLIDEAN GEOMETRY. Sem; 3 cr. Foundations of geometry without using Axiom of Parallels. Non-Euclidean trigonometry. Cayley-Klein's projective model. Special properties and 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. FOUNDATIONS AND GENERAL METHODS OF PROBABILITY. Sem; 3 cr. A study of the modern postulational basis and logical structure of the theory of probability.

237. ADVANCED MATHEMATICAL STATISTICS. Sem; 3 cr. Normal regression theory and analysis of variance. Additional topics in mathematical statistics to suit the requirements of the students enrolling. Prerequisite: Mathematics 137b.

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. Higher Geometry. Sem; 3 cr. Projective geometry in three and higher dimensions. The postulational approach to the subject will be considered.

246. Theory of Finite 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 and fluid flow; airfoil theory; viscous fluids. Prerequisite: Mathematics 110.

250. Theory of Elasticity. Sem; 3 cr. Analysis of stress and strain, theory of the bending and torsion of beams, thin plates, elastic stability.

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: Mathematics 261.

265. Harmonic Analysis. Sem; 3 cr. Boundary value problems in partial differential equations of ordinary occurrence in mathematical physics. Fourier's series, series of Bessel's functions, Hermite polynomials, and spherical harmonics. Prerequisite: Advanced calculus.

266. 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. Prerequisite: An introductory course in differential equations.

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 indefinite dimensional generalization of geometric spaces; linear, closed subsets and orthogonality. Linear transformations, projections, spectral theory. Rings of operators and connections with the theory of lattices. Geometric aspects of the theory will be stressed.

271. Linear Algebras. Sem; 3 cr. A course in the theory of linear associative algebras of finite order and their associated number theories. Prerequisite: Mathematics 261.

272. Seminar in Algebra. Yr; 1 or 2 cr.

273. Theory of Integration. Sem; 3 cr.

274. Theory of Numbers and Diophantine Equations. Sem; 3 cr. Elementary properties of the rational integers and an introduction to the theory of quadratic forms and certain Diophantine problems.

275. Banach Spaces. Yr; 3 cr. Abstract normed linear spaces and linear operators, together with applications to analysis in spaces of functions and sequences.

277. Analytic Theory of Polynomials. Sem; 3 cr. The zeros of a polynominal from the standpoint of the geometric theory of functions of a complex variable. Prerequisite: Completion of, or concurrent registration in, Mathematics 220.

278. Ordinary Differential Equations of a Complex Variable. Sem; 3 cr. The properties and functional character of the solutions of ordinary differential equations in

which the variables are complex. Prerequisite: Some familiarity with the theory of functions of a complex variable.

279. Advanced Topics in Algebra. Yr; 3 cr. Topics selected from the area of non-associative systems with attention to the connections with other fields of mathematics and to unsolved problems. Prerequisite: Mathematics 261.

282. Concepts, Problems and Methods. Sem; 3 cr. Basic operations, the concept of numbers, and projective and metric geometry. Axiomatics. General methods, the non-logical elements in mathematics.

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; 2 or 3 cr.

285. Seminar in Analysis. Sem; 3 cr. Recent work on the area of surfaces and on cognate topics of analysis and topology.

286. Advanced Topics In Analysis. Sem; 3 cr. Powerful modern real variable methods and their applications, notably to single integral problems in the calculus of variations.

Courses in advanced algebraic theory of equations, advanced analytic theory of equations, algebraic geometry, projective differential geometry, Riemannian geometry and infinite series of functions are given when demand warrants.

TEACHERS' COURSE

The Teaching of Mathematics. See School of Education.

MEDICAL SCIENCE

A major in Medical Science is authorized for students in the General Course who pursue the regular three-year premedical sequence and meet both their premedical and special degree requirements. In their senior year such students register in the Medical School as well as in the College of Letters and Science. For a detailed outline of the premedical work, see page 62.

MEDICAL TECHNOLOGY

COURSES IN SENIOR YEAR

Professors Stovall, Jaeschke; Associate Professor Worley; Assistant Professor Thorngate; Instructor Thiessen.

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

Assistant Professors Bryson, Suomi; Instructor Ekern.

Major. For a major 30 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 Circulations. 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; 5 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 environ-

ment, and relation of ocean and atmosphere. Prerequisites: 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 inter-relations with crops and the soil, primarily for students in agriculture. Mr. Ekern.

180. ADVANCED INDEPENDENT READING. Prerequisite: Consent of instructor. Staff.

200. RESEARCH. Yr; *cr. Staff.

258. SEMINAR: PALEOCLIMATOLOGY. I; *cr. Prerequisite: Graduate standing or consent of instructor. Mr. Bryson.

292. SEMINAR. Yr; *cr. Prerequisite: Graduate standing. Staff.

MUSIC

PROFESSORS BURLEIGH, BURNS, COON, *chairman,* DVORAK, ILTIS, JOHANSEN; ASSOCIATE PROFESSORS CARPENTER, CHURCH, JONES, LUCKHARDT, SWINNEY; ASSISTANT PROFESSORS BLOTZ, EASTMAN, GUNLAUGSON, KAUFMANN, STEFFENS; INSTRUCTORS COOPER, FLEURY, MONSCHEIN, VOEGELI; ARTISTS IN RESIDENCE FRIEDLANDER, KOLISCH, MILOFSKY, RAHIER OF THE PRO ARTE QUARTET.

See School of Music, page 70, 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 71.

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. Kaufmann, Mr. Monschein.

12. FIRST-YEAR HARMONY. Yr; 2 cr. Written and keyboard harmony, ear training, scales, intervals, triads, including dominant sevenths. Miss Eastman.

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. Kaufmann, 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. Mr. Kaufmann.

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. Mrs. Blotz.

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. Mr. Kaufmann.

30b. Music in the Classic Era. II; 2 cr. Survey of the development of the classic era based on the study of master works of the period. Prerequisites: Music 21a, 30a. Mr. Kaufmann.

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 master works of the period. Prerequisites: Music 21b, 30b. Mr. Kaufmann.

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: 21b, 40a. Mr. Kaufmann.

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: 61b or equivalent. Staff.

72. Second-Year Voice. Yr; 2–3 cr. Art songs in English and Italian; easy oratorio and operatice 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. Staff.

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. Staff.

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 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 Band, Freshman Band, Transcription Band. Prerequisites: Ability to play a band instrument. Membership by try-out is open to all students. Mr. Dvorak, Mr. Fleury.

88. UNIVERSITY RADIO ORCHESTRA. Yr; 0–1 cr. The playing of music especially intended for radio. Rehearsal and performance for actual broadcasts and recordings from the studios of WHA. Music composed and arranged for broadcast use. Membership by try-out is open to all students. Staff.

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.

96. APPLIED TECHNICS. I; 2 cr. A study of the principles of applied music, both class ensembles. 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. Staff.

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. Fleury.

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. Staff.

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. Mrs. Carpenter.

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. Prerequisites: 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 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.

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.

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.

NAVAL SCIENCE

PROFESSOR BLUE, *commanding officer*; ASSOCIATE PROFESSOR HUNT; ASSISTANT PROFESSORS RANDAL, HUDSON, DAVIS, HADLEY.

11. NAVAL ORIENTATION. Sem; 3 cr. Naval customs, regulations, and organization; warship construction and characteristics; elementary naval strategy and tactics; leadership.

12. NAVAL ORIENTATION. Sem; 3 cr. History of the United States Navy; elementary seamanship and shiphandling; rules of the road at sea; elementary tactical maneuvers.

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 equipments; 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.

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. 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.

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. 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 policy.

42. SHIP STABILITY, NAVAL JUSTICE AND LEADERSHIP. Sem; 3 cr. Fundamentals of ship stability; impaired stability and control of damage; naval law and courts; naval leadership; naval administration.

*42M. AMPHIBIOUS WARFARE. Sem; 3 cr. Evolution of landing operations; amphibious organization and intelligence; naval gunfire, air, and artillery support; logistics; selected amphibious operations.

PHILOSOPHY

PROFESSORS RAMSPERGER, *chairman*, BÖGHOLT, FRIES, GARNETT; ASSOCIATE PROFESSOR WEINBERG; ASSISTANT PROFESSORS HAY, MCGARY; INSTRUCTORS GOLIGHTLY, GOODWIN.

The student may begin his work in philosophy with any of the courses numbered under one hundred, but beginners who desire to take three hours of work throughout

* Substituted for equivalent navy course by candidates for USMC or USMCR commissions.

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 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 one-hundred group. A thesis may be included in these 24 credits at the option of the department.

1a. INTRODUCTION TO PHILOSOPHY. I. II; 3 cr. Studies of opposing philosophical views about man, reality, and truth, and examination of the ways for attaining dependable belief. Prerequisite: Sophomore standing. Staff.

1b. INTRODUCTION TO SOCIAL PHILOSOPHY. II; 3 cr. Studies of opposing philosophical views about man and his political and social life. Prerequisite: Philosophy 1a. Mr. Bögholt, Mr. Fries.

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. 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.

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.

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. (Offered 1950–51 and in alternate years.) Mr. Hay.

106. GERMAN PHILOSOPHERS. II; 3 cr. German thought in the 19th century. Prerequisite: 3 credits in philosophy or consent of instructor. (Not offered 1950–51.)

107. FRENCH PHILOSOPHY. I; 3 cr. Prerequisite: 3 credits in philosophy or consent of instructor. (Not offered 1950–51.)

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. (Offered 1950–51.)

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: 3 credits in philosophy. Mr. Hay. (Offered 1950–51.)

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.

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. (Not offered 1949–50.) 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, Descartes and Leibniz. 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. Prerequisite: 3 credits in philosophy. (Offered 1950–51 and in alternate years.) 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. (Not offered 1949–50.) 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. (Offered in 1949–50 and in alternate years.) 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. The principal types of ethical theory from Hobbes to the present day, with special emphasis upon the 20th century. Prerequisite: 3 credits in philosophy or consent of instructor. Mr. Garnett.

144. Philosophy of Social Planning. I; 3 cr. Analysis of philosophies of planning: study of the way these philosophies are reflected in administrative, managerial, and labor relations policies. Prerequisites: 3 credits in philosophy and consent of instructor. Mr. Fries.

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. (Offered 1949–50 and in alternate years.) 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.

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: Philosophy 53 or consent of instructor. (Not offered 1949–50). Mr. Hay.

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. Mr. Fries.

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. Mr. Fries.

180. Advanced Independent Reading. Consult chairman of department.

200. Thesis. Yr; 2 cr. Staff.

201. Colloquium: Current Philosophical Literature. I, II; 0 cr. Prerequisite: Graduate major. 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. (Not offered 1949–50.) Staff.

232. Advanced History of Philosophy: Rationalism. I or II; 3 cr. Prerequisites: Graduate standing and consent of instructor. (Not offered 1949–50.) Staff.

233. Advanced History of Philosophy: Empiricism. I or II; 3 cr. Prerequisites: Graduate standing and consent of instructor. (Offered II, 1949–50.) Staff.

234. Advanced History of Philosophy: Critical Philosophies (Kant and Hegel). I or II; 3 cr. Prerequisites: Graduate standing and consent of instructor. (Offered I, 1949–50.) Staff.

240. Metaphysical Seminar. I or II; 2 cr. Prerequisite: Graduate standing. Staff.

247. Ethical Seminar. I or II; 2 cr. Prerequisite: Graduate standing. Staff.

280. Graduate Independent Reading. Consult chairman of department.

PHYSICAL MEDICINE

Professor Bouman; Assistant Professor Kohli; Instructors Lehman, Robie.

Courses in Physical Medicine are open only to students enrolled in the Course in Physical Medicine.

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 tested.

2. Preclinical Subjects. I; 1 cr. This course includes observation 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 and includes the additional three months of the twelve-month senior year.

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 Administration. II; 1 cr. Instruction in medical 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, Herb, Rollefson, *chairman*, Sachs, Wahlin; Visiting Professor Fluegge; Associate Professors Beeman, Mack, Richards, Winans; Assistant Professors Adler, Curtiss (also Chemistry), Dillinger, Luttinger, McLane, Miller, Powell; Instructors Eisenstein, Rodgers, Shoemaker.

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. Course 51–52, 53–54 are intended for engineering students. It is assumed that students taking any of the courses have had elementary high-school algebra and plane geometry or their equivalent.

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 103, 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. 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: **31, or** one of the other elementary one-year courses, 102, 103, 104a, 106a and 106b. The remaining credits will be selected from physics courses numbered 100 and above, but not

including 119. 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, magnetism. Prerequisite: One and one-half years of high-school mathematics. 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, sound, and light. 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.

7. PHOTOGRAPHY. I, II; 3 cr. Elementary theory and practice. Image formation, exposure-density curve, latent image, development, positives, color. Prerequisite: Sophomore standing or consent of instructor. A knowledge of elementary physics and chemistry is recommended. 1 lect.; 4 hrs. lab.-quiz. Mr. Mack, Mr. McLane.

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 thier 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 ELECTRICITY. I; 5 cr. Required of sophomores in electrical engineering. Prerequisite: Calculus or concurrent registration. 2 lect.; 4 hrs. lab.; 2 quiz. Mr. Richards, Mr. Wahlin.

54. HEAT, WAVE MOTION, SOUND, AND LIGHT. II; 5 cr. Continuation of Physics 53. 2 lect.; 4 hrs. lab.; 2 quiz. Mr. Wahlin, Mr. Richards.

55. ADVANCED ELECTRICAL MEASUREMENTS. I; 3 cr. Theory and use of electrical apparatus. Certain phases of modern physics are discussed and dealt with in the laboratory. Prerequisites: Physics 1b, or 31b, or 52, or 54 plus EE1. Required of juniors in electrical engineering. 1 lect.; 4 hrs. lab. Mr. Wahlin, Mr. Richards.

61. GENERAL PHYSICS. II; 5 cr. For agricultural and home economics students and physical education students. Letters and Science students may take this course fo 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.

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, 2 lect.; 3 hrs. lab.; 1 quiz. Mr. Rollefson, Mr. Dillinger.

103. Optics. I; 4 cr. Elements of geometric optics, Huyghens principle, image formation, interference, diffraction, polarization, optical instruments, resolving power. Corresponding laboratory work. 2 lect.; 3 hrs. lab.; 1 quiz. Mr. Rollefson, 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 dieletrics, semiconductors, and magnetic properties of solid bodies. 2 lect-conf.; 3 hrs. lab. Mr. Wahlin, Mr. Powell.

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. Wahlin, Mr. Powell.

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, Mr. Fluegge.

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, vibrational, rotational; solids; radioactivity; nuclear forces, radiations, transformations, detectors and accelerators; cosmic rays. 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. Beeman, Mr. Barschall, Mr. Richards.

113. Atomic and Molecular Structure. I; 3 cr. Bohr-Sommerfeld theory, vector model, wave model, periodic table, complex spectra, hyperfine structure; diatomic molecules, infrared, Raman spectra, electronic transitions, continuous spectra, dissociation, molecular constants, spin and statistics. Applications. Prerequisite: Physics 106b. Mr. Mack, Mr. Winans.

115. Thermodynamics. II; 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. Prerequisites: Differential equations or advanced calculus or concurrent registration. Staff.

116. Advanced Electronics and Circuit Analysis. I; 3 cr. Theory of electric circuits, alternating currents, networks, transmission lines, guided systems, analysis of vacuum tube circuits, gas tubes, instrumentation. Prerequisites: Physics 104b or equivalent and differential equations. Mr. Wahlin.

118. Kinetic Theory. II; 2–3 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 Infra-red. II; 1 cr. Primarily for premedical students. Non-mathematical lectures on radiation, including radium (gamma) rays, X-rays, ultraviolet, visible, and infra-red and longer waves, their properties, physiolological 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.

124. Mathematical Theory of Heat Conduction. II; 2–3 cr. Fourier's series and integrals and their applications to heat conduction problems. Applications in the fields of physics, engineering, and geology. Staff.

126. Special Topics in Experimental Physics. I, II; 3 cr. Mainly reports by students on experiments of fundamental importance in physics, e.g., the determination of fundamental constants. Mr. Wahlin.

180. Advanced Independent Reading. I, II; *cr. Staff.

190. Junior Seminar. II; 2 cr. Reports by students on the less difficult papers concerning experimental and theoretical physics. The primary purpose is to train students in the collection, organization, and oral presentation of technical material. 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 coordinates, rigid bodies, mathematical methods of physics, vector analysis, potential theory, waves. Prerequisites: Consent of instructor or Physics 105 or equivalent, and differential equations. Mr. Adler, 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. Adler, Mr. Luttinger, Mr. Powell.

211. Advanced Dynamics. II; 3 cr. Variational principles, contact transformations, Hamilton-Jacobi equation, action variables, perturbation theory, rigid bodies, normal coordinates, special relativity, basic principles of mechanics of continua. Prerequisite: Physics 210a. Mr. Adler, 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. Adler.

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 elctrodynamics. Special boundary value problems, Lorentz electron theory, electromagnetic mass problem, relativistic electrodynamics, canonical formulation, wave guides and antennas. Prerequisite: Physics 210b. Mr. Eisenstein, 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.

225. X-Rays and Solid State. I; 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, in-

teraction 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.

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. Fluegge.

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. Mr. Eisenstein.

Courses in electromagnetic theory of light and radiation will be offered when demand warrants.

PHYSIOLOGY

PROFESSORS EYSTER, *chairman*, HERRIN; EMERITUS PROFESSOR MEEK; ASSOCIATE PROFESSORS BARNARD, MORRISON, MURPHY; ASSISTANT PROFESSOR 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. Stone.

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 FELLMAN, MCCAMY, *chairman*, PFANKUCHEN; ASSOCIATE PROFESSORS CLARENBACH, SALTER, STOKES, YOUNG; ASSISTANT PROFESSORS EPSTEIN, HART, HUITT; 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, international 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 81 and 85.

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 or 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. I or II; 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. I or II; 3 cr. Prerequisite: Full junior standing. Staff.

166. CONTEMPORARY AMERICAN POLITICAL THOUGHT. I or II; 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. I; 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. Prerequisites: Political Science 7 and 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. I or II; 3 cr. The delegation of powers; elements of fair administrative procedure; judicial control over administrative determinations. Prerequisite: Senior standing or consent of instructor. Mr. Fellman.

122. POLITICAL PARTIES AND PUBLIC OPINION. I, II; 3 cr. A description and critical examination of the party process in the United States. Prerequisite: Political Science 7 and sophomore standing. Mr. Salter.

123. ADMINISTRATION OF UNITED STATES FOREIGN POLICY. I or II; 3 cr. Descriptive analysis of the way in which American foreign policy is formulated and carried out by Federal agencies. Prerequisite: Sophomore standing. Mr. McCamy.

124. PUBLIC FINANCE. (See ECONOMICS 124.)

126. LEGISLATION. II; 3 cr. Principles, procedures, and problems of the legislative process. Prerequisite: A course in political science. Mr. Huitt.

134. RURAL LOCAL GOVERNMENT. I or II; 3 cr. The structure and functions of rural local government in the United States. Prerequisites: Political Science 7 and junior standing. Mr. Clarenbach.

139. STATE GOVERNMENT. I or II; 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.)

145. GOVERNMENT AND WAR. I or II; 2 cr. The special problems of government caused by war and the resulting policies, organizations, and procedures. Prerequisite: Junior standing. Staff.

146. GOVERNMENT AND BUSINESS. (See ECONOMICS 146.)

148. PROSEMINAR IN POLITICAL PARTIES AND PUBLIC OPINION. I, II; 2 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. I or II; 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. I or II; 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. I or II; 3 cr. Analysis of the internal politics of labor unions, business and professional associations, and farm groups; and of the tech-

niques employed in advancing their policies in government. Prerequisite: Junior standing. Mr. Huitt.

213. SEMINAR IN LOCAL GOVERNMENT. I, II; 2 or 3 cr. Mr. Clarenbach, Mr. Young.

226. SEMINAR IN THE LEGISLATIVE PROCESS. I or II; 2 or 3 cr. Prerequisite: Graduate standing or consent of instructor. Mr. Young.

261. SEMINAR IN PUBLIC LAW. II; 2 or 3 cr. Mr. Fellman.

270a–b. SEMINAR IN THE PLANNING PROCESS. Yr; 2 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.

III. COMPARATIVE GOVERNMENT AND PUBLIC ADMINISTRATION

127. COMPARATIVE GOVERNMENT: THE BRITISH COMMONWEALTH. 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. COMPARATIVE GOVERNMENT: 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.

129. THE GOVERNMENT OF CANADA. I or II; 3 cr. An analysis of Canadian problems and policies, including those relating to its external relationships. Prerequisite: Junior standing. Staff.

130. GOVERNMENTS OF LATIN AMERICA. I or II; 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: Political Science 7 or consent of instructor; sophomore standing. Mr. Stokes.

135. MUNICIPAL ADMINISTRATION. II; 3 cr. The functions and structure of municipal administration. Prerequisites: Political Science 7 and sophomore standing, or Political Science 13 or 143 or consent of instructor. Mr. Young.

143. INTRODUCTION TO PUBLIC ADMINISTRATION. I, II; 3 cr. The role of administration in modern government; problems of organization, control, personnel, and finance. Prerequisites: Political Science 7 and sophomore standing or consent of instructor. Mr. Hart, Mr. McCamy, Mr. Young.

163. LOCAL PLANNING ADMINISTRATION. (See Group II.)

170. THE CIVIL SERVICE. I, II; 3 cr. Analysis of problems of public personnel. Prerequisites: Political Science 7 and junior standing. Political Science 143 is recommended. Mr. Conway, Mr. Hart.

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 and junior standing. Mr. Kjeldstadli.

250. SEMINAR IN EUROPEAN GOVERNMENT. I or II; 2 or 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. I, II; 2 or 3 cr. Prerequisite: Graduate standing or consent of instructor. Mr. McCamy, Mr. Young.

262. SEMINAR IN LATIN-AMERICAN GOVERNMENT, POLITICS, AND INTERNATIONAL RELATIONS. I or II; 2 cr. Prerequisite: Graduate standing. Mr. Stokes.

290. INTERDEPARTMENTAL SEMINAR IN LATIN-AMERICAN PROBLEMS. II; 2 cr. Prerequisite: 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

25. Survey of World Politics. I, II; 3 cr. An introduction to international relations. Prerequisite: Sophomore standing. Staff. (Credit will not be given for both Political Science 25 and Political Science 121a or 121b.)

118. Principles of International Law: Survey. I or II; 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. Mr. Pfankuchen. (This course will not be offered concurrently with Political Science 118a or 118b.)

118a. Principles of International Law: Law of Peace. I or II; 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. I or II; 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. II; 3 cr. Research on hypothetical cases or significant current problems. Prerequisite: Political Science 118 or consent of instructor. Mr. Pfankuchen.

121a–b. Introduction to International Relations. (Identical with Geography 121a–b.) Yr; 3 cr. 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. Recommended to be taken as a full year's course. Credit will not be given for both Political Science 25 and either 121a or 121b. Mr. Hartshorne and Mr. Pfankuchen.

123. Administration of United States Foreign Policy. (See Group II.)

131. International Relations of Latin America. I, II; 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.

132. Africa in World Politics. I; 2 cr. Imperialist rivalries in Africa and the problems of colonial administration. Prerequisite: Political Science 25 or consent of instructor. Staff.

133. The Near and Middle East in World Politics. II; 2 cr. Postwar international relations and problems of the regions indicated; special emphasis upon India. Prerequisite: Political Science 25 or consent of instructor. Staff.

135. Eastern Europe in World Politics. I or II; 3 cr. A study of the small states of eastern Europe and the policies of the great powers in that region. Prerequisites: Senior standing and either grade of *B* in Political Science 25 or consent of instructor. Staff.

137. International Organization and Diplomacy. I or II; 3 cr. Evaluation of agencies and procedures of international co-operation, with special attention to the League of Nations and the United Nations. Prerequisite: Political Science 25 or 121a–b or consent of instructor. Mr. Thomson.

138. Proseminar: Contemporary Problems in International Relations. II; 3 cr. A proseminar in selected aspects of international institutions and politics. Prerequisites: Senior standing and consent of instructor. Staff.

140. Far Eastern Politics. I. II; 3 cr. Interests and policies of the United States are given special emphasis. Prerequisite: Sophomore standing. Mr. Thomson.

155. PROSEMINAR: THE UNITED STATES AND THE FAR EAST. I; 2 or 3 cr. Mr. Thomson.

159. PROBLEMS IN AMERICAN FOREIGN POLICY. (Identical with SOCIAL SCIENCE 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: Political Science 7 or consent of instructor and junior standing. Mr. Kjeldstadli.

251. SEMINAR IN AMERICAN FOREIGN POLICY. Yr; 2 or 3 cr. Staff.

255. SEMINAR IN THE POLITICS OF THE PACIFIC. II; 2 or 3 cr. Mr. Thomson.

259. SEMINAR IN INTERNATIONAL LAW AND ORGANIZATION. II; 2 or 3 cr. Mr. Pfankuchen.

260. SEMINAR IN INTERNATIONAL RELATIONS. II; 2 or 3 cr. Staff.

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 16, page 40.

200. THESIS. *cr. Staff.

275. SCOPE AND METHODS OF POLITICAL SCIENCE. I or II; 2 cr. Prerequisite: Graduate standing. Staff.

280. SPECIAL WORK. Open to graduate students only. 2 or 3 cr. Staff.

PSYCHOLOGY

PROFESSORS BROGDEN, CAMERON, GRANT, HARLOW, *chairman*, MAGARET, SMITH; ASSOCIATE PROFESSORS EGAN, MOTE; ASSISTANT PROFESSORS GILCHRIST, MUSSEN; INSTRUCTOR GUTTMAN; LECTURER RUEDISILI.

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 algebra, 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 requirements 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, 170, 171, 172, 173, 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. Mote.

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. Brogden, Mr. Egan.

50. APPLIED PSYCHOLOGY. I, 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. Miss Magaret, Mr. Mussen.

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.

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. Gilchrist.

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.

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. Prerequisites: Prior credit or current registration in Psychology 115. Mr. Smith.

117. PSYCHOLOGY OF INDIVIDUAL ASSESSMENT. I; 3 cr. Introduction to the field; diagnostic precedures used by the clinical psychologist; interviewing methods, psychometric and projective techniques; analysis and writing of case materials. Prerequisites: Psychology 105, 141. Miss Magaret.

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. Egan.

127. PSYCHOLOGY OF PERSONALITY. I; 3 cr. Modern approaches to the organization and development of the personality. Personality measurement by means of testing, scaling, and projective techniques, with applications. Prerequisite: Psychology 1. Mr. Gilchrist.

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. Egan.

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.

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.

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.

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.

147. Child Psychology. I; 3 cr. Origins of psychological processes and general genetic principles; motor, language, emotional and social development of the child. Prerequisite: Psychology 1.

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.

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. 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. 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.

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. 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. Egan.

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

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 visual sensation. 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. Prerequisite: Psychology 25 and 130 or consent of instructor.

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. Prerequisite: Psychology 25.

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. Mussen.

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 16, page 41. 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. Miss Magaret, Mr. Mussen.

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. Smith.

190. Problems in Human Behavior. I, II; 3 cr. Individual experimental investigation. Prerequisite: Consent of instructor. Mr. Brogden, Mr. Egan, Mr. Gilchrist, Mr. Grant, Mr. Mote.

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. Mussen.

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. Miss Magaret.

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. Mussen.

210. Seminar in Aptitude Testing. I; 2 cr. Prerequisite: Consent of instructor.

215. Seminar in Industrial Psychology. I, II; 2 cr. Prerequisites: Psychology 115 and consent of instructor. 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. Miss Magaret, Mr. Mussen.

228. Field Work in Clinical Psychology. I, II; 3 cr. Supervised field work in practical clinical situations. Prerequisites: Psychology 207 and consent of instructor. Miss Magaret, Mr. Mussen.

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.

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; 2 cr. Prerequisites: Psychology 165 and consent of instructor. Dr. Cameron.

267. Seminar in Thinking and Imagination. I; 2 cr. Prerequisites: Psychology 167 and consent of instructor. Dr. Cameron.

270. Seminar in Perception. I, II; 2 cr. Prerequisite: Consent of instructor. Mr. Egan, Mr. Mote.

273. Seminar in Personality. I, II; 2 cr. Prerequisite: Consent of instructor.

SCANDINAVIAN AREA STUDIES

COMMITTEES-IN-CHARGE

EXECUTIVE: DEANS HERRIOTT, INGRAHAM; PROFESSORS HAUGEN, *chairman*, HILL, KNAPLUND. ADVISORY: PROFESSOR GROVES; ASSOCIATE PROFESSORS BAKKEN, BARTON, RIEMER, STOKES.

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 101. 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. Haugen 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. II; 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. 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. Miss Johnson.

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. Miss Johnson.

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 1950–51.)

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. Kjeldstadli.

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. Kjeldstadli.

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. Kjeldstadli.

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 1950–51.)

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 1950–51.) Mr. Haugen.

127. TWENTIETH-CENTURY WRITERS. Yr; 3 cr. Dramatic and narrative masterpieces since about 1905. (Offered 1951–52.) 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 1950–51 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 1949-50 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.

72. Scandinavian Folklore and Balladry. Sem; 2 cr. Popular beliefs in Scandinavia; primitive religion; magic and witchcraft; Christian influences; legends, fairy tales, and ballads; folklore themes in literature. Mr. Haugen.

78. Henrik Ibsen: Social and Psychological Dramas. Sem; 2–3 cr. Dramatic work from *Peer Gynt* to *When We Dead Awaken.* Discussion of themes, technique, significance. 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. (II, 1949–50.) Prequisite: A year course in literature. 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*; Instructors Daugman, Gasiorowski, 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 by placement tests given during the Freshman Period. These tests may admit a student to a more advanced course, but give no extra credit toward graduation.

See page 37 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. Mrs. Gasiorowski.

1b. Second-Semester Polish. II; 4 cr. Morphology of Polish continued. Simple texts. Prerequisite: Polish 1a or consent of instructor. Mrs. Gasiorowski.

10a. Third-Semester Polish. I; 3 cr. Reading, conversation exercises and grammar review. Prerequisite: Polish 1b or consent of instructor. Mrs. Gasiorowski.

10b. Fourth-Semester Polish. II; 3 cr. Reading, conversation exercises and grammar review. Prerequisite: Polish 10a or consent of instructor. Mrs. Gasiorowski.

13. Rapid Reading. Yr; 1 cr. per sem. Journalistic Polish. Prerequisite. Concurrent registration in Polish 1b or consent of instructor. Mrs. Gasiorowski.

31. Selected Masterpieces. Yr; 3 cr. per sem. Prerequisites: Polish 10b or knowledge of Polish and consent of instructor. Mr. Zawacki.

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.

120. Survey of Polish Literature. Yr; 3 cr. per sem. Prerequisites: Polish 31 or knowledge of Polish and consent of instructor. Mr. Zawacki.

125. Contemporary Polish Literature. II; 3 cr. Polish 120 recommended but not required. Prerequisites: Polish 31 or advanced knowledge of Polish and consent of instructor and dean. Hours to be arranged. Mr. Zawacki.

150. History of the Polish Language. II; 2 cr. Primarily for majors in Polish. Prerequisite: Consent of instructor. Mr. Zawacki.

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.

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.

15a. Elementary Composition and Conversation. I; 2 cr. Prerequisite: Russian 1b or consent of instructor. Mr. Daugman.

15b. Elementary Composition and Conversation. II; 2 cr. Prerequisite: Russian 15a or consent of instructor. Mr. Daugman.

18a. Scientific Russian. I; 2 cr. Reading in scientific texts with grammatical review. Prerequisite: Russian 1b 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 10b 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. Mr. Zawacki.

124a. Advanced Composition and Conversation. I; 2 cr. Prerequisite: Russian 25b or special examination. Mrs. Wilde.

124b. Advanced Composition and Conversation. II; 2 cr. Prerequisite: Russian 124a or special examination. Mrs. Wilde.

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 31, 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 31, or two years of college Russian and graduate standing. Mr. Zawacki.

140a. Survey of Russian Drama. I; 2–3 cr. The principal dramas in Russian literature preceding Chekhov, their social function and their literary significance. The lectures are in English. Prerequisites: Russian 31, or two years of college Russian and graduate standing. Mrs. Gasiorowski.

140b. Survey of Russian Drama. II; 2–3 cr. The principle dramas in Russian literature from Chekhov to the present. The lectures are in English. Prerequisite: Russian 31, or two years of college Russian and graduate standing. Mrs. Gasiorowski.

148a. Contemporary Russian Literature. I; 2–3 cr. Representative works of Russian literature from 1917 to World War II. The lectures are in English. Prerequisites: Russian 31, or two years of college Russian and graduate standing. Mrs. Gasiorowski.

148b. Contemporary Russian Literature. II; 2–3 cr. Russian literature from World War II to the present, a continuation of Russian 148a, which may be taken as a separate course. Prerequisites: Russian 31, 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. Daugman.

151. Proseminar in the History of the Russian Language. II; 2 cr. Primarily for majors in Russian. Prerequisite: Russian 150. Mr. Daugman.

180. Supervised Individual Reading. Yr; 2–3 cr. Prerequisites: Russian 31, or two years of college Russian and graduate standing. Consent of the Dean is required in all cases. Mr. Zawacki.

NOTE

Courses 131a, 131b, 140a, 140b, 148a, and 148b are organized in a way which makes them available as Comparative Literature 31a, 31b, 40a, 40b, 48a, and 48b to students who do not read Russian. (See p. 110.) The reading schedules, the examinations, and the discussion sections in English (Comparative Literature) and in Russian (Slavic Languages) are parallel but not alike. Students desiring credit toward the fulfillment

of the language and course requirements for a major in Russian or for higher degrees in Russian must, of course, do the reading, take the examinations, and participate in the discussions in Russian as provided for in the organization of the given course.

SOCIAL STUDIES

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.

SOCIAL WORK

PROFESSORS CLARKE, MILES, *chairman*; ASSOCIATE PROFESSORS DOWNING, ORCHARD; ASSISTANT PROFESSORS BOEHM, DUNNING, GANE, GAUNT, TETER; INSTRUCTOR RUSSELL.

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

14. INTRODUCTION TO RECREATION. I; 2 cr. (See EDUCATION 14.)

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. Miss Clarke.

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; 2–3 cr. Fields and methods of social work. For social work students and those preparing for allied professions as law, medicine, ministry, teaching. Field trips are arranged for 3-credit students. 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.

* Students who plan to do graduate work are urged to elect Sociology 132 rather than Sociology 32.

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

219. Social Group Work. I; 2 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.

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 Dunning and staff.

245. Principles of Social Work Treatment. I; 2 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 Practice. I, II; 6–10 cr. Fifteen 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. Yr; 3–6 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 Dunning.

253. 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.

258. Seminar in Case Work Theory. I; 2 cr. Emphasis upon increasing the student's understanding of personality, of the purposefulness of behavior and of the role of the worker in case work treatment. Prerequisites: Social Work 249 and consent of instructor. Miss Orchard.

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 Gaunt.

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. Miss Dunning.

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. Miss Dunning.

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 Dunning.

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. Mr. Boehm.

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; 3–6 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

210. THE CHILD AND THE STATE. I; 2 cr. The legal and administrative structures of services for the child in present-day society. The development of provisions for the protection of the child as evidenced in child labor, adoption, and mother's aid legislation. Prerequisite: Consent of instructor.

220. SEMINAR IN SOCIAL SECURITY. Yr; 2 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.

251. SOCIAL WORK AND THE LAW. I; 3 cr. The relationship and the areas of co-operation between the legal and social work professions as well as the leading principles of law are discussed. Prerequisite: Consent of instructor. Mr. Boehm.

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.

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.

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. Miles and staff.

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.

VI. HISTORY OF SOCIAL WELFARE

184. Development of Social Welfare. II; 2–3 cr. Emergence and evolution of organized attempts to relieve human want and distress; origin and development of the individualized approach in social treatment. Prerequisite: Consent of instructor. Mr. Russell.

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. Boehm.

SOCIOLOGY AND ANTHROPOLOGY

Professors Becker, Hill, Howells, Kolb, McCormick, *chairman*, Sewell, Wileden; Associate Professors Barton, Clinard, Gerth, Hart, Riemer; Lecturers Gill, Schwalbach; Assistant Professors Baerreis, Duncan; Instructors Chiozza, Daifuku.

Sociology and anthropology deal with group behavior, the origins, structure and working of social institutions and the folkways, and the relation between these and personality. Anthropology deals also with the antiquity and evolution of human races and cultures. Sociology considers current social problems; both sociology and anthropology are supplementary to professional training in fields such as law, journalism, business, personnel and social work. Specialization in one or both subjects may lead to graduate study in preparation for secondary and college teaching and for 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, 39, 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 Antropology 3, Sociology 2, 32 or 132, 39, 61, 151 or Anthropology 40, and Sociology 156a. 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 archeology, 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.

ILS 21. Wherever Anthropology 3 is listed as a requirement or as a prerequisite, ILS 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 of this major, see page 201.

INDEPENDENT WORK

100. SENIOR THESIS. Yr; 2 cr. Staff.

180. INDEPENDENT WORK IN SOCIOLOGY. I, II, or Yr; *cr. See page 40 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.

I. SOCIOLOGICAL THEORY

1. MAN IN SOCIETY. I, II; 3 cr. A course designed primarily for the general student. Interrelations of personality, social order, and culture; major social processes, structures, and institutional functions. 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.

151. GENERAL ASPECTS OF SOCIAL RELATIONS. I; 3 cr. (Formerly SOCIOLOGY 10.) 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, ILS, 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. Riemer.

172. SOCIAL INTERACTION. I; 3 cr. Groups from pairs upward, with functions ranging from reproduction to war, surveyed in perspectives of process and structure. Emphasis on observation, recording, and systematic analysis. Prerequisite: Sociology 135, 151, 157, or consent of instructor. Mr. Becker.

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.

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.

199. DEVELOPMENT OF AMERICAN SOCIOLOGY. II; 3 cr. Schools of thought in American sociology, traced through origins, conceptualizations, methodologies, and research. Prerequisite: Sociology 135, 151, 157, 175, 176, or equivalent. Mr. Becker.

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. I, 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. Mr. Riemer and lecturers.

71. THE MODERN CITY. I; 3 cr. (Formerly SOCIOLOGY 124.) 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. Mr. Riemer.

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 Paraquay, Absolutist Prussia, National Socialism and Russian Communism will be considered in the perspective of freedom and order. Prerequisites: Sociology 1 or 39 and junior standing, or consent of instructor. Mr. Gerth.

144. CAPITALISM AND SOCIALISM. II; 3 cr. Capitalism, unionism, socialism, facism-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. Mr. Riemer.

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. Mr. Riemer.

174. SOCIAL CONTROL. II; 3 cr. (Formerly SOCIOLOGY 50.) 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. Mr. Riemer.

185. CONTEMPORARY AMERICAN SOCIETY. I; 3 cr. (Formerly SOCIOLOGY 96.) The patterns of contemporary North American social life in the United States and Canada; cultural orientations, social structures, and dynamics of social change. Prerequisites: Sociology 1 or 2 or Anthropology 3, and junior standing. Staff.

186. EUROPEAN SOCIAL ORGANIZATION: SOUTH AND WEST. I; 3 cr. (Formerly SOCIOLOGY 88.) 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 or consent of instructor; junior standing.

188. EUROPEAN SOCIAL ORGANIZATION: NORTH AND EAST. II; 3 cr. (Formerly SOCIOLOGY 89.) A study of comparative social organization with special attention to the societies of Northern and Eastern Europe. Survey of the regional differences (i.e., Ukrainian, Upper Saxon, Finnish, etc.), in social institutions, patterns of living and contemporary social organization. Prerequisite: Junior standing. Mr. Becker.

190. SOCIAL ORGANIZATION OF CONTEMPORARY INDIA. II; 3 cr. A study of the patterns of social organization and social change in modern India with special reference to the role of the social heritage and of the impact of industrialism. Prerequisite: Junior standing. (Offered II, 1949–50.) Mr. Muzumdar.

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 71 and graduate standing, or consent of instructor. Mr. Riemer.

264. SEMINAR: MARRIAGE AND FAMILY. II; 2 cr. Recent research surveyed and analyzed. Prerequisites: Sociology 159 and graduate standing, or consent of instructor. Mr. Riemer.

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. Mr. Riemer.

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 ILS 21. Mr. Howells or Mr. Hart and 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 pre-historic development, its cultures at the time of initial contact with European civilizations and present problems of acculturation. Prerequisites: Anthropology 3 and junior standing. Mr. Daifuku.

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. Daifuku.

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. Howells or Mr. Hart.

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. (Formerly Anthropology 107.) 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 or Sociology 39 and junior standing. Mr. Hart.

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. Prerequisite: Anthropology 145. Mr. Hart.

147. FIELD PROBLEMS AND METHODS. II; 3 cr. A survey of the methods of field work in social anthropology and sociology; 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 instructors. Staff.

240. SEMINAR: PROBLEMS IN CULTURAL ANTHROPOLOGY. II; 2 cr. Discussions 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. (To be given II, 1951–2 and in alternate years.) 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. (To be given II, 1950–51 and in alternate years.) Mr. Fowler.

E. INDEPENDENT WORK

100. SENIOR THESIS. Yr; 2 cr. Staff.

180. INDEPENDENT WORK IN ANTHROPOLOGY. I, II, or Yr; *cr. See page 41 of this bulletin for requirements and procedures. Staff.

200. RESEARCH AND THESIS. Yr; *cr. Prerequisite: Advanced graduate standing. Staff.

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* May *not* be counted toward the Social Studies credits required for the B.A. or B.S. degrees.

280. READING AND RESEARCH IN ANTHROPOLOGY. I, II, or Yr; *cr. Prerequisites: Graduate standing and consent of major professor. Staff.

F. INTER-DEPARTMENTAL COURSE

290. INTER-DEPARTMENTAL 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. (Offered II, 1949–50.) Mr. Baerreis and Mr. Hill.

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.

61. CRIMINOLOGY. II; 3 cr. (Formerly SOCIOLOGY 161.) 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.

153. CRIME PREVENTION AND POLICE ADMINISTRATION. I; 3 cr. Proposed and actual programs of crime prevention. History, organization, and general policies of police administration including bureaus of identification, crime laboratories, and police training—federal, state, and local. Prerequisites: Sociology 2 and junior standing, or consent of instructor. Mr. Gill.

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.

156a. JUVENILE DELINQUENCY (Introduction). I; 3 cr. Definition and interpretations of juvenile delinquency. Theories of causation, prevention, and treatment. Statistical and life-history data. Prerequisites: Sociology 1 or 2 and junior standing, or consent of instructor. Mr. Chiozza.

156b. JUVENILE DELINQUENCY (Agencies). II; 3 cr. The organization and functioning of community agencies, the police, the juvenile court, probation, parole, detention homes, industrial schools, correctional institutions, youth services, and youth correction authorities as they relate to juvenile delinquency. Prerequisites: Sociology 156a and junior standing, or consent of instructor. Mr. Gill.

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 61 and junior standing, or consent of instructor. Mr. Mathews.

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* For sociology majors, may be counted toward 20 hours of related social science, but not toward the 30 credits in sociology.

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 61 and junior standing, or consent of instructor. Mr. Gill.

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; ideological aspects of social disorganization. Prerequisites: Sociology 2 and junior standing, or consent of instructor. Mr. Clinard.

170. INSTITUTIONAL TREATMENT OF ADULT OFFENDERS. I; 3 cr. (Formerly SOCIOLOGY 170b.) Place of jails, prisons and reformatories, in the correctional process, The Clinical School of Criminology; federal, state and local instituions; the dynamics of institutional treatment—personnel structure, custody, discipline, treatment procedures, administrative problems. Prerequisites: Sociology 61 and junior standing, or consent of instructor. Mr. Gill.

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.

258a–b. SEMINAR: CORRECTIONAL POLICIES. I, II; 3 cr. (Formerly SOCIOLOGY 158 and 270.) 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. Prerequisites: Graduate standing and consent of instructor. Mr. Gill.

270. INTERNSHIP: CORRECTIONAL ADMINISTRATION. I, II; 3 cr. (Formerly SOCIOLOGY 170a.) 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. Prerequisites: Graduate standing and consent of instructor.

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, crime prevention, probation and parole, and institutional treatment of adult 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, and law are also available. On the graduate level, special curricula in sociology, social work, psychology, education, home economics, 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 204.

Requirements for basic subjects should be completed as far as possible during the freshman and sophomore years at college. Some work in related subjects will also normally be included during these years.

BASIC COURSES*

Sociology 1,	Man in society, 3 cr.
or Anthropology 3	Man and culture: An introduction to anthropology, 3 cr.
Sociology 2	Social disorganization, 3 cr.
Sociology 32,	Interpretive social statistics, 3 cr.
or Sociology 132	Introductory social statistics, 3 cr.
Sociology 39	Social psychology, 3 cr.
Sociology 151,	General aspects of social relations, 3 cr.
or Anthropology 40	Cultural anthropology, 3 cr.
Psychology 1	Introduction to psychology, 4 cr.
Psychology 105	Psychology of human adjustment, 3 cr.
Social Work 145	Introduction to the field of social work, 2–3 cr.
Political Science 7	American government, 3 cr.
or Political Science 13	Municipal government, 3 cr.
Social Work 113	Theory and practice of group leadership, 2 cr.
or Education 181	Techniques of guidance, 2–3 cr.

SPECIAL COURSES**

	Group I
Sociology 61	Criminology, 3 cr.
Sociology 168	Probation and parole, 3 cr.
Sociology 170	Institutional treatment of adult offenders, 3 cr.
	Group II
Sociology 156a	Juvenile delinquency (Introduction) 3 cr.
Sociology 156b	Juvenile delinquency (Agencies) 3 cr.
	Group III
Sociology 158	Crime prevention and police administration, 3 cr.
Sociology 165	Scientific crime detection, 2 cr.
Sociology 180	Reading and research in correctional administration, 1–3 cr.

Related Subjects. Recommended (subject to Section 17) for consideration of students with a major in Correctional Administration in sociology:

Sociology: 60, 127, 128, 129, 131, 133, 151, 154, 155, 157, 164, 169, 185, 197, 199

Anthropology: 101, 104, 145

Social Work: 113, 114, 146, 162, 177, 185

Psychology: 25,*** 109, 127, 130,*** 141, 147, 148, 165

Education: 73†, 74†, 75†, 84, 113, 114, 128, 131, 181, 183, 184

Physical Education: 6, 59, (for men); 8, 9, 10, 11, 13 (for women); 31, 32, 33, 35, 36, 37, 38, 40a

Art Education: 57, 62, 70, 175

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* Students must offer a total of 29 credits in the Basic Courses.
** Students must offer a total of 15 credits in Special Courses.
*** Psychology 25 and 130 are required for those who wish to do graduate work in psychology.
† Education 73, 74, 75 are required for the Teachers' Certificate.

LIBRARY SCIENCE: 113, 114, 132, 150
MUSIC: 62, 75, 76, 85, 86, 87, 115
SPEECH: 7, 19, 110, 136
JOURNALISM: 10, 105a–b; 107, 117
ECONOMICS: 1a–b, 106, 117‡, 127‡, 145, 174, Geography 128‡
POLITICAL SCIENCE: 112a, 112b, 115, 122, 134, 136, 139, 143, 170
HOME ECONOMICS: 2, 3, 5, 8, 15, 18, 110, 117, 119.

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. PRINCIPLES OF RURAL SOCIOLOGY. I; 3 cr. Advanced course in the study of rural society through systematic examination of important source materials from Europe and America with emphasis on the impact of urbanization on the rural population, its social organization, and its culture. Prerequisites: An introductory course in rural or general sociology and junior standing. 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 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 confiict 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. 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. Sewell.

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, an introductory course in rural or general sociology or economics or consent of instructor. Mr. Hill.

‡ Economics 117 or Geography 128 and Economics 127 are required by statute for teachers of social studies, science and agriculture in Wisconsin.

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.

225. Seminar in Rural Social Research. Yr; 2 cr. Scope and method in current research; community organization, standards of living, population, farmers' organizations, social institutions, rural government. Prerequisites: Graduate standing and consent of instructor. Mr. Kolb, Mr. Hill.

VI. STATISTICS

32. Interpretive Social Statistics. II; 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. Duncan.

132. Introductory Social Statistics. I; 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. Duncan.

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. Prerequisites: 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. Prerequisites: Sociology 132 or equivalent. Mr. McCormick.

232a. Statistical Research in Sociology. I; 3 cr. (Formerly Sociology 189.) Individual staff research. Definition of problem, preparation of questionnaries, 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. (Formerly Sociology 189.) 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. Social Psychology. I, II; 3 cr. (Formerly Sociology 139.) Introduction to the study of personality development and collective behavior in contemporary social life. Prerequisites: Sociology 1 and sophomore standing, or Psychology 1. Mr. McCormick.

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.

150. Collective Behavior. II; 3 cr. The social psychology of organized and unorganized social movements, mobs, crowds, masses, fashions, entraordinary 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 WARFARE. II; 3 cr. Techniques of subverting military and civilian morale, chiefly by playing on existing social differentials, in ideological conflict, i.e., "psychological warfare." Primary attention to World War II and its aftermath. Prerequisites: Sociology 1, 2, or Anthropology 3, and junior standing. Mr. Becker.

197. PERSONALITY AND SOCIAL STRUCTURE. II; 3 cr. An analysis of relationships between personality, social interaction and culture. Prerequisites: Sociology 39 or two courses 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 39, 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 39, 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 39, or 164, graduate standing, and consent of instructor. Mr. McCormick.

288. SEMINAR: EXPERIMENTAL SOCIAL PSYCHOLOGY. II; 2 cr. Approaches to the experimental study of fundamental problems of social psychology and the measurement of attitudes, values, and traits. Prerequisites: Sociology 39 and 132, graduate standing, and consent of instructor. Mr. McCormick.

297. SEMINAR: PERSONALITY. II; 2 cr. Research topics which relate the development of personality to social-cultural environment. Prerequisites: Sociology 39 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. Hill.

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. Duncan.

166. ECONOMICS OF POPULATION. II; 3 cr. (This course is listed elsewhere as ECONOMICS 166.) Interrelations between population developments and economic developments. Economic 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. Duncan.

267. SEMINAR: POPULATION PROBLEMS. Yr; 2 cr. Prerequisites: Sociology 163 or equivalent and consent of instructor. Mr. McCormick and Mr. Duncan.

271. SEMINAR ON THE GEOGRAPHY OF POPULATION PROBLEMS. 2–3 cr. (This course is listed elsewhere as GEOGRAPHY 271.) Department of Geography staff.

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. Group-work methods such as programming, counselling, use of records, etc. Five hours a week of supervised field work at Wisconsin Union, Neighborhood House, Y.W.C.A., Y.M.C.A., Cooperatives, etc. 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. Miss Clarke.

145. INTRODUCTION TO THE FIELD OF SOCIAL WORK. Sem. (repeated); 2–3 cr. Fields and methods of social work. For social work students and those preparing for allied professions as law, medicine, ministry, teaching. Field trips are arranged for 3-credit students. 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 Gaunt.

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.

178. COMMUNITY PLANNING FOR SOCIAL SERVICE. Sem. (repeated); 2 cr. Current resources for social welfare appraised in light of their historical, economic and political evolution. Prerequisites: Senior Social Work or Recreation majors or consent of instructor. Mr. Downing, Miss Clarke.

185. INTRODUCTION TO SOCIAL WELFARE ADMINISTRATION. II; 3 cr. Administrative process in federal, state and local welfare structure. Comparison of administrative techniques in public and voluntary agencies. Prerequisites: Section 1: Graduate standing; Section 2: Senior standing and Social Work 145 or concurrent registration. Mr. Miles, Mr. Downing.

SPANISH AND PORTUGUESE

PROFESSORS HERRIOTT, KASTEN, *chairman*, NEALE-SILVA; ASSOCIATE PROFESSORS MULVIHILL, ROSALDO, SINGLETON; ASSISTANT PROFESSORS HESSE, LYON, SANCHEZ, SANCHEZ-BARBUDO; INSTRUCTOR VANCE; ACTING INSTRUCTOR ROSA.

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 knowlege 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, 15, and 16 may be taken only concurrently with Spanish 10a and 10b; not more than one of these courses may be taken in any one semester, along with 10a or 10b. Students who have passed the intermediate examination will be allowed to take only one semester of Spanish 16; they should normally continue with Spanish 25. 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. Other third-year courses are Spanish 22, 23, and 24, which are not open to students majoring in Spanish or Hispanic Studies. International Relations majors may substitute Spanish 24 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, for which the prerequisite is three years of college Spanish including 4 credits in practice courses; 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 11, page 37. The foreign-language requirements for the B.A. degree are set forth in Section 22, page 44.

MAJOR. 28 credits in advance of 1b of which at least 4 must be in second- or third-year practice courses (15, 16, 25), 6 in Spanish 21, and 11 in courses of the 100-group. In the 100-group courses a minimum of 2 credits must be in language (112, 117, 124, 127, 128, 190) with a grade of *B*, 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 79.

REPORTING HISPANIC AFFAIRS. (See JOURNALISM 121.) Does not carry credit in Spanish. Prerequisite: Spanish 10b or equivalent. Mr. Neale-Silva, Mr. Rosaldo.

MAJOR IN INTERNATIONAL RELATIONS. (Specialization in the Latin-American region.) Students interested in this major field should consult page 85.

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, for the following year, 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 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 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, II; 2 cr. Should also be taken concurrently with 10a or 10b. Can be credited by semesters. Students who have passed the intermediate examination can take no more than one semester of Spanish 16. They should normally continue with Spanish 25. Prerequisite: Spanish 1b or equivalent. Mr. Neale-Silva and staff.

25a. INTERMEDIATE COMPOSITION AND CONVERSATION. I, II; 2 cr. Majors should combine Spanish 25 with Spanish 21. Non-majors may combine 25 with any one semester of 22, 23, or 24. Prerequisite: Two years of Spanish. 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.

ADVANCED PRACTICE COURSES

(Prerequisite: Three years of college Spanish, including 4 credits in composition and conversation in courses under 100. All conducted in Spanish.)

112. COMPOSITION AND CONVERSATION. Yr; 2 cr. Study of constructions, idioms; oral work. Mr. Hesse, Mr. Rosaldo, Mr. Singleton.

117. COMMERCIAL AND INDUSTRIAL LANGUAGE PRACTICE IN HISPANIC COUNTRIES. I, 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.

TEACHER'S 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. 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, 22, 23 or 24.

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, 22, 23 or 24. Offered in 1948–49. 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, 22, 23 or 24. 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. Rosaldo and staff.

21b. Elementary Survey of Spanish Literature. II; 3 cr. Continuation of above course. (Twelfth to seventeenth centuries.) Mr. Rosaldo and staff.

21a–b. Modern Spanish Novel and Drama. Yr; 3 cr. Reading of outstanding works produced in Spain since 1800. Historical and literary background. Lectures, translations, analysis, discussions. Prerequisite: Spanish 10b. Mr. Rosaldo, staff.

23a–b. Contemporary Spanish Literature. Yr; 3 cr. Selected Spanish novels, dramas, and poems produced since 1898. Historical and literary background. Lectures, translations, analysis and discussions. Prerequisite: Spanish 10b. Mr. Rosaldo, staff.

24a–b. Modern Spanish-American Literature. Yr; 3 cr. Selected novels, dramas, and poems of Spanish America since 1800. Historical and literary background. Lectures, analyses and discussions. Prerequisite: Spanish 10b. Mr. Rosaldo, 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.

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. Mr. Singleton.

134. Spanish Renaissance. Yr; 2 cr. A study of the most significant authors and their works from the *Celestina* to Cervantes. Offered in 1951–52. Mr. Herriott.

135. Survey of Golden-Age Literature. Yr; 3 cr. Picaresque novel, poetry, theater, of the neo-classical period. Offered 1951–52. Mr. Lyon.

137. Survey of Eighteenth-Century Literature. Yr; 2 cr. Prose, poetry and drama of the neo-classical period. Offered 1951–52. 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. Mr. Sánchez-Barbudo.

139. Survey of Twentieth-Century Literature. Yr; 3 cr. The generation of 1898 and its successors. Offered in 1950–51.

144. Survey of Spanish Poetry. Yr; 2 cr. Principal works and authors of Castilian lyric poetry from the thirteenth century to the present. Mr. Sánchez-Barbudo.

146. Survey of Spanish-American Literature. Yr; 3 cr. Poetry, novel and drama from the colonial period to the present. Offered in 1950–51. 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 1950–51. 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 1951–52. 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.

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 contemporánea. Yr; 2 cr. Offered 1948–49. Mr. Neale-Silva, Mr. Rosaldo.

223. Introductory Seminar in Medieval Literature: The Spanish Epic. Yr; 2 cr. Mr. Kasten.

225. Introductory 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. 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 Selva. Yr; 2 cr. 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. Mr. Mulvihill, Mr. Sánchez-Barbudo.

Romance Philology. (See Comparative Philology 273.) Mr. Kasten.

PORTUGUESE

1a–1b. Elementary Portuguese. Yr; 4 cr. Portuguese grammar, conversation and reading. Mr. Kasten and staff.

10a. Third-semester Portuguese. I; 3 cr. Reading of Portuguese and Brazilian texts. Prerequisite: Portuguese 1b. Mr. Kasten and staff.

10b. Fourth-semester Portuguese. II; 3 cr. A continuation of 10a. Prerequisite: Portuguese 10a. Mr. Kasten 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. 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.

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, Irwin, Mitchell, Weaver, *chairman*; Associate Professors Curvin, Dietrich, Gard, Haberman; Assistant Professors Brembeck, Brockhaus, Grim, R. Stanley; Lecturer J. H. Stanley; Instructor Buerki.

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) argumentation 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 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, 16 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.

CLINIC. The Speech Clinic, which has facilities for treating a limited number of university students with defects of speech, is open throughout the academic year. Students who desire remedial help should apply at 403 Bascom Hall early in the semester.

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 (Limited enrollment second semester); 3 cr. Training and practice designed to improve vocal conditions for all speech purposes. Exercises for flexibility, range, relief from tension, articulation and enunciation. Prerequisite: For

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* 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.

majors and minors, Speech 1,* which may be taken concurrently; for others, consent of instructor. Not open to senior majors or minors. Miss Grim 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. Miss Grim and staff.

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. Miss Grim.

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. Curvin.

22. DRAMATIC READING AND PLATFORM ART. I; 3 cr. Experience in different modes of presentation. Study of audience problems in choice and arrangement of programs. Prerequisites: Speech 16 and 18. Miss Grim.

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.)

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 broad-

* 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.

casting, practice in preparing, rehearsing, and producing programs of various types. Prerequisites: For majors and minors, Speech; 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, Mr. Curvin.

115. Broadcasting Workshop. II (limited enrollment); 3 cr. Acting, directing and producing various types of radio programs. Prerequisite: Speech 110. Mr. Stanley.

116. Radio and Society. I; 2 cr. The history of radio program development; comparative study of broadcasting practices in other countries; radio as a social force and a cultural influence. Prerequisite: Junior standing. Mr. Ewbank.

117. Writing for Radio. I; 2–3 cr. Analysis of model scrips. 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. Selection and arrangement of novels and plays for interpretative reading. Study of audience situations in relation to program materials. Criteria and criticism of judging considered. Prerequisite: Speech 22 or consent of instructor. Miss Grim.

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. Miss Grim.

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.

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 and 39 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 1950–51 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. Offered 1951–52 and in alternate years. 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. Prerequisite: 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 in 1951–52. 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 in 1950–51.

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. Miss Grim.

223. INTERPRETATION OF CLASSIC LITERATURE. I; 3 cr. Oral study of great works of literature. Esthetic principles involved in criticism of material, situation, and performance. Lecture recital developed. Prerequisite: Speech 122 or consent of instructor. Miss Grim.

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 WOLFE, *chairman*, HASLER, HERRICK, MEYER, NOLAND; ASSOCIATE PROFESSORS BILSTAD, EMLEN, MCSHAN, RIS; ASSISTANT PROFESSORS CROW, FRASER, KRAMER, MORRISON, WHITEHEAD; INSTRUCTOR COLLIAS.

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 ILS 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 ILS 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 vertebrate body; introduction to histology, embryology, heredity and evolution. Miss Bilstad, Mr. Fraser, Mr. Wolfe and staff.

2. GENERAL ZOOLOGY. II; 5 cr. Classification, structure, physiology and life history of representative types which are of interest to man. Bird trips. Mr. Hasler and staff.

6. HEREDITY. I; 2–3 cr. (Same as GENETICS 6.) Principles of heredity and their application to plants, animals and man. Lectures and discussion, 2 cr.; with laboratory, 3 cr. Laboratory open to all, but required of majors in Agriculture and Zoology. Prerequisite: A college course in botany or zoology. Mr. Crow.

17. SURVEY OF ZOOLOGY. II; 3 cr. Structure and function of representative animals, from amoeba to the vertebrates. Open to freshmen but not to students who take Zoology 1. Mr. Fraser 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.

102. INVERTEBRATE ZOOLOGY. I; 5 cr. Structure, life history, classification, and adaptations of invertebrate animals. Prerequisite: Introductory course in zoology. Mr. Noland and 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. Heredity. I; 3 cr. Principles of heredity and their application to plants, animals and man. Lectures, discussion and laboratory. Prerequisite: Consent of instructor. Mr. Crow.

107. Organic Evolution. II; 2 cr. A discussion of organic evolution and how it has taken place. Prerequisites: Introductory course in zoology and sophomore standing. 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. 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 1950–51 and in alternate years.) Prerequisites: Zoology 105 and consent of instructor. Mr. Meyer.

110. Insect Physiology. II; 3 cr. (Same as Economic Entomology 110.) Physiology of the organs of the insect body. Prerequisite: General entomology. (Offered 1949–50 and in alternate years.) Mr. Beck.

111. Microtechnique. I; 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 Economic 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 1950–51 and in alternate years.) Mr. Herrick and 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 adaptations of fishes, amphibians and reptiles. Prerequisite: Introductory course in zoology. (Not given 1950–51 or 1951–52.) Staff.

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. 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. Ris.

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.

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 1949–50 and in alternate years.) Mr. Herrick.

121. (Same as Economic Entomology 121). Internal Anatomy and Histology of Insects. I; 3 cr. 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. Mr. Hasler.

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 102 or 141 or consent of instructor. Mr. Hasler.

127. Comparative Physiology. II; 3 cr. The physiology of vertebrates and invertebrates in relation to their taxonomy and environment. Prerequisites: Two courses in zoology, 10 credits of chemistry and a course in 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 in 1950–51 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 in 1951–52 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 102 or 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 Economic Entomology 140.) Insects in relation to their environment. Prerequisite: A course in zoology or economic entomology. (Offered 1949–50 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. II; 3 cr. Morphological characteristics of the Chordata including the early embryology of the frog. Prerequisite: Introductory course in zoology. (Given in 1951–52 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. Emlen, Mr. Hasler.

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 and consent of instructor; physics advised. Mr. Morrison.

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 16, page 41. Staff.

200. Graduate Research. I, II; 2–5 cr. Staff.

201. Proseminar. Yr; 1 cr. History of zoology (1st sem.); bibliography, planning and writing up experiments (2nd sem.). (Not given 1950-51.) Staff.

202. Invertebrate Zoology Journal Club. Yr; 1 cr. Mr. Fraser, Mr. Kramer, Mr. Noland.

204. Advanced Craniate Anatomy. II; 3 cr. Correlation of structure and function of craniate organ systems. Prerequisites: Zoology 104 and 105 and consent of instructor. (Not offered in 1950–51 or 1951–52.) Mr. Wolfe.

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 in 1950–51 and in alternate years.) Mr. Wolfe.

218. Cytology Journal Club. Yr; 1 cr. Reports by students; critical discussion of recent literature; topics will be restricted to a field of cytology depending on the interest of the students and the activity of research in the respective fields. These topics will be changed every year. Prerequisite: Zoology 116 or consent of instructor. Mr. Ris.

219. Parasitology Journal Club. Yr; 1 cr. Mr. Herrick.

220. Seminar. Yr; 0 cr. Oral reports and discussions of advanced zoological subjects by members of the group. 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 the instructor. (Offered in 1951–52 and in alternate years.) Mr. Meyer.

224. Limnology Journal Club. Yr; 1 cr. Mr. Hasler.

229. Journal Club in Ornithology and Mammalogy. Yr; 1 cr. Mr. Emlen.

230. Journal Club in Zoological Serology. Yr; 1 cr. Mr. Wolfe.

SCHOOL OF EDUCATION

FACULTY

ACKERMANN, MRS. MARY A., *M.S.*, Teacher of Fine Arts (part time), Wisconsin High School
AINSWORTH, SIDNEY E., *M.A.*, Teacher of Mathematics, Wisconsin High School
ALLCOTT, RUTH E., *M.S.*, Associate Professor of Education; also Wisconsin High School
ANDERSON, C. J., *Ph.M., LL.D.*, Emeritus Dean of the School of Education; Emeritus Professor of Education
ANDERSON, DONALD M., *M.A.*, Instructor in Art Education
ANDERSON, JOHN E., *M.S.*, Instructor in Physical Education
ANNEN, MRS. HELEN WANN, *B.F.A., M.S.*, Professor of Art Education; Chairman Department of Art Education
ARNOLD, MRS. GWEN F., *Ph.D.*, Assistant Professor of Education
ARNOLD, RICHARD R., *M.F.A.*, Instructor in Art Education
BACH, JACOB O., *B.S.*, Instructor (part time), Supervisory Program
BALL, FREDERICK C., *M.A.*, Assistant Professor of Art Education
BARR, ARVIL S., *Ph.D.*, Professor of Education
BASSETT, GLADYS B., *M.A.*, Associate Professor of Physical Education
BAUER, GEORGE V., *B.S.*, Instructor in Physical Education
BEERY, GEORGE S., *Ph.D.*, Assistant Professor of Education (Extension Division)
BELEW, MRS. RUTH M., *M.S.*, Instructor in Physical Education
BEST, J. RILEY, *B.S.*, Instructor in Physical Education (part time); also, Track and Cross-Country Coach, Intercollegiate Athletics
BJORAKER, WALTER T., *M.S.*, Assistant Professor of Agricultural Education and of Education
BORCHERS, GLADYS L., *Ph.D.*, Professor of Speech; also Wisconsin High School
BORST, ROMA, *B.S.*, Teacher of Spanish (part time) Wisconsin High School
BOUMAN, HARRY D., *M.D.*, Professor of Physical Medicine; Director, Course in Occupational Therapy
BROWN, JOHN A., *B.S.*, Teacher of Mathematics, Wisconsin High School
BURNS, SAMUEL T., *Ph.D.*, Professor of Education and of Music
BUYS, WILLIAM E., *Ph.M.*, Teacher of Speech, Wisconsin High School
CARNS, MARIE L., *M.D.*, Professor of Physical Education; Director, Course in Physical Education for Women
CLARKE, HELEN I., *M.A.*, Professor of Social Work
COLESCOTT, WARRINGTON W., *M.A.*, Instructor in Art Education
CRONIN, KATHERINE L., *M.A.*, Associate Professor of Physical Education
CUMBEE, FRANCES Z., *M.S.*, Instructor in Physical Education (1950-51, II)
DAVIS, IRA C., *M.A.*, Professor of Education; also Wisconsin High School
DAWE, HELEN C., *Ph.D.*, Associate Professor of Home Economics (Nursery School)
DIEKROEGER, EMMA M., *B.A.*, Teacher-Librarian, Wisconsin High School
DIETRICH, GEORGE A., Assistant Professor of Art Education
DVORAK, RAYMOND F., *B.M.*, Professor of Music
EASTHAM, L. JANE, *M.S.*, Instructor in Physical Education
EBERMAN, PAUL, *Ph.D.*, Assistant Professor of Education
EDGERTON, ALANSON H., *Ph.D.*, Professor of Education
ELSOM, JAMES C., *M.D.*, Emeritus Professor of Physical Education and of Physical Therapy
ELWELL, FAYETTE H., *B.A., C.P.A.*, Dean, School of Commerce; Professor of Accounting

EYE, GLENN G., *Ph.D.*, Professor of Education; Director of Student Teaching and Laboratory Schools

FOWLKES, JOHN GUY, *Ph.D.*, Dean of the School of Education; Professor of Education; Director, Summer Session

FRANCIS, ROBERT J., *M.A.*, Associate Professor of Physical Education

FRITZ, CATHERINE L., *M.S.*, Instructor in Physical Education

GAUGER, PAUL W., *B.S.*, Teacher of Speech and English, Wisconsin High School

GENTHER, MRS. SHIRLEY B., *B.F.A.*, Instructor in Physical Education

GLASSOW, RUTH B., *M.A.*, Professor of Physical Education

GOLDGRUBER, JOHN J., *M.S.*, Principal, Wisconsin High School; Instructor in Education

GOOD, LEONARD, *B.F.A.*, Assistant Professor of Art Education

GORDON, EDGAR B., Emeritus Professor of Music

GREGG, RUSSELL T., *Ph.D.*, Professor of Education

GRILLEY, ROBERT L., *M.S.*, Assistant Professor of Art Education

GROSS, KATHERINE F., *M.S.*, Instructor in Physical Education (1950-51, I)

HALVERSON, LOLAS E., *M.S.*, Instructor in Physical Education

HANSEN, ABNER L., *Ph.D.*, Assistant Dean, School of Education; Assistant Professor of Education

HANSON, MARGIE R., *M.S.*, Instructor in Physical Education

HARNACK, ROBERT S., *Ph.M.*, Instructor in Education (part time)

HARRIS, CHESTER W., *Ph.D.*, Associate Professor of Education

HARRIS, THEODORE L., *Ph.D.*, Associate Professor of Education

H'DOUBLER, MARGARET N. (MRS. WAYNE CLAXTON), *M.A.*, Professor of Physical Education

HENDERSON, RUTH A., *M.A.*, Associate Professor of Education; also Wisconsin High School

HERRICK, VIRGIL E., *Ph.D.*, Professor of Education

HICKMAN, JOHN C., *M.S.*, Instructor in Physical Education

HILL, HENRY B., *Ph.D.*, Professor of History; also, Extension Division

HINKSON, MARY, *M.S.*, Instructor in Physical Education

HOARD, MARJORIE J., *M.A.*, Teacher of English, Wisconsin High School

HOPKINS, KENNETH R., *M.S.*, Instructor in Art Education (second semester, part time); Assistant in Social Education; Acting Art Director, Wisconsin Union.

HOSLER, RUSSELL J., *Ph.D.*, Associate Professor of Education and of Commerce; also Wisconsin High School

JAMES, JOHN A., *B.S.*, Professor of Agricultural Education

JENKINS, JOHN W., *B.S.*, Instructor in Art Education (second semester, part time); Chief Curator, State Historical Museum

JENSEN, KAI, *Ph.D.*, Professor of Education

JOACHIM, FREDERICK G., *M.D.*, Instructor in Anatomy

JOHNSON, MRS. KAREN F., *M.A.*, Teacher of History, Wisconsin High School

JOHNSON, LAURA B., *M.A.*, Professor of Education; also Wisconsin High School

JOHNSON, RUTH M., *Ph.M.*, Teacher of History, Wisconsin High School

JOHNSON, VIRGINIA D., *B.S.*, Instructor in Physical Education (part time)

KLOEPPER, LOUISE O., *B.S.*, Assistant Professor of Physical Education

KNOELL, DOROTHY M., *Ph.D.*, Project Associate in Education

KREITLOW, BURTON W., *Ph.D.*, Assistant Professor of Education and of Agricultural Education

KRUG, EDWARD A., *Ed.D.*, Professor of Education

LACY, EDGAR W., *Ph.D.*, Associate Professor of English

LATIMER, ROY ANDERSON, *M.A.*, Instructor in Commerce and in Education (Wisconsin High School)

LAURITZEN, FREDERICK J., *M.F.A.*, Instructor in Art Education

LAXSON, RUTH LOUISE, *B.S.*, Teacher of English (part time), Wisconsin High School

LEGGETT, DOROTHY A., *M.S.*, Instructor in Physical Education

LIBA, MARIE R., *M.S.*, Instructor in Physical Education (1950-51, I)
LIDDLE, CLIFFORD S., *Ph.D.*, Associate Professor of Education; Chairman, Department of Education
LITTLE, JAMES K., *Ph.D.*, Professor of Education; Director, Student Personnel Services; Registrar
LOGAN, FREDERICK J., *M.A.*, Assistant Professor of Art Education
LOW, CAMILLA M., *Ed.D.*, Professor of Education
MANSFIELD, ARTHUR W., *M.S.*, Professor of Physical Education; Baseball Coach
MARTIN, GEORGE A., *B.S.*, Assistant Professor of Physical Education
MARTIN, JOAN, *M.S.*, Instructor in Physical Education
MAXFIELD, SUSAN E., *M.S.*, Assistant Professor of Home Economics (Nursery School)
MAYOR, JOHN R., *Ph.D.*, Associate Professor of Education and of Mathematics; also Wisconsin High School
MEEKER, DEAN J., *M.F.A.*, Assistant Professor of Art Education
METZEN, HAROLD A., *M.A.*, Instructor in Physical Education; also Wisconsin High School
MORTIMER ELIZABETH M., *M.S.*, Instructor in Physical Education
NEMEC, MRS. LOIS G., *Ph.D.*, Associate Professor of Education
NOHR, ROBERT, *B.P.E.*, *B.E.*, Professor of Physical Education; Director, Course in Physical Education for Men
NORFORD, CHARLES A., *M.S.*, Lecturer in Education (1950-51); also, Instructor Bureau of Visual Instruction, Extension Division
OLSON, CHESTER P., *M.S.*, Teacher of Science (part time), Wisconsin High School
PARKIN, MRS. MARJORIE M., *M.S.*, Instructor in Physical Education
PELLA, MILTON O., *Ph.D.*, Assistant Professor of Education; also Teacher of Science, Wisconsin High School
PETERSON, LEROY, *Ph.D.*, Assistant Professor of Education
PETZOLD, ROBERT G., *M.M.*, Teacher of Music, Wisconsin High School
PHILLIPS, BURR W., *M.A.*, Professor of Education and of History; also Wisconsin High School
POST, LOUISE, *M.S.*, Teacher of Home Economics, Wisconsin High School
PURVES, JAY L., *M.S.*, Teacher of Physical Education (Girls), Wisconsin High School
RAGSDALE, CLARENCE E., *Ph.D.*, Professor of Education
RARICK, G. LAWRENCE, *Ph.D.*, Professor of Physical Education
RIFE, S. MARVIN, *M.A.*, Assistant Professor of Education
RINGNESS, THOMAS A., *Ph.M.*, Instructor in Education (part time)
RIPPE, RUSSELL, *M.S.*, Associate Professor of Physical Education
ROESELER, ROBERT O., *Ph.D.*, Professor of German
ROTHNEY, JOHN W. M., *Ed.D.*, Professor of Education
SANGER, CARL E., *M.S.*, Associate Professor of Physical Education; also Extension Division
SCHADE, MAJA L., *M.S.*, Associate Professor of Physical Education
SCHULLER, CHARLES F., *Ph.D.*, Lecturer in Education, 1950-51; also, Assistant Professor, Bureau of Visual Instruction, Extension Division
SESSLER, ALFRED E., *M.S.*, Assistant Professor of Art Education
SHAFER, LYDIA Z., (MRS. A. J.,) *M.A.*, Instructor in Physical Education and Assistant to the Director
SHANNON, THEODORE J., *M.A.*, Lecturer in the Department of Education (1950-51); also, Instructor, Extension Division
SHOEMAKER, FRANCIS, *Ph.D.*, Associate Professor of Education; also Wisconsin High School
SOUTHWORTH, WARREN H., *Dr.P.H.*, Associate Professor of Education
SPRINGHORN, RITA K., *Ph.B.*, Teacher of English, Wisconsin High School
STAHL, HOMER C., *B.S.*, Teacher of Industrial and Fine Arts, Wisconsin High School
STEBBINS, ROLAND S., *R.M.*, *A.A.*, Emeritus Professor of Education

STEUSSY, MRS. GENE W., *M.S.*, Instructor in Physical Education
TAYLOR, HAROLD A., *M.F.A.*, Instructor in Art Education
THOMPSON, CAROLINE G., *B.A.*, Assistant Professor of Physical Medicine; Adviser to the Students in the Course in Occupational Therapy
TORGERSON, THEODORE L., *Ph.D.*, Professor of Education
TRILLING, BLANCHE M., *B.A.*, Emeritus Professor of Physical Education
TRUMP, PAUL L., *Ph.D.*, Associate Professor of Education; Associate Director of Student Personnel Services; Dean of Men
VIERTHALER, ARTHUR A., *M.S.*, Assistant Professor of Art Education
WALLER, CARL H., *Ph.D.*, Lecturer in Education (part time) (1950-51, I)
WEBER, LYNDA M., *M.A.*, Emeritus Assistant Professor of Education
WEIGHTMAN, ESTHER, *M.A.*, Instructor in Education; also Wisconsin High School
WESSELS, DEAN H., *B.S.*, Teacher of Science, Wisconsin High School
WILDE, JOHN H., *M.S.*, Assistant Professor of Art Education
WILLING, MATTHEW H., *Ph.D.*, Professor of Education
WILSON, DELLA F., *M.A.*, Professor of Art Education
WINSOR, GEORGE B., *M.Ph.*, Instructor in Education and in Geography
WITTICH, WALTER A., *Ph.D.*, Director, Bureau of Visual Instruction (Extension Division); Associate Professor of Education
WOLF, JACOB GROVE, *Ph.D.*, Assistant Professor of Physical Education
WOODFIN, GENE R., *M.S.*, Instructor in Physical Education
ZAWACKI, EDMUND I., *Ph.D.*, Associate Professor of Slavic Languages
ZINGALE, SANTOS, *M.S.*, Assistant Professor of Art Education
ZUILL, FRANCES, *M.A.*, Professor of Home Economics; Director of Home Economics

PRINCIPALS AND TEACHERS IN OFF-CAMPUS SCHOOLS SUPERVISING PRACTICE TEACHERS, 1948-50

PUBLIC SCHOOLS, MADISON, WISCONSIN

ALEXON, ELVIRA, Art, Marquette School
ALLEN, H. RALPH, Principal, Randall School
ARGRAVES, WALTER H., Principal, Longfellow School
BAINBRIDGE, EMERY C., Principal, Emerson School
BAKER, (MRS.) MARGUERITE, Commercial, Madison Vocational and Adult Education School
BARNES, LEO, Art, Longfellow School
BAUER, LUNA, Art, Marquette School
BAUMANN, EVELYN, Art, West Junior-Senior High School
BERGER, WALTER J., Principal, Sherman School
BREDESON, MAURINE, Principal, Lapham School
BURGESS, GORDON, Science, West Junior-Senior High School
BUTLER, RICHARD, Science, West Junior-Senior High School
CARPENTER, FREDERICK L., Art, 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
DANIELS, (MRS.) PHYLLIS, ART, Central 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
DOLAN, CECILIA, Fourth Grade, Marquette School
DOPP, EDITH R., Commercial, Madison Vocational and Adult Education School
ENGELKE, WALTER W., Principal, Nakoma School
ENGLE, MARTHA, Science, East Junior-Senior High School
FITZGIBBON, GERALD, Physical Education, Emerson School

FOSTER, MARVIN, Social Studies, Central Junior-Senior High School
FRATER, A. KERMIT, Principal, Lowell School
GEBHARDT, ANNA, English, East Junior-Senior High School
GEORGE, MABLE, Commercial, East Junior-Senior High School
GODFREY, PATRICIA, Home Economics, West Junior-Senior High 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
HANSON, CECILIA, Physical Education, East Junior-Senior High School
HARRIS, ROBERT, Physical Education, West Junior-Senior High School
HINTZ, (MRS.) CAROLINE, Art, Longfellow School
HUXTABLE, MARION G., Music, West Junior-Senior High 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
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
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
MANZ, (MRS.) JOYCE, Music, Franklin School
MARKS, (MRS.) MARY, English, East Junior-Senior High School
MARSH, WILLIAM, Social Studies, Central Junior-Senior High School
MASON, (MRS.) DORIS, Art, Randall 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
NORMINGTON, (MRS.) NORMA, Social Studies, East Junior-Senior High School
NORTH, ELSIE, English, East Junior-Senior High School
NORTON, VIOLA A., Commercial, West Junior-Senior High School
OTTERSON, JOSEPH, Social Studies, East Junior-Senior High School
PATTERSON, (MRS.) IDA, Home Economics, West Junior-Senior High School
PETERSON, HARVEY, Science, East Junior-Senior 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
RENNEBOHM, (MRS.) WINIFRED, Home Economics, West Junior-Senior High 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
SHARPE, JULIA, Social Studies, East Junior-Senior High School
SHELTON, AGATHA, English, West Junior-Senior High School
SIGWALT, JEAN, Music, Lowell School
SIMON, HELEN, Principal, Lincoln School
SIMONSON, LILLIAN, Principal, Marquette School
SPELMAN, NORINE, Music, Emerson School
SPRECHER, ROLAND O., Science, Central Junior-Senior High School
STANKE, ERNEST J., Music, West Junior-Senior High School
STEENSLAND, DOUGLAS, Music, Central Junior-Senior High School
STEVENS, (MRS.) JANE, Physical Education, Randall School
STILLMAN, RUTH, Science, East Junior-Senior High School
TARRELL, ANNE, Commercial, Madison Vocational and Adult Education School
THOMPSON, HARRY C., Physical Education, Randall School
TIFFANY, (MRS.) ESTHER, Music, Lapham School
TOWNSEND, JOAN, Art, Lapham School
WAEHLER, L. A., Principal, Central Junior-Senior High School
WILLIAMS, LEWIS, Social Studies, East Junior-Senior High School
WINGER, HOMER, Socials 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. Patricks School
SR. DOLORETTA, Principal, St. Raphaels 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
KRUSE, MARIE C., Art, Silver Springs School
MCDONALD, GENEVA, Principal, Shorewood Hills School
NERDRUM, (MRS.) ELEANOR, Music, Lakewood School
REPPEN, (MRS.) MARY, Art, Lakewood School
SCHWARTZ, MELVIN, Principal, Nichols School
STRAWN, (MRS.) LYNN, Art, Shorewood Hills School
SUMMERS, CLIFTON, Principal, Mendota School

SCHOOL OF EDUCATION

JOHN GUY FOWLKES, DEAN
ABNER L. HANSEN, ASSISTANT 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 academic subjects in high schools, junior high school, and, to a limited degree, in elementary schools. It provides preparation for directors and teachers of recreation, business education, and for teachers of such special subjects as art, agriculture, home economics, physical education, child development, and conservation; also, high-school librarians, principals, superintendents, and supervisors.

The preparation noted above 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. 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, colleges, and universities, as well as supervisors and administrators.

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.

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

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.

PSYCHO-EDUCATIONAL CLINIC

The Psycho-Educational Clinic is a service and teaching clinic in the area of child study. It serves the schools of the state: (a) through a campus clinic where children with educational problems, referred to it from homes or schools throughout the state, are studied and appropriate therapy prescribed; (b) by providing an in-service training for teachers in cooperating schools in a child-study program; (c) by cooperating with existing agencies and clinics on the campus and in the state in the several aspects of child study; (d) by providing clinical training in child study for campus students in education and psychology; (e) by holding exhibits and demonstrations for campus students of the techniques, tests and apparatus used by the clinic.

The clinic is located in the Education-Engineering Building (second floor). It provides six rooms designed for individual and group testing or counseling and a sound-proof room for audiometric testing. Some of the rooms are equipped with windows which permit only one-way vision in order to facilitate individual and group observation. A tape-recorder is available for transcription. A clinical psychologist, a reading specialist, and a psychometrist, assisted by student internes, provide diagnostic services to parents, teachers, and other clinics and agencies seeking the services of this clinic.

Inquiries should be addressed to Professor T. L. Torgerson, Chairman, Psycho-Educational Clinic.

THE READING CLINIC

The reading clinic deals with the problems of retarded readers from grades 3 to 12. The clinic provides remediation for the children and laboratory-training for teachers in diagnostic and remedial procedures in reading. Student teachers registered in Education 134 (Clinical Practice in Reading) will teach in the clinic two hours each day. Students enrolled in Education 136 (Remedial Reading) will observe in the clinic. The clinic is in session for six weeks each summer, from 9 to 11 a.m., five days each week, and is open to visitors during certain designated periods. Additional information may be obtained from Professor T. L. Torgerson, Department of Education, University of Wisconsin, Madison 6, Wisconsin.

LEARNING LABORATORY

Provision is made for laboratory study of learning problems by advanced graduate students and for laboratory demonstrations as a part of several courses in the area of Human Development, Behavior, and Learning. Students have an opportunity to become acquainted with laboratory techniques and apparatus and to do individual research in learning.

STATISTICAL LABORATORY

The statistical laboratory offers facilities and informal instruction for students who are summarizing or analyzing educational data, such as observations of children in various situations, measured results of different teaching procedures, surveys of practices, and/or opinions, and the like. The major types of automatic calculating machines are available, and students may be instructed in their operation. Informal advice and instruction regarding ways of summarizing or analyzing data may also be secured.

Inquiries should be addressed to Professor C. W. Harris.

INSTRUCTIONAL MATERIALS CENTER

The instructional-materials center, located on the mezzanine floor of the library of the School of Education, and the annex, located in Room 222 of the Education

Building, contain 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. The annex houses the free-and-inexpensive materials and the various audio and visual aids which can enrich the curriculum. This center is designed as a service-agency for all courses in the School of Education.

EDUCATIONAL AND OCCUPATIONAL INFORMATION CENTER

The educational and occupational information-center, located in the stacks of the library of the School of Education (in the rear of the office of the librarian) contains books and pamphlets on the various occupations and their outlook, brochures of business and industry, state and federal civil-service examination announcements, information on scholarships and fellowships, directories of schools, and some catalogs of various universities and colleges. A counselor is there, at scheduled hours, to assist students, or students may browse during library hours.

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 edution 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 upon the basis of an outstanding scholastic record, upon the general capacities of the candidate to preform 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.

SCHEDERS

Scheders is a club for students in the School of Education which 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 for the advancement of professional growth and development of prospective teachers. Scheders has a faculty adviser and co-ordinates its program with other activities of the School of Education.

The bi-weekly meetings usually have a speaker, 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, its membership having risen from a half-dozen to almost one hundred students. It has succeeded in providing an atmosphere of good fellowship and professional growth for prospective teachers on the university campus.

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 counselling and orientation of foreign students.

ADMISSION AND REGISTRATION

1. Students electing a major in Art Education, in Applied Art, or in Physical Education 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 and elect a teaching major in an academic field, are required to comply with the same general regulations outlined in the College of Letters and Science section (see pp. 32–50).

The pre-education programs of students who enter the School of Education, with academic majors, 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 of the later required professional courses—Education 73, 74, and 75. Such subject-fields are Physiology or Zoology 1, Psychology, and a selection from the introductory courses in the several Social Studies.

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* as given below. It is required that students registered in other colleges of the University, and who plan to prepare for the University Teachers' Certificate, meet one of the options before registering for the professional courses in education.

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, 6, 7, 105, and 110) 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.

Exceptions: 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.

3. 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 and give evidence of proficiency in speech (see *Option A* or *Option B*, above) in order to receive the University Teachers' Certificate.

4. 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.

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 (3) above.

REQUIREMENTS FOR GRADUATION

Graduation from the School of Education and recommendation for the University Teachers' Certificate in academic subjects are based upon the following conditions and requirements:

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.

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 twenty credits, and in addition, credit for the departmental teachers' course. (See Academic Teaching Majors and Minors, pages 243–262.)

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 fifteen credits, exclusive of the departmental teachers' course. (See Academic Teaching Majors and Minors, pages 243–262.)

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 page 241).

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):

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

(*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.)

For information concerning the graduation requirements in the four-year courses in Art Education, Applied Art, Occupational Therapy, and Physical Education, see pages 262–275.

The requirements for graduation in Agriculture and Education and Home Economics and Education are given on pages 275–277.

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 resourses 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.

REGULATIONS OF THE WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION FOR THE CERTIFICATION OF TEACHERS IN WISCONSIN

High School. Graduation from an approved four year course in an accredited college, with the following minimum requirements:

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.

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." (See p. 39.)

MAJOR IN AMERICAN INSTITUTIONS

This major in the Division of Social Studies is designed for (a) students in the College of Letters and Science desiring to study American culture, (b) students in the School of Education,* (c) students planning to enter the Law School. It is open only to students whose major interest is essentially interdepartmental in scope.

A Divisional Committee consisting of Professors Hart (Chairman), Brandeis, Harrington, Loomer, McGary, Olmstead, and Riemer administers the major. The chairman will assign one of the members of this committee as adviser to each student electing this major.

* A student who plans to elect a major in American Institutions in the School of Education should, as early as possible, carefully plan his college work so as to complete the necessary and desirable major and minor combinations required for the University Teachers' Certificate, and also to enable him to compete successfully for positions in social studies in secondary schools. Additional information may be secured from Professor Burr W. Phillips.

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. High-school mathematical prepration is required.

I. REQUIREMENTS FOR THE MAJOR

The 40 credits required by the major include:

a. 19 credits of the following foundation courses:

History 4a-b—History of the United States, 1776-1951 (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). 6 cr.

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

Economics 1a—General economics. I, II. (with the consent of the adviser, the student may substitute: Integrated Liberal Studies 23—Modern industrial society. I). 4 cr.

Geography 103—Geography of Anglo-America. I, II. 3 cr.

Sociology 185—Contemporary American social organization, sem. 3 cr.

b. 18 credits elected from the list of American Institutions courses (see III below), not more than 9 of which may be in one department.

c. 3 credits in American Institutions 100—Evaluation of America institutions. The student has a responsibility in this final course to integrate his previous studies relating to a theme of interest within the general field of American Institutions. As prerequisite for the course, he must have taken at least 12 hours of the 18 hours of courses described in b. above in studies approved by the adviser as relevant to this theme. Themes with representative courses meeting this requirement are listed in II below.

At least half of the 40 hours of work required for the major shall be in upper division courses.

Students will consult with advisers, and shall, not later than the beginning of the junior year, submit a program of study for the approval of an adviser representing the Committee. The program will indicate the student's theme of interest, the courses related to it, and other American Institutions courses as required in b. above. It will include such work as in the opinion of the adviser best fits the preparation, interests, and needs of the student.

II. THEMES OF INTEREST

A theme not listed may be approved by the Committee provided it is essentially interdepartmental in scope.

Courses are listed as representative to indicate the scope and type of work which will be approved by the adviser to meet the 12-hour prerequisite in paragraph I, c. Approval of courses for each student will, however, be made from the list of courses in III below.

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.

   Representative course offerings:

   Geography 129—Urban geography; Soc. 71—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.

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 and complex 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; Pol Sci. 152—Government and natural resources; Philosophy 144—Philosophy of social planning; History 111—History of the West.

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. Security and Opportunity in American Life. With the growth of large-scale 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 Economics 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 124—Recent history of the U. S., 1890-1951.

7. 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 may elect this theme 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 *American and World Problems* as a theme may, with the approval of their adviser, satisfy part of requirement b. above by courses on foreign areas or international affairs outside the list of American Institutions courses.

8. 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 145—American labor history; 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.

In this theme, students may, with the approval of the adviser, satisfy part of requirement b. above by courses on foreign governments or cultures outside the list of American Institutions courses.

9. 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.

10. A Period Illustrative of American Development. An intensive study of a historical period, approached via several of the social studies, lends itself particularly well to an appreciation of the interrelation of institutions, and 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.

III. COURSES WHICH MAY BE CREDITED TOWARD THE MAJOR

Art History and Criticism

131 American architecture
135 Current American architecture
159 Development of American art

Contemporary Trends

103 Contemporary trends

Economics

1b General economics
105 Money and banking
110 Investment principles
117 Outline of land economics
120 Social security
122 Labor problems
123 Labor legislation
124a Public finance—Taxation
124b Public finance—Taxes, debts, expenditures
126 International trade on agricultural products
127 Co-operation
134 Economic history of United States
135 Railway transporation
136 Transportation problems
137 Corporation finance
139 Principles of insurance

142 Public utilities
143 Structure of the American economy
144 Capitalism and socialism
145 American labor history
146 Government and business
148 Economics of collective bargaining
152 Farmer movements
158 Large-scale enterprise
162 Agricultural policies
166 Economics of population
172 Economics of industrial conflict
177 Rural land-use planning and zoning
179 Urban land economics

ENGLISH

112 Hawthorne, Melville, Mark Twain
114 Poe, Emerson, Whitman
140 Spokesmen of American ideals
150 American fiction
166 American literary criticism
169 Major American poets
170 Contemporary American literature, 1914 to the present
171 Major developments in contemporary American poetry
173 The rise of a national literature in America 1775-1836
174 Major American prose writers
190 American literature 1880-1914
191 Literature of Colonial America 1607-1775

GEOGRAPHY

104 Geography of Wisconsin
125 Political geography: World survey (emphasis on Europe and North America)
126 Geography of transportation
127 Geography of manufacturing
128 Conservation of natural resources
129 Urban geography
153 The Great Lakes-to-Atlantic Region of North America

HISTORY

109 History of Wisconsin
111 History of the West, 1763-1893
112 Representative Americans
113 History of American thought and culture
114 Sectionalism and the Civil War
115 The Age of the American Revolution
116 History of Colonial Society
117a Origin and growth of the Constitution
117b The Constitution in American development
118 Reconstruction and the New Nation
120 American foreign relations
121 Social development of the American people
122a American economic life: The history of American agriculture
122b American economic life: The growth of industrial and finance capitalism
124 Recent history of the U. S., 1890-1951
137 Origins and history of World War II

HISTORY OF SCIENCE

170 Modern science

JOURNALISM

111 The newspaper and society
114 Communication and public opinion

PHILOSOPHY

54 Social problems of contemporary art
120 Philosophy of science
139 American philosophers
144 Philosophy of social planning
147 Philosophy of religion
150 A philosophy of democracy
158 Types of humanism
162 Idealism and pragmatism

POLITICAL SCIENCE

13 Municipal government
110 Government and the problems of democracy
112a-b Constitutional law
115 Law in society
120 Administrative law
121a-b Introduction to international relations
122 Political parties and public opinion
123 Administration of United States foreign policy
126 Legislation
131 International relations of Latin America
134 Rural local government
135 Municipal administration
139 State government
143 Introduction to public administration
145 Government and war
148 Proseminar in political parties and public opinion
152 Government and natural resources
159 Problems in American foreign policy
165 History of American political thought
166 Contemporary American political thought
170 The Civil Service
171 Civil liberties in the United States
172 Politics of pressure groups

PSYCHOLOGY

105 Psychology of human adjustment

SOCIAL WORK

145 Introduction to the field of social work

SOCIOLOGY AND ANTHROPOLOGY

25 Rural life
71 The modern city
101 Human evolution and racial history
114 The Indians of North America
125 Principles of rural sociology
126 Rural standards of living
127 Rural community organization
129 The family in rural society

130 Rural population trends and public policies
131 Rural community and welfare agencies
133 Social stratification
134 Democratic and totalitarian societies
136 Public opinion
139 Social psychology
144 Capitalism and socialism
145 The individual and his culture
150 Collective behavior
154 Treatment and prevention of social disorganization
156 Juvenile delinquency
159 Sociology of the family
161 Criminology
163 Modern population problems
164 Problems of American minority groups
169 Processes of social disorganization
171 Planning and social organization
173 Social institutions
174 Social control
193 Industrial sociology
198 Industry and community
199 Development of American sociology

SPEECH

116 Radio and society
130 The American Theatre: Colonial period to Civil War
131 The American Theatre: Civil War to present day
156 History of American public address

COURSES OUTSIDE THE COLLEGE OF LETTERS AND SCIENCE

Upon checking with the Office of the Dean their compliance with Section 16a, b, c, d, of the General Regulations, students in the major in American Institutions who have the proper prerequisites will be given permission under the Twenty-Credit Rule to take the courses listed below. Such permission is not needed for the starred courses.

SCHOOL OF COMMERCE

*43 Business Ethics
*178 Housing Problems

SCHOOL OF EDUCATION

104 Social History of Education
115 Social Issues and Education

COLLEGE OF ENGINEERING: CIVIL ENGINEERING

141 City Planning
142 Advanced City Planning

LAW SCHOOL

Law in Society
History of Anglo-American Law

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 242.) 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.

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 71: The teaching of biology, 2 or 5 credits.

CHEMISTRY

JOSEPH HOWARD MATHEWS, *Ph.D.*, Professor of Chemistry, *Chairman*

MAJOR. 30-32 credits including 8-10 credits in general chemistry and qualitative analysis (1), 8 credits in quantitative analysis (11), 4 credits in organic chemistry-lectures (120), 3 credits in organic chemistry-laboratory; (121), 4 credits in physical chemistry-lectures (130), and 3 credits in physical chemistry-laboratory (131). A year of calculus is prerequisite to the course in physical chemistry. (Please note also statutory requirements for certification described on page 242.) (To be accepted as a Major in Chemistry, a student must have a grade-point average of 1.5 or better in courses in chemistry taken in the first two years.)

MINOR. A minimum of 15 credits.

EDUCATION 72: The teaching of chemistry, 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 20 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 Profesor John W. Thompson, Jr., Room 209, Biology Building.

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 1 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.

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.
   Agriculturing 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 243.)

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 general information concerning the equipment and the courses offered in education, see pages 287–295. For detailed information relative to the special requirements of courses in education for the University Teachers' Certificate, see pages 240–242.

ENGLISH

RICARDO BECKWITH QUINTANA, *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 33 credits, including (a) Freshman English; (b) two semesters to be chosen from 30, 32, 33, 40 (30 and 33 may not be combined; of the 33 credits required for the English Major, not more than *six* may be in sophomore literature); (c) one, and only one of the following: 37, 136, 137; (d) two of the following, one of which must be either Chaucer or Milton: 57, 129, 131, 156, 157, 160, 161, 162; (e) at least one of the following: 112, 114, 132, 133, 134, 135, 138, 139b, 150, 169, 174; (f) English 128; (g) 123, or 124; outside the department, Education 76 (5 cr.).

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 some knowledge of the literature and civilization of France. The following specific training must be offered:

1. 28 credits in advance of French 1b, including the following:
   (a) 2 credits of practical phonetics (French 190);
   (b) 4 credits in conversation and composition courses (French 25, 124, 127) with grade of *B*; (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 150 (French civilization); 4–6 of the above credits must be taken in the senior year. (In lieu of this senior requirement "upper-group" students may elect to write a senior thesis.)
2. A certificate of oral proficiency in French. (This certificate is awarded on the basis of an oral examination given 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 a departmental representative. A minimum of 18 credits in advance of French 1b is required. The following specific training must be offered:

1. (a) 2 credits of phonetics (French 190);
   (b) 2 credits in French composition and conversation (French 15, 25, 124, 127) with a grade of *B*, 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 21 or 3 credits in a more advanced course in French literature or civilization.
2. 2 credits in Education 81 unless majoring in 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. (The attention of graduate assistants is called to Education 186, page 293.)

GENERAL SCIENCE

(See Natural Science, page 259.)

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 Professor Olmstead 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 on page 242, and departmental statement described in the College of Letters and Science section.)

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. 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 Roeseler, 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 demonstrate the necessary command of the spoken language at the German House. 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 83. The teaching of German, 2 or 5 cr.

HISPANIC STUDIES (DIVISIONAL MAJOR)

LLOYD AUGUST KASTEN, *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 1–2 (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:

	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 credits 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 College of Letters and Science in this catalog.

HISTORY

CHESTER VERNE EASUM, *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.

* Those who elect History 3 may not elect History 2 and vice versa.

Outside the department, Education 84 (5 cr.) and Economics 1a are required. Political Science 25, Sociology 110, and Geography 1–2 are recommended. (Please note also statutory requirements for certification described on page 242.)

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 293.)

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, pp. 240–242, 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, six 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, 5, and 6), 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 College of Letters and Science). Evidence of proficiency in speech must be shown by meeting the requirements of either *Option A* or *Option B* (see page 241, paragraphy 3).

MINOR. A minimum of 15 credits, including at least Journalism 110, Journalism 191, and one semester each of Journalism 2 and Journalism 3.

EDUCATION 76, The teaching of English, 5 credits.

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* Those who elect History 3 may not elect History 2 and vice versa.

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 SERVICE

The Library School offers a minor of eleven semester hours for students in the School of Education. The purpose of this minor is to prepare students for teacher-librarian positions and to meet the certification requirements for teacher-librarians in the state of Wisconsin. The required courses are: Library Science 171, 172, 173, 174, and 191. (This minor meets the pre-professional training requirement for admission to the Library School's graduate program.)

MATHEMATICS

RUDOLPH ERNEST LANGER, *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, 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 all work 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. A minimum of 15 credits, including a year's course in the calculus and excluding courses 7 and 135, constitutes a minor in mathematics. It is understood that at least six of these credits, including one course at the 100-level, shall be earned in residence at the University of Wisconsin with a grade not lower than *B*. In addition, Education 93 is required.

EDUCATION 93, The teaching of mathematics, 2 or 5 cr.

MUSIC

LELAND A. COON, *M.A.*, Professor of Music, *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*, paragraph 3, p. 241, 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 76 (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 or 5, 4 credits.

For *curricula in school music* (vocal and instrumental), see pp. 278–279.

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 242.)

(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 completion of this major.)

GENERAL SCIENCE MINOR for students whose major is a field other than Natural Science: 15 credits in science, 5 or which must be in physics; 5 in chemistry; and 5 in either botany or zoology, in addition to Education 97. (Please note also statutory requirements for certification, described on page 242.)

EDUCATION 97, The teaching of science, 2–5 credits.

(For additional information consult Professor Ira C. Davis, Wisconsin High School.)

PHYSICAL EDUCATION

(See pages 269–275.)

PHYSICS

RAGNAR ROLLEFSON, *Ph.D.*, Professor of Physics, *Chairman*

MAJOR. A minimum of 28 credits in physics which shall include the following courses: 1 or 31 or 51–52, 102, 103, 104a. Other credits are to be selected from courses 7, 10, 104b, 105, 106, 110, 113, 115, 116, 118, 119, 124, 126. 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 general science, 2–5 credits.

PHYSIOLOGY

J. A. E. EYSTER, *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

JAMES LUCIAN MCCAMY, *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 293.)

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

THOMAS CARSON MCCORMICK, *Ph.D.*, Professor of Sociology, *Chairman*

MAJOR. Thirty credits in sociology and anthropology, to include Sociology 1 and 2 (6 cr.), 10 (2 cr.), 32 or 132 (3 cr.), 139 (3 cr.), and Anthropology 3 (3 cr.); and 20 credits in related social studies including Geography 128 (3 cr.) and Agricultural Eco-

nomics 127 (3 cr.). Education 84 (5 cr.) is required in addition. (Note also statutory requirements for certification described on page 242.)

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

LLOYD AUGUST KASTEN, *Ph.D.*, Professor of Spanish, *Chairman*

MAJOR. Twenty-eight credits in advance of Spanish 1b, of which at least 2 credits must be in composition courses under 100, 6 credits in Spanish 21, and 9 credits in courses of the 100-group. The required courses are: Spanish 190, Phonetics, (2 cr.) with a grade of *B*; and Spanish 112 or 124 (2 cr.) with a grade of *B*, and Education 81 (5 cr.) which does not give credit in Spanish. Well qualified students may apply to the chairman of the department for permission to write a thesis.

MINOR. Eighteen credits in advance of Spanish 1b. The required courses are: 2 credits in conversation and composition and 3 credits in literature, and also Education 81, if not majoring in another foreign language. Minor students are advised (but not required) 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.

SPEECH

ANDREW THOMAS WEAVER, *Ph.D.*, Professor of Speech, *Chairman*

MAJOR. A minimum of 30 credits, including courses 1, 2, 3, 6, 16 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, five 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.

EDUCATION 198, The teaching of speech in high school, 2 or 5 credits.

SPEECH CORRECTION MAJOR. A minimum of 30 credits, including courses 1, 2, 25, 121, 125, 126, 141 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); one of the following courses: Education 119, 120 (Child development), Sociology 197 (Personality and social adjustment), Home Economics 109 (Humanics); and 12 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 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 or 126, 185. Also Education 198.

EDUCATION 198, The teaching of speech in high school, 2 or 5 credits.

ZOOLOGY

HAROLD RECLUS WOLFE, *Ph.D.*, Professor of Zoology, *Chairman*

MAJOR. A minimum of 30 credits is required including not more than one introductory course (Zool. 1, 2, 17 or ILS 33–34). Zoology majors in the School of Education are required to take Botany 1 or 17 as part of the major. 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.

MINOR. A minimum of 15 credits. Zoology 1 and 2, which together constitute a year's work, are especially recommended for those taking a minor in this department.

COURSES IN ART EDUCATION AND APPLIED ART

LEADING TO THE DEGREES OF BACHELOR OF SCIENCE (ART EDUCATION) AND BACHELOR OF SCIENCE (APPLIED ART)

HELEN W. ANNEN, *M.S.*, Professor of Art Education, *Chairman*

The School of Education offers two four-year undergraduate curricula, leading to the degree, 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 who have completed 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 Arts. 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, 62, 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 Art Education Building, conveniently situated on the upper campus, with studios overlooking Lake Mendota. The building contains one large exhibition and lecture room, 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 equip 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 of each department as outlined in this bulletin, pp. 243–262 inclusive. Information on the requirements for 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 European or American history or in 100-group courses.

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 (2 cr.) or 56 (3 cr.); Art Education 54, 3 cr.; Art Education 55, 6 cr.; Art Education 60, 2 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 241.)

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.

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 (2 cr.) or 56 (3 cr.); Art Education 54, 3 cr.; Art Education 55, 6 cr.; Art Education 60, 2 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 241.)

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 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, 53–68 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.

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. (53 and 54 are 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.; Art Education 53, 4 cr.; Art Education 52 (2 cr.) or 56 (3 cr.); 54, 3 cr.; 55, 6 cr.; 60, 2 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 European or American history, or in 100-group courses.

SCIENCE OR MATHEMATICS: Mathematics, 8 cr. or completion of Mathematics 1b or 3b; Science, 10 cr. in regular year or semester courses, or 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. (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 (2 cr.) or 56 (3 cr.); 55, 6 cr.; 60, 2 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	2-3
Art Education 60a or 64a	2-3	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	2-3	Art Education 60a or 64a	2-3
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

First Semester	Credits	Second Semester	Credits
Education 73	3	Education 74	3
Art Education 61a	3	Art Education 61b	3
Education elective	2		

Sequence B—Art Education

First Semester	Credits	Second Semester	Credits
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)

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
Art Education 54—Sculpture
Art Education 56—Oil Painting
Art Education 60—Layout and Letter Structure
Art Education 63—Commercial art
Art Education 64—Composition
Art Education 70—Art Metal
Art Education 71—Ceramics
Art Education 123—Industrial art
Art Education 132—Portraiture & figure painting
Art Education 140—Stage design
Art Education 150—Advanced art problems
Art Education 152—Advanced watercolor
Art Education 154—Advanced sculpture
Art Education 155—Advanced life drawing
Art Education 156—Advanced painting
Art Education 160—Graphic arts
Art Education 162—Design research
Art Education 165—Photography
Art Education 166—Serigraphy
Art Education 168—Advanced ceramics
Art Education 170—Advanced art metal
Art Education 179—Museum techniques

NON-DEPARTMENTAL COURSES

Students in either curricula 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)

Home Econ. 8—House furnishing
Home Econ. 18—Interior design
Home Econ. 20—Costume design and selection
Home Econ. 28—Home architecture
Home Econ. 94—Decorative textiles
Home Econ. 95—Weaving
Home Econ. 114—Technique of interior design
Home Econ. 115—Traditional interior design
Home Econ. 116—Traditional interior design
Home Econ. 121—Advanced costume design
Home Econ. 194—Advanced studies in related art

Agricultural Engineering

Agr. Engr. 18—Architectural drawing

Horticulture (Landscape Design)

Hort. 6—Landscape design
Hort. 12—Home grounds design
Hort. 101—Adv. home grounds design
Hort. 102—Public grounds

Physical Education

Phys. Ed. 146—Theory and philosophy of dance

Drawing

Drawing 1 or 10 and 2—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.

Because of limitations of clinical and laboratory facilities in the Medical School, the number of students permitted to continue in the Course in Occupational Therapy beyond the sophomore year is thirty (30), provided that each of these students has completed Occupational Therapy 1 with a grade of *C* or better, and has a general grade-point average of not less than 1.3. These changes in regulations became effective for students admitted to the Course in Occupational Therapy after May 15, 1946.

The requirements for this course are as follows:

ENGLISH: 6 credits in freshman composition.

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: 14 credits, to be earned in college, not more than 8 of which may be in a first-year college course; or intermediate knowledge of one foreign language as disclosed by an 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—Freshman English	3	English 1b—Freshman English	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—Preclinical training	1	Physical Education 48—Recreational therapy	1
Phys. Ed. 15a—First aid	1	Physical Education	0
Physical Education	0		
	15-17		14-16

SOPHOMORE YEAR

Foreign language 10a	3	Foreign language 10b	3
Art Education 54—Elementary modeling	3	Art Ed. 108—Painting for occupational therapy	3
Speech 1	2	Physiology 3	4
Sociology 1	3	Anatomy 37	6
Electives	6	Physical Education	0
Physical Education	0		
	17		16

JUNIOR YEAR

Art Ed. 175—Crafts in occupational therapy	3	Art Ed. 71—Pottery	3
Art Ed. 70—Art metal	3	Art Ed. 175—Crafts in occupational therapy	3
Psychology 1—Introduction	4	Phys. Ed. 56—Kinesiology	3
O. T. 2—Medical lectures	1	Home Econ. 94—Decorative textiles	2
Home Econ. 85—Weaving	3	Psychology 105—Human adjustments	3
Electives	2	Electives	2
	16		16

SENIOR YEAR

Psychology 165—Behavior Pathology	3	O. T. 5—Theory of O. T.	4
O. T. 3—Surgical lectures	2	O. T. 6—Pre-clinical practice	1
O. T. 4—Practical application of crafts of O. T.	3	Home Econ. 119—Child development	2
Home Econ. 15	2	O. T. 7—Neurology, psychiatry	2
O. T. 121—Occupational therapy in the treatment of physical injuries	2	Electives	6
O. T. 7—Communicable disease	1		
Electives	3		
	16		15

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—Elementary theory. Yr; 2 cr.	4
Music 20—Appreciation and history of music. Yr; 2 cr.	4
Music 75—Instrumental techniques. Yr; 2 cr.	4
Music 76—Conducting. I; 2 cr.	2
Pianoforte—Three semesters, to be assigned by the School of Music Assignment Committee, on the basis of student's proficiency	6
Total	20

Organizations: Four semesters, principally University Chorus or A Cappella Choir...0

In addition, it is suggested for the student's general benefit that he or she audit the following:

	Credits
Music 9—Quartets. Yr.	0
Music 12—Elementary theory: harmony. Yr.	0
Music 38—Vocal problems and interpretation of song literature	0
Music 115—Music in society	0

During the student's fifth year of professional training, part of the required nine months of hospital experience will be arranged in an occupational therapy department offering supervised practice in the use of music as a therapeutic occupation.

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	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 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
Education 75—The nature and direction of learning	5
Electives	4-6
Phys. Ed. 12—Techniques and materials in physical education	3
	15-17

Phys. Ed. 168—Organization and administration of physical education	2
Education 70—The teaching of physical education	5
Electives	5-7
Phys. Ed. 13—Techniques and materials in physical education	3
	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	8

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	20

COURSE IN PHYSICAL EDUCATION FOR WOMEN

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

Marie L. Carns, *M.D., Director,* Professor of Physical Education

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 the average college program during her first semester.

A student transferring from another institution may find that it requires extra time to complete the requirements.

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.

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 the basic sciences, applied sciences, educational psychology, and principles of education and teaching.

It is possible for the student to 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.	
HISTORY	4–6
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
SOCIAL STUDIES	5–6
ART AND MUSIC	4–6
One course each or equivalent	
Requirement will be waived upon presentation of a suitable substitute	
	42–58
EDUCATION, to include:	21
Courses required for the University Teachers' Certificate, to include one week of field work in teaching in addition to required practice 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 technique of physical education with a minimum of 6 credits in dance	21–23
A course in movement and its rhythmic structure	2
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
	31–34
SPEECH CERTIFICATION. Option A or Option B (see page 17)	0–2
ELECTIVES	31–10

GENERAL MAJOR*

Suggested study lists planned to meet all course prerequisites as well as specific requirements.

* It is suggested that a student considering majoring 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.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a	3	English 1b	3
History	3	History	3
Zoology 1	5	Physics 61	5
Phys. Ed. 30	2	Phys. Ed. 30	2
Electives	2-3	Electives	2-3
Phys. Ed. Required	0	Phys. Ed. Required	0
	15-16		15-16

SOPHOMORE YEAR

Anatomy 36	4	Psychology 1	4
Phys. Ed. 40a	1	Phys. Ed. 56	3
Phys. Ed. 31	2	Phys. Ed. 41	1
Electives	8-9	Phys. Ed. 31	2
Phys. Ed. Required	0	Electives	5-6
		Phys. Ed. Required	0
	15-16		15-16

JUNIOR YEAR

Physiology 1	4	Education 75	4
Education 73	3	Education 169	3
Education 129	2	Phys. Ed. 103	3
Phys. Ed. 60	2-3	Phys. Ed. 176	3
Phys. Ed. 32	3	Phys. Ed. 40b	1
Electives	2-3	Phys. Ed. 32	3
	16-17		17

SENIOR YEAR

Education 69	3	Education 69	3
Education 74	3	Methods course in the minor	2-3
Phys. Ed. 177	2	Advanced Phys. Ed. course	2
Phys. Ed. 60	2-3	Phys. Ed. 168	2
Phys. Ed. 33	2	Phys. Ed. 33	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 as such, as well as with necessary technical training. Provision is made for courses in sports and therapeutic gymnastics to enable the teacher to qualify for various types of school and college positions.

Because of the heavy activity program required, it is strongly urged that four academic years and two summer sessions, or five academic years, be spent in preparation. This enables the student to elect other related subjects and to begin study toward a master's degree, if she so desires. In the case of students transferring from other institutions, three years of residence work are usually required to meet technical standards of the course.

SPECIFIC REQUIREMENTS

	Credits
English	6
History	6
Music	4
Art	5–6
Speech	2–3
Psychology	3–4

PHILOSOPHY 5–6

SOCIAL STUDIES 2–3

SCIENCE, to include: 19–27

One course each in zoology, physics, anatomy, and kinesiology
Physiology, to include a course in physiology of exercise

52–65

EDUCATION, to include: 18–19

Courses required for the University Teachers' Certificate, to include one week of field work in teaching in addition to required work in practice teaching
A course in health information for teachers

18–19

PROFESSIONAL COURSES, to include:

Practice, principles and techniques with a minimum of six credits in general physical education activities 21–23
A course in movement and its rhythmic structure 2
A course in therapeutic gymnastics 2–3
A course in relaxation 2
Courses in composition, accompaniment, dance summary, production and historical survey 14

41–44

SPEECH CERTIFICATION. Option A or Option B (see page 241) 0–2

ELECTIVES 19–0

DANCE MAJOR*

Suggested study lists planned to meet in minimum time all course prerequisites as well as specific requirements listed above.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a	3	Social Studies	3
Zoology 1	5	English 1b	3
History	3	Physics 17	4
Phys. Ed. 35a	2	History	3
Phys. Ed. 40a	1	Phys. Ed. 35b	2
Phys. Ed. Required	0	Phys. Ed. 30	1
		Phys. Ed. Required	0
	14		16

SOPHOMORE YEAR

Anatomy	4	Music 1a	2
Phys. Ed. 60	2	Art History	3
Art History	2-3	Phys. Ed. 160	2
Philosophy	3	Phys. Ed. 56	3
Phys. Ed. 36a	2	Phys. Ed. 36b	2
Phys. Ed. 31	2	Phys. Ed. 31	2
Phys. Ed. Required	0	Electives	2
		Phys. Ed. Required	0
	15-16		16

* 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.

SUMMER SESSION

Psychology	4
Education 74	3
	7

JUNIOR YEAR

Physiology	4	Education 75	4
Music 1b	2	Phys. Ed. 103	3-4
Education 73	3	Phys. Ed. 37	2
Phys. Ed. 37a	2	Phys. Ed. 40b	1
Phys. Ed 133 or 165	2	Phys. Ed. 146	3
Phys. Ed. 32	1	Education 169	3
Electives	2		
	16		16-17

SENIOR YEAR

Phys: Ed. 177	2	Phys. Ed. 38	2
Phys. Ed. 38	2	Education 69	3
Phys. Ed. 61	2	Phys. Ed. 181	2
Education 69	3	Phys. Ed. 176	3
Phys. Ed. 165 or 133	2	Speech	2-3
Phys. Ed. 134	2	Electives	3
Phys. Ed: 181	2		
	15		15-16

MINOR IN PHYSICAL EDUCATION (WOMEN)

A minimum of 20 credits, to include 3 credits in science applied 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, 2 credits in Education 69 (theory). In addition, 2 of the 5 credits in student teaching (required for the University Teachers' Certificate) to be in physical education, 1 credit each to be applied to Education 75 and Education 69.

There will be opportunity to prepare especially for elementary-school teaching or for high-school teaching. 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 (Women).

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, *should 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 cooperative marketing and consumers' cooperatives shall be required." See *Agricultural Economics 127,* Cooperation (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 241. The major consists of twenty-one credits in the Departments of Education and Agricultural Education which also meets 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
Educ. 73—The child: his nature and his needs	
or	
Educ. 74—The school and society	3
Educ. 75—The nature and direction of learning	5
Agr. Educ. 1—Rural education	2
Agr. Educ. 128—Program building in vocational agriculture	3
Educ. 50—The teaching of agriculture	5
	18

Education 50—The teaching of agriculture. 1–5 cr.

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. 15 credits in science, 5 of which must be in physics, 5 in chemistry, and 5 in biology, in addition to Education 97 (2 credits).

MINOR IN COMMUNITY RELATIONSHIPS. Economics 1a, 4 credits; Agricultural Economics 1, 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.

HOME ECONOMICS AND EDUCATION

FRANCES L. ZUILL, *M.A.*, Professor of Home Economics, *Director*

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
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	5
Educ. 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 241).

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. 243–262.

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.

TEACHER PREPARATION IN 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:

Educ. 73—The child: his nature and his needs, 3 cr.
Educ. 74—The school and society, 3 cr.
Educ. 75—The nature and direction of learning, 5 cr.
(Includes practice teaching)
Educ. 20—The teaching of the secretarial subjects, 2 or 5 cr.
Educ. 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 241).

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.

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	2	Music 61, 62, 63, 64b—Applied	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	2	Music 71, 72, 73, 74b—Applied	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 Science	0
	17		17

JUNIOR YEAR

Music 9a—Quartets of Haydn & 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	2
Music 81, 82, 83, 84a—Applied	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 85, 86, 87—Music organizations ..	1	Music 85, 86, 87—Music organizations ..	1
Music 91, 92, 93, 94a—Applied	2	Music 91, 92, 93, 94b—Applied	2
Education 4—Music education for elementary schools	4	Music 138—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

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	2	Music 61, 62, 63, 64b—Applied	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	2	Music 71, 72, 73, 74b—Applied	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 Science	0	Military Science	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	2
Music 81, 82, 83, 84a—Applied	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 85, 86, 87—Music organizations	1	Music 85, 86, 87—Music organizations	1
Music 91, 92, 93, 94a—Applied	2	Music 91, 92, 93, 94b—Applied	2
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

MAJOR 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 Marvin Rife, 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 241).

	Credits
1. B.A. or B.S. requirements.	
2. Foundation Courses	19–21
(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.	
3. Professional Courses (All required)	23–24
Education 14—Introduction to recreation	2
Physical Education 16—First aid	1
Education 73—The child: his nature and his needs (field work)	3
Health Education	3
Education 74—The school and society	3
or	
Rural Sociology 127—Rural community organization (field studies)	2
Education or Social Work 113—Theory and practice of group leadership (field work)	6
Education or Social Work 114—Problems in recreation planning	3
Education 155—Adult education	3
4. Resource Courses	20
The student will select a minimum of 10 credits in one area of perform-	

ance 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.

5. Field Experience (at least one) 0
   The student will elect a summer of supervised recreation leadership experience or a one-year Recreation Laboratory, or both.

6. Students in this major will meet the requirements for the University Teachers' Certificate.

Total credits in major 64

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	7	Degree requirements and electives	7
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	16		16

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
	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 113 (Social Work)	3	Education 113 (Social Work)	3
Education 155	3	Education 114 (Social Work)	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 Professional Courses	11
Education 14—Introduction to recreation	2
Education (Social Work) 113—Theory and practice of group leadership	6
Education (Social Work) 114—Problems in recreation planning	3
Resource Courses—a minimum of	6–8

A minimum of 6 credits in two areas for students majoring in Art Educa-

tion, 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.

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

Anatomy	*Credits*
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
- Physical Geography 1 5
- Physical Geography 2 5
- Survey of Physical Geography 5 3
- Survey of Physical Geography 17 4
- Regional World Survey of Cultural Geography 6 3
- Geography of Anglo-America 83 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
- Humanics (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

Professors Annen, *chairman,* Wilson; Associate Professor Allcott; Assistant Professors Ball, Dietrich, Good, Grilley, Logan, Meeker, Sessler, Vierthaler, Wilde, Zingale; Instructors Anderson, Arnold, Colescott, Hopkins, Lauritzen, Taylor.

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. Zingale, Mr. Wilde.

52. Watercolor. Yr; 2 cr. Prerequisite: Art Education 50b. Mr. Anderson, Mrs. Annen, Mr. Zingale.

53. Art Survey. Introduction of the fine art field. Yr; 2 cr. Open to Art Education freshmen. Mr. Logan.

54. Sculpture. Yr; 3 cr. Mr. Dietrich.

55. Life Drawing and Anatomy. Yr; 3 cr. Prerequisite: Art Education 50b. Mr. Grilley, Mr. Meeker.

56. Oil Painting. Yr; 3 cr. Prerequisites: Art Education 64a and 55a. Mr. Anderson, Mr. Grilley, Mr. Meeker.

57. Drawing and Design. Yr; 3 cr. For Occupational Therapy and Recreation students. Mr. Arnold, Mr. Lauritzen.

60. Layout and Letter Structure. Yr; 2 cr. Proportions of the classical letter. Contemporary layout and lettering adaptations. Open to freshmen in the Course in Art Education. Mr. Anderson.

61. Elementary School Arts. Yr; 3 cr. Prerequisite: Junior standing. Miss Wilson.

62. Creative Design. Yr; 3 cr. Open to freshmen. Home Economics majors with a prerequisite of Home Ec. 2 (Introduction to related arts) may enter either semester. Mrs. Annen, Mr. Arnold, Mr. Colescott, Mr. Lauritzen.

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. Lauritzen.

71. CERAMICS. Yr; 3 cr. Prerequisite: Art Education 62. Miss Wilson.

108. PAINTING FOR OCCUPATIONAL THERAPY. Sem; 3 cr. Prerequisite: Art Education 57b. Mr. Lauritzen.

132. FIGURE PAINTING AND PORTRAITURE. Yr; 3 cr. Prerequisite: Art Education 56. Staff.

140. STAGE DESIGN. Yr; 3 cr. First semester: Principles of design in relation to scenic designing. Mr. Meeker. 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. Dietrich.

155. ADVANCED LIFE DRAWING. Yr; 1–3 cr. Figure composition; methods of interpeting the human figure. Mr. Grilley.

156. ADVANCED PAINTING. Yr; 3 cr. Prerequisite: Art Education 56. Mr. Anderson, Mr. Grilley, Mr. Meeker, 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. Prerequisites: Elementary course in design and consent of instructor. Mrs. Annen.

163. ADVANCED COMMERCIAL DESIGN. Yr; 3 cr. Prerequisite: Art Education 63 or equivalent. Mr. Anderson.

165. VISUAL AIDS IN ART EDUCATION. Sem; 2 cr. Prerequisite: Junior standing. Staff.

166. SERIGRAPHY. Sem; 3 cr. Prerequisite: 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. Miss Wilson.

170. ADVANCED ART METAL. Yr; 3 cr. Projects include enameling, jewelry techniques. Mr. Vierthaler.

175. CRAFTS FOR OCCUPATIONAL THERAPY. Yr; 3 cr. Prerequisite: Art Education 57a.

179. MUSEUM TECHNIQUES. Yr; 2 cr. Prerequisite: 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.

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 292, 293.

EDUCATION

PROFESSORS BARR, BORCHERS, BURNS, DAVIS, DAWE, EDGERTON, EYE, FOWLKES (DEAN), GREGG, HERRICK, HILL, JAMES, JENSEN, JOHNSON, KRUG, LITTLE, LOW, NOHR, PHILLIPS, RAGSDALE, ROTHNEY, ROSELER, TORGERSON, WILLING, ZUILL; ASSOCIATE PROFESSORS ALLCOTT, CRONIN, C. HARRIS, T. HARRIS, HENDERSON, HOSLER, LIDDLE, *chairman*, MAYOR, NEMEC, SHOEMAKER, SOUTHWORTH, TRUMP, WITTICH; ASSISTANT PROFESSORS ARNOLD, BEERY, BJORAKER, EBERMAN, HANSEN, KREITLOW, LOGAN, PELLA, PETERSON, RIFE; LECTURERS NORFORD, SCHULLER, SHANNON; INSTRUCTORS GOLDGRUBER, HARNACK, RINGNESS, WEIGHTMAN, WINSOR.

Students below the junior class are not admitted to courses in the Department of Education without the written permission of the Dean of the School of Education. Students electing courses in Education should have taken introductory or survey courses in biology, psychology, and the social sciences.

Courses 73, 74, and 75 are regarded as elementary, and as introductory to the advanced courses offered by the department. These courses are not open for election by graduates of professional courses of normal schools and teachers' colleges without special permission by the department. Courses in the 200-group are open to qualified seniors who obtain the consent of the instructor.

See pages 237, 238, 240–242 for information concerning the Wisconsin High School, Field Services, Educational Laboratories, Teachers' Certificates, etc.

CLASSIFICATION OF 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 Instruction

FIELD VI. Organization and Teaching of School Subjects

FIELD VII. Guidance and Special Personnel Services

FIELD VIII. Clinical Techniques

FIELD IX. Education of Exceptional Children.

REQUIRED UNDERGRADUATE COURSES

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.

73. *The Child: His Nature and His Needs.* I, II; 3 cr. Behavior and development of children, with emphasis on the junior and senior high school levels. Prerequisite: Junior standing. Required of candidates for the University Teachers' Certificate. Miss Low, Mr. Herrick, Mr. Jensen, Mr. Rothney.

74. *The School and Society.* I, II; 3 cr. Social control of the school. The community school. Democracy and education. Professional status of teachers. Required of candidates for the University Teachers' Certificate. Mr. Gregg, Mr. Harnack, Mr. Krug, Mr. Liddle, Mrs. Nemec, Mr. Peterson, Mr. Willing.

75. *The Nature and Direction of Learning.* I, II; 3, 4, or 5 cr. (4 cr. with 1 cr. in educational practice, applies only to majors in Course in Physical Education—Women;

3 cr. for majors in Recreation and Dietetics. 5 cr. applies to all others, and includes 2 cr. in educational practice.) Should be preceded by Education 73. Required of candidates for the University Teachers' Certificate. Mr. Barr, Mr. T. Harris, Mr. Eberman, Mr. Ringness.

EDUCATIONAL FOUNDATIONS

I. HUMAN DEVELOPMENT, BEHAVIOR, AND LEARNING

107. Laboratory Study of School Learning. II; 2 cr. Experimental study of individual and group learning processes; development of laboratory techniques; interpretation of laboratory data. Prerequisite: Graduate standing. Mr. T. L. Harris.

118. Human Abilities and Learning. I; 3 cr. Principles and techniques of learning; individual differences in education. Prerequisite: Education 75. Mr. Ragsdale.

119. Human Development (Infancy, 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 (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. I, II; 2–3 cr. (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. The Exceptional Child (Nature of). 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. Mr. T. Harris.

176. Advanced Course in the Theory and Practice of Learning. II; 3 cr. Study of current experimental and theoretical literature having implications for the conduct of school learning. Prerequisite: Graduate standing. Mr. Ragsdale.

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. Prerequisite: Graduate standing. Mr. Ragsdale.

209. Modern Systems of Psychology and Education. II; 3 cr. Critical study of the educational implications of conflicting psychological theories and systems. Prerequisite: Education 118. Mr. Ragsdale.

219. Seminar. Child Development. Yr; 2 cr. Mr. Jensen.

249. Seminar. Educational Psychology. Yr; 2 cr. Mr. Ragsdale.

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 Systems of Psychology and Education. (See above, 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 Philosophies 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. 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; 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. Mrs. Nemec, Mr. Herrick.

248. Seminar. Recent Developments in Higher Education. Yr; 2 cr. Mr. Little.

268. The 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. Gregg.

III. MEASUREMENT, STATISTICS, AND REASEARCH PROCEDURES

111. Principles of Appraisal and Evaluation in Education. I; 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.

129. Tests and Measurements in Physical Education. Sem; 2 cr. Standards for evaluating tests; statistics for the classroom instructor; construction of tests. Available measures and norms. Laboratory experience. Miss Glassow, Mr. Torgerson.

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. II; 3 cr. Introduction to factor theory; survey of contributions of Spearman, Holzinger, Thurstone, Hotelling, Kelley, etc. Mathematical relationships among different types of solutions. Applications 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. II; 3 cr. The improvement of the written examination. Critical evaluation of tests and a study of the technique of test construction. Mr. Torgerson.

226. Seminar. Measurement, Statistics, and Research Techniques. Yr; 2 cr. For advanced students pursuing research in this area. Mr. Barr.

200. Research or Thesis. I, II; credit to be arranged. Staff.

EDUCATIONAL FUNCTIONS

IV. ADMINISTRATION AND SUPERVISION

193. The Evaluation and Planning of Educational Programs. I; 3 cr. Class discussion; field trips and observation. Mr. Barr.

261. Principles of Educational Administration. I; 3 cr. National, state, and county school organization and administration. Mr. Gregg.

262. General Administrative Problems of the Modern School. II; 3 cr. Local school organization and administration. Mr. Gregg.

263. The Administration and Supervision of the Teaching Personnel. 2–3 cr. Basic considerations in personnel relationships, methods, and problems. Mr. Eye.

268. The Financial Support of Public Education. (See above, Field II.)

271. The Business Management of Local Schools. II; 3 cr. Financial accounting; unit costs, financial reports; insurance; depreciation; budgetary procedure and school budgets. Mr. Gregg.

272. School Buildings 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 control of school finances, curriculum, property. Special emphasis on state and federal court decisions. Mr. Peterson.

277. Public School Relations. 2–3 cr. Policies, organization, personnel, techniques, and procedures in a program of public school relations. Mr. Gregg.

278. Seminar. School Administration. I, II; 2 cr. For advanced students and others pursuing research problems. Mr. Gregg.

V. CURRICULUM PLANNING AND INSTRUCTION

107. Laboratory Study of School Learning. II; 2 cr. (See Field I.)

114. Problems in Recreational Planning. I, II; 3 cr. Means and methods of planning and presenting a general recreation program; contributions of each form of recreational activity to the individual and his community; studies of effective procedures in various administrative areas. Mr. Rife.

123. Early Childhood Education. I, II; 2–3 cr. Trends, principles, and problems in the education of children from infancy through the fifth year. 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.

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 or Mr. Liddle.

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.

166. LOCAL PRODUCTION OF AUDIO-VISUAL MATERIALS. 2-3 cr. Mr. Wittich.

170. SCHOOL AND COMMUNITY HEALTH PROBLEMS. II; 3 cr. Analysis of child health problems, and ways of solving these problems through home, school, and community planning and action. Mr. Southworth.

174. INTRODUCTION TO CURRICULUM PLANNING. I; 2–3 cr. The concept of curriculum in modern American education. Foundation principles and major objectives. Mr. Willing or Mr. Krug.

175. PRACTICES IN CURRICULUM PLANNING. I; 3 cr. Development of curriculum guides and teaching aids. Use of teaching aids in puplic-teacher planning. Organization of curriculum programs on the state-wide basis and in local school systems. Prerequisite: Graduate standing or teaching experience. Mr. Krug or Mr. Willing or Mr. Liddle.

176. ADVANCED COURSE IN THE THEORY AND PRACTICE OF LEARNING. II; 3 cr. (See Field I.)

207. FIELD STUDY OF SCHOOL LEARNING PROBLEMS. I, II; 2 cr. Systematic study of school learning problems in actual school situations. Prerequisite: Graduate standing. Staff.

235. SEMINAR. 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.

236. SEMINAR. THE STUDY OF COMMUNICATIONS AT THE COLLEGE LEVEL. 3 cr. Mr. Shoemaker.

240. SEMINAR. ELEMENTARY EDUCATION. Yr; 2 cr. Mr. Herrick.

244. SEMINAR. CURRICULUM CONSTRUCTION. II; 2 cr. Opportunity to develop curriculum materials or work on individual problems in curriculum. Prerequisite: Consent of instructor. Mr. Krug.

245. SEMINAR. THE PRE-SERVICE AND IN-SERVICE EDUCATION OF TEACHERS. Yr.; 2 cr. For advanced students interested in problems of teacher education. Mr. Barr.

250. INTER-CULTURAL WORKSHOP.

265. SEMINAR. AUDIO-VISUAL EDUCATION. 2 cr. Mr. Wittich.

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 cooperating schools and activities according to needs. Mr. Barr, Mrs. Nemec, Mr. Krug, Mr. Eye, Mr. Herrick.

VI. ORGANIZATION AND TEACHING OF SCHOOL SUBJECTS (EDUCATIONAL METHODS)

Some of the courses in this field are offered only in the Summer Session. Those starred (*) are offered during the academic year.

Courses numbered under 100 and Courses 156 and 198 are the first courses taken by students in the undergraduate teacher-education program which deal with the teaching in the various subject areas. Each gives attention to objectives, methods, instructional materials, and problems of curriculum organization in the field indicated by the title.

Courses in this field are open to and *may be credited only by students who are registered in the School of Education* with a major or minor in the department concerned. *Education 75 and senior standing are prerequisites for these courses*, except that seniors must take the methods course in their minor field concurrently with Education 75.

These regulations do not apply to courses numbered above 100 with the exception of 156 and 198.

*4. Music Education for Elementary Schools. I; 4 cr. Teaching materials and procedures for the development of integrated musical experiences through singing, playing, 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; 4 cr. The development of music curricula to meet the needs of junior and senior high-school students; problems of teaching and administering choral and instrumental organizations. Lectures, laboratory practice and observation of classroom teaching. Mr. Burns.

*14. Introduction to Recreation. I; 2 cr. Leisure in our society and its implications; influence of social, economic, and technological changes. The recreation needs of various age groups, types of communities and groups. Survey of common recreation resources and forms of recreation activity; the role of public, private, and commercial agencies. Relation of recreation to education. Prerequisite: Sophomore standing. Mr. Rife.

*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.

*71. Teaching of Biology. II; 2–5 cr.

*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, Italian, Latin, and Spanish. Miss Johnson, Miss Weightman.

*83. Teaching of German. I; 2–5 cr. For seniors and graduates. Graduate credit on special recommendation of the instructor. Mr. Roseler.

*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.

*102. Studies in Curriculum and Instruction in School Music. II; 3 cr. Trends in curriculum development and the psychological factors which determine procedures in school music teaching. Prerequisite: Teaching experience. Mr. Burns.

105. Problems in Directing and Administering School Bands. I; 2 cr. Mr. Dvorak.

109. Music in the Elementary School. 3 cr. Mr. Burns.

110. Teaching of Music Appreciation in Secondary Schools. 3 cr. Mr. Burns.

*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. Miss Clarke.

*121. Improvement of Instruction in Shorthand and Typing. 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. Prerequisites: Graduate standing and teaching experience. Mr. Hosler.

*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. Mrs. Nemec.

*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. Mrs. Nemec.

135. Science in the Elementary School. I; 3 cr. Mr. Davis.

137. Advanced Problems in Science Education. II; 3 cr. Mr. Davis.

147. Teaching of Rhythms to Children. 2–3 cr.

154. Home Economics in Vocational Programs. 2 cr. Miss Henderson.

*156. Teaching of Home Making in Schools of Vocational and Adult Education. I, II; 2 cr. Miss Henderson.

157. Part-Time Education. 3 cr.

158. Directing Instruction in the Language Arts. II; 3 cr. Mr. Pooley.

159. Teaching Distributive Education Subjects in the Part-Time School. 3 cr.

160. Organization of Distributive Education Programs. 3 cr.

162. Improvement of Instruction in the Basic Business Education Subjects. 3 cr. Mr. Hosler.

163. Classroom Use of Radio. 2–3 cr.

164. Investigations in the Teaching of Arithmetic. 2–3 cr. Mr. Mayor.

165. Visual Instruction. II; 2 cr. Mr. Wittich.

*169. Health Education. II; 3 cr. Miss Carns, Mr. Southworth.

171. Contemporary Practices in Art Education. I or II; 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.

172. Language, Meaning and Maturity. 3 cr. Mr. Shoemaker.

*173. Basic Principles of Business Education. II; 3 cr. Mr. Hosler.

177. New Perspectives in the Teaching of English. 3 cr. Mr. Shoemaker.

178. Current Approaches to the Teaching of Literature in the Secondary School. 3 cr. Mr. Shoemaker.

185. Advanced Course in the Teaching of History and the Other Social Studies. II; 2 cr. Mr. Phillips.

*186. Practice Teaching on the College Level. Yr; 2 cr. Prerequisite: Graduate assistantship in the department of the major.

*187. Advanced Course in the Teaching of Languages. 2–3 cr. Intended for teachers with experience. Preparation of teaching units. Use of audio-visual aids. Prerequisite: Graduate standing. Miss Johnson.

*188. Seminar. Home Economics Education. I; 2 cr. Miss Zuill.

189. The Teaching of Speech in the Elementary School. 2–3 cr.

190. Studies in Curriculum and Instruction in Geography. II; 3 cr. Mr. Winsor.

192. Studies in Curriculum and Instruction in Mathematics. II; 3 cr. Mr. Mayor.

*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. Mrs. Nemec.

*197. Problems and Materials in Health Education 2–3 cr. Mr. Southworth.

*198. The Teaching of Speech in 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.

*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.

288. Seminar. Workshop in Home Economics Education. Miss Zuill.

291. Seminar. Teaching of History and Geography. Mr. Winsor, Mr. Phillips.

*299. The Teaching of Speech in College. I, II; 2 or 4 cr. History of speech teaching in the United States. Implications for the teaching of speech derived from scientific research. Prerequisite: Graduate standing. Miss Borchers.

VII. GUIDANCE AND SPECIAL PERSONNEL SERVICES

181. Techniques of Guidance and Special 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.

184. Principles and Practices of Guidance. 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, Mr. Hansen.

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.

284. Seminar. Educational, Social, and Vocational Guidance. 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.

285. Educational, Social, and Vocational Guidance (College Personnel). 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.

VIII. CLINICAL TECHNIQUES

122. 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.

126. Proseminar in Child Study. 4 cr. A course for teachers and administrators participating in or planning a child study program for the local community sponsored by the Department of Education.

127. Advanced Clinical Practice. 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.

128. Clinical Testing (Binet and Wechsler). I, II; 3 or 5 cr. Instruction and practice in the use of revised Binet and Wechsler-Bellevue Scales of Intelligence. Prerequisite: Junior standing. Mrs. Arnold.

130. Diagnosis of Scholarship and Behavior Difficulties. I; 3 cr. Methods of studying pupils, diagnostic procedures and remedial principles in learning and adjustment.

134. Clinical Practice in Reading. II; 4 cr. Two hours of participation each day in the summer reading clinic. Grades 3 to 12. Prerequisite: Education 134 or consent of instructor. Mr. Torgerson.

136. Remedial Reading. I; 3 cr. Survey of experimental investigations in remedial reading; the diagnosis and correction of reading difficulties; planning remedial reading instruction at all levels. Mr. Torgerson.

138. Performance Testing. II; 2–3 cr. Practice in the use and clinical interpretation of tests of interests, aptitudes, and performance in the high-school guidance program.

230. Seminar. Clinical Testing. I, II; 2 cr. Mr. Torgerson.

IX. EDUCATION OF EXCEPTIONAL CHILDREN

Most of the courses in this field have hitherto been offered only in the Summer Session. (To be offered in academic year as demand increases.)

122. Measurement of the Physically Handicapped. II; 3 cr. Mrs. Arnold. (See Field VIII.)

125. The Exceptional Child (Nature of). II; 3 cr. (See Field I.)

139. Methods and Materials in the Education of the Blind in the Elementary Grades. 3 cr.

142. Special Techniques and Appliances Used in Teaching the Blind. 3 cr.

143. Modern Acoustic Instrumentation. 2–3 cr.

144. Education of the Partially Seeing Child. 3 cr.

145. Language Training of the Deaf. 3 cr.

148. Advanced Problems in the Education of The Blind. 3 cr.

149. Advanced Course in Sight Saving. 6–8 cr.

150. Methods and Materials in the Education of the Blind (Secondary Level.) 3 cr.

151. Education of Mentally Handicapped. 3 cr.

152. Hearing Rehabilitation. 3 cr.

INDEPENDENT READING

180. Independent Reading. Sem; Credits to be arranged. Open to upper-group students of senior rank. Staff.

280. Independent Reading. I, II; credit to be arranged. For the benefit of superior graduate students unable to secure needed content in regular courses. Staff.

PHYSICAL EDUCATION—MEN

Professors Mansfield, Nohr *chairman*; Associate Professors Francis, Rippe, Southworth, Sanger; Assistant Professors Anderson, Martin, Wolf; Instructors Bauer, Best, 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 tactics, conditioning, exercises and swimming. Staff.

7. PHYSICAL EDUCATION ACTIVITIES. Sem; 0 cr. Proficiency in apparatus, tumbling and stunts, pyramids and softball. Staff.

8. PHYSICAL EDUCATION ACTIVITIES. Sem; 0 cr. Proficiency in football, basketball, recreational games. Staff.

9. PHYSICAL EDUCATION ACTIVITIES. Sem; 0 cr. Proficiency in graded class games, field and track, baseball. Staff.

10. TECHNIQUES AND MATERIALS IN PHYSICAL EDUCATION. Sem; 1–3 cr. Football theory, basketball theory, tennis, badminton and handball. Staff.

11. TECHNIQUES AND MATERIALS IN PHYSICAL EDUCATION. Sem; 1–3 cr. Baseball theory, rules and officiating, wrestling, swimming. 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, swimming coaching, golf and archery. 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.

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; 2–3 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, Mr. Torgersen. (See EDUCATION 129.)

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. Mr. Southworth.

168. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION. Sem; 2 cr. Prerequisite: Senior or graduate standing. 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; credit to be arranged. Open only to upper-group students of senior rank. Staff.

200. RESEARCH. Sem; credit to be arranged. Mr. Francis, Mr. Wolf.

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 292.) Mr. Nohr, Mr. Anderson.

PHYSICAL EDUCATION—WOMEN

Professors Carns, *chairman*, Glassow, H'Doubler, Rarick; Associate Professors Bassett, Cronin, Schade; Assistant Professor Kloepper; Instructors Belew, Cumbee, Eastham, Fritz, Genther, Gross, Halvorson, Hanson, Leggett, Liba, Martin, Mortimer, Parkin, Shafer, Steussy.

Starred (*) courses are open to students majoring in Physical Education. Students who are not majors 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 on the kinesthetic approach to the study of movement as experience. Miss H'Doubler, Miss Kloepper.

40. Group Dance and Rhythms for Children. Yr; 2 cr. Miss Bassett, Mrs. Belew.

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 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.) Practice 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, Mr. Rarick.

*81. Campcraft. I; 1–2 cr. Fall term, 1 cr. Pioneer camping, organization of trips, outdoor cooking, counselor responsibilities. Miss Fritz. Winter term, 1 cr. Arts and crafts. Mr. Vierthaler.

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. I; 2 cr. Prerequisite: Physical Education 103.

129. Tests and Measurements in Physical Education (Education 129). I; 2 cr. Measurement as a functional part of method; its relation to objectives and to diagnosis. 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, Miss Liba, Mr. Torgerson.

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: 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 1951 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. I; 2 cr. Stresses better understanding of the child, his development and needs during these formative years, with special emphasis upon contributions which physical education can make and the kind of curriculum which should be developed. Miss Bassett.

156. Advanced Kinesiology. II; 2 cr. Prerequisite: Physical Education 56. Miss Glassow.

160. Dance Composition (Elementary). II; 2–3 cr. Includes the study of basic principles of form and their application to dance composition. Prerequisites: 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. Prerequisite: Physical Education 160. Given 1950 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. Prerequisite: Junior standing in the Department of Physical Education for Women; 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; 3 cr. Discussion of posture deviations. Analysis and practice of exercises. The restricted program. Miss Schade.

177. Principles of Relaxation. I; 2 cr. Theory and practice of a specific technique of relaxation. Discussion of other methods. Prerequisites: Anatomy, physiology, psychology and consent of instructor. Miss Schade.

180. Advanced 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. 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. I; 4 cr. (a. 2 cr., b. 2 cr.) Relationship of skill and its development to rhythmic analysis, to kinesiological and physiological principles. The importance of kinesthetic perception and mechanical analysis to intelligent motor control. Miss H'Doubler, Miss Glassow, Miss Schade.

202. RESEARCH PROCEDURES AND CRITICAL ANALYSIS OF PROFESSIONAL LITERATURE. (a) I; 2 cr. Research procedures. Mr. Rarick, Dr. Carns. (b) II; 2 cr. Miss Cronin, Miss Glassow.

230. SEMINAR IN MEASUREMENT. II; 2 cr. Miss Glassow.

256. SEMINAR IN KINESIOLOGY. II; 2 cr. Miss Glassow.

265. DANCE SEMINAR. II; 2 cr. Miss H'Doubler.

280. INDEPENDENT STUDY. I, II; credit to be arranged. Staff.

284. SEMINAR IN MOTOR DEVELOPMENT. II; 2 cr. Prerequisite: Physical Education 184. Mr. Rarick.

296. SEMINAR IN CURRICULUM AND TEACHING METHODS. II; credit to be arranged. Individual problems in curriculum, methods, and in evaluation of teaching. Prerequisites: Graduate standing and teaching experience in physical education. Miss Cronin.

TEACHER'S COURSE

THE TEACHING OF PHYSICAL EDUCATION. See Education 69, page 292.

Other courses in physical education open to women are listed under PHYSICAL EDUCATION FOR MEN; they include 16, 59, 159, 164, and 293.

For courses in motor learning, physical development, child psychology, and supervision, see the DEPARTMENT OF EDUCATION, pages 288, 290.

See also announcement 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, *A.B.*, Instructor in Mechanical Engineering
Akerman, Joseph Reid, *M.S.*, Instructor in Mechanical Engineering
Allison, Dean Malcolm, *M.S.*, Instructor in Mechanical Engineering
Altpeter, Roger James, *Ph.D.*, Associate Professor of Chemical Engineering
Baird, John, *D.Sc.*, Associate Professor of 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 P., *M.S.*, Instructor in Mechanics
Bonow, Eric D., *B.S.*, Instructor in Mechanical Engineering
Bridge, Bert Bernard, Instructor in Mechanical Engineering
Bryan, Edward H., *M.S.*, Instructor in Civil Engineering
Buer, Howard H., *B.S.*, Instructor in Civil Engineering
Buroker, Donald, *B.S.*, Assistant Professor of Mechanical Engineering
Caldwell, Ralph R., *M.S.*, Instructor in Electrical Engineering
Cottingham, Willard Sherwin, *M.S., C.E.*, Professor of Civil Engineering
Crandall, Lee W., *M.S.*, Associate Professor of Civil Engineering
Daggett, Ronald Lorin, *M.S.*, Associate Professor of Mechanical Engineering
Davidson, Bruce M., *M.S.*, Instructor in Civil Engineering
Doke, Howard Bailey, Assistant Professor of Drawing and Descriptive Geometry
Doyle, Robert, *B.S.*, Instructor in Drawing and Descriptive Geometry
Easton, Archie H., *B.S.*, Research Associate, Director of Truck Research Project
Elliott, Benjamin George, *M.S., M.E.*, Professor of Mechanical Engineering
Engelman, Helmuth W., *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.*, Instructor in Mechanical Engineering
Fluck, Paul G., *Ph.D.*, Assistant Professor of Mechanics
Garver, John Cormany, *M.S.*, Instructor in Chemical Engineering
Gage, James A., *M.S.*, Assistant Professor of Mechanical Engineering
Gilpin, Charles A., *B.S.*, Associate Professor of Mechanical Engineering
Goehring, Henry G., *A.B.*, Assistant Professor in Charge of Admission and Placement Director
Griffith, Fuller Orville, Jr., *B.S.*, Assistant Professor of Drawing and Descriptive Geometry
Griswold, Arnold Forrest, Instructor in Mechanical Engineering
Haas, Wilbur M., *B.S.*, Instructor in Civil Engineering
Hafstrom, John R., *M.S.*, Assistant Professor of Electrical Engineering
Haft, Everett E., *B.S.*, Instructor in Mechanics
Hammersley, Robert Cameron, *M.A.Sc.*, Instructor in Chemical Engineering
Harker, Ralph J., *M.S.*, Associate Professor of Mechanical Engineering
Harris, John F., *M.S.*, Instructor in Chemical Engineering
Harvey, William R., *B.S.*, Assistant Professor, Librarian
Heine, Richard W., *M.S.*, Assistant Professor of Mining and Metallurgical Engineering
Higgins, Thomas J., *Ph.D.*, Professor of Electrical Engineering
Holcomb, Charles Edward, *B.S.*, Instructor in Chemical Engineering

HOLMES, VET VERNON, *M.S.*, Instructor in Mechanical Engineering
HOLTZMAN, HERMAN, *M.S.*, Instructor in Mechanics
HORI, SHIZUO, *M.S.*, Instructor in Electrical Engineering
HOUGEN, OLAF ANDREAS, *Ph.D., Ch.E.*, Professor of Chemical Engineering
HYLAND, PATRICK HENRY, *B.S., M.E.*, Professor of Mechanical Engineering
IMM, RUBEN A., *M.S.*, Assistant Professor of Electrical Engineering
JOERGER, JEROME C., *M.S.*, Instructor in Electrical Engineering
KALLSEN, HENRY A., *B.S.*, Instructor in Civil Engineering
KEMPKA, GILBERT, *B.S.*, Instructor in Mining and Metallurgical Engineering
KING, BERNARD G., *M.S.*, Instructor in Electrical Engineering
KIRK, ROBERT S., *Ph.D.*, Assistant Professor of Chemical Engineering
KOEHLER, GLENN, *M.S.*, Professor of Electrical Engineering
KOMMERS, JESSE B., *B.S., M.E.*, Professor of Mechanics
LARSON, LUDWIG C., *B.S., E.E.*, Professor of Electrical Engineering
LAWTON, GERALD W., *M.S.*, Instructor in Civil Engineering, Engineer, Heating Station
LEIDEL, FREDERICK D., *B.S.*, Instructor in Drawing and Descriptive Geometry
LENZ, ARNO THOMAS, *Ph.D., C.E.*, Professor of Civil Engineering
LEUTWILER, RICHARD W., JR., *M.S.*, Associate Professor of Mechanical Engineering
LEVINTHAL, JAY G., *M.S.*, Instructor in Electrical Engineering
LINDBERG, ROY ALFRED, *M.S.*, Instructor in Mechanical Engineering
LIVERMORE, DONALD FRANK, *M.S.*, Assistant Professor of Mechanical Engineering
LIVERMORE, JOSEPH DOW, *B.S.*, Associate Professor of Drawing and Descriptive Geometry
LOVINGTON, ROSS C., *M.S.*, Instructor in Mechanical Engineering
MACK, DAVID J., *Ph.D.*, Assistant Professor of Mining and Metallurgical Engineering
MANN, RICHARD A., *M.S.*, Instructor in Mechanical Engineering
MARSHALL, W. ROBERT, JR., *Ph.D.*, Associate Professor of Chemical Engineering
MAY, HAROLD L., *B.S.*, Instructor in Mechanics
MCNAUL, JAMES WILBUR, *B.S.*, Professor of Mechanical Engineering
MILLER, JOHN B., *B.S.*, Instructor in Electrical Engineering
MONSON, LEON A., *B.S.*, Instructor in Mining and Metallurgical Engineering
MYERS, PHILLIP S., *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
NEMETZ, VICTOR, *B.S.*, Assistant Professor of Electrical Engineering
NICHOLS, M. STARR, *Ph.D.*, Professor of Sanitary Chemistry; Lecturer in Sanitary Engineering; Chemist, State Laboratory of Hygiene
OLESON, MERVAL W., *B.S.*, Instructor in Electrical Engineering
ORLOFF, DANIEL L., *B.S.*, Instructor in Mechanics
ORTH, HERBERT DENNEY, *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
PETERSEN, JOHN R., *M.S.*, Instructor in Mechanics
PETERSON, HAROLD A., *M.S.*, Professor of Electrical Engineering
RADER, LLOYD FORREST, *Ph.D.*, Professor of Civil Engineering
RAGATZ, ROLAND ANDREW, *Ph.D.*, Professor of Chemical Engineering
RETHERFORD, ROBERT C., *Ph.D.*, Assistant Professor of Electrical Engineering
RHUDE, MAURICE JOHN, *M.S.*, Instructor in Civil Engineering
RIDEOUT, VINCENT C., *M.S.*, Associate Professor of Electrical Engineering
ROARK, RAYMOND J., *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, *M.S.*, Professor of Mining and Metallurgical Engineering
RUNDLE, WILLIAM JUDD, *M.S.*, Assistant Professor of Mining and Metallurgical Engineering

RUSSELL, PAUL E., *M.S.*, Instructor in Electrical Engineering
SAEMANN, JESSE C., *M.S.*, Instructor in Mechanics
SCHEIBE, ELMER H., *M.S.*, Instructor in Electrical Engineering
SCHMITZ, NORBERT L., *M.S.*, Instructor in Electrical Engineering
SCHWEITZER, THEODORE J., *M.S.*, Assistant Professor of Mechanical Engineering
SELL, ROBERT FREDERICK, *B.S.*, Instructor in Civil Engineering
SHANK, RUSSELL, *B.S.*, Instructor, Assistant Librarian
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
SIMON, JACK M., *M.S.*, Instructor in Electrical Engineering
SLATER, JOHN G., *M.S.*, Instructor in Civil Engineering
SWENSON, GEORGE W., JR., *M.S., E.E.*, Instructor in Electrical Engineering
THOMSON, WILLIAM T., *Ph.D.*, Professor of Mechanics
TIBBITTS, JOHN R., *B.S.*, Instructor in Mechanics
TIEDEMANN, JAMES B., *M.S.*, Instructor in Mechanics
UYEHARA, OTTO A., *M.S., Ph.D.*, Assistant Professor of Mechanical Engineering
VILLEMONTE, JAMES RICHARD, *M.S.*, Assistant Professor of Civil Engineering
WAGNER, ELDON CHRISTIAN, *M.S.*, Associate Professor of Civil Engineering
WASHA, GEORGE W., *Ph.D.*, Associate Professor of Mechanics
WASSERMAN, BERNARD, *M.S.*, Instructor in Electrical Engineering
WATSON, CHARLES CHURCHILL, *Ph.D.*, Associate Professor of Chemical Engineering
WEBER, JOHN C., *M.S.*, Associate Professor of Electrical Engineering
WENDT, KURT F., *B.S.*, Professor of Mechanics; Associate Director of Engineering Experiment Station
WILLIAMS, DUNCAN E., *M.S.*, Instructor in Mechanics
WILSON, LEROY ALONZO, *M.E., M.M.E.*, Professor of Mechanical Engineering
WITHEY, MORTON O., *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 C., *M.S.*, Instructor in Mechanics

COLLEGE OF ENGINEERING

DEGREES IN THE COLLEGE OF ENGINEERING

That a thorough training in fundamentals is essential preparation for a career in engineering is the conviction which 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 courses: CHEMICAL ENGINEERING; BIOCHEMICAL ENGINEERING; CIVIL ENGINEERING; ELECTRICAL ENGINEERING; MECHANICAL ENGINEERING; METALLURGICAL ENGINEERING; AND MINING ENGINEERING. (For aeronautical engineering, see page 312.)

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. 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 who comply with certain other requirements.

The various courses 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 degrees of Civil Engineer, Mechanical Engineer, Electrical Engineer, Chemical Engineer, Engineer of Mines, and Metallurgical Engineer are conferred upon graduates of the College of Engineering of the University of Wisconsin who have spent five years in professional work, at least one of which must have been in a position of responsibility, and who present a satisfactory thesis.

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 164 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 Chemical Engineering building, Engineering, 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 to be housed in temporary structures and the Chemical Engineering Laboratories will soon be housed in a new portion of Engineering.

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; 4000 sq. ft. available.

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

DYNAMO 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. Maintains 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 and special tests on trucks involving the use of a recording oscillograph in conjunction with electrical resistance strain gages.

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.

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 is located in a separate building in the rear of the Mining and Metallurgical Engineering building. It is equipped with modern machines and tools for a modern metal casting laboratory, including 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.

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 a 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 laboratory also contains magnetic separating equipment and petrographic microscopic apparatus especially provided for research in mineral dressing.

THE PHYSICAL METALLURGICAL LABORATORY 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 a radiographic X-ray equipment for casting inspection.

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 recommendations 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 General Information, pp 7–12.

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 the student's progress, and is available for consultation and advice whenever needed. Normally, the student will have a different adviser each year.

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 science and one year of physical education. Students completing this basic course in military 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

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 counselling 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 list of speakers includes 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 and 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 on page 555.

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 1.3. (Veterans 1.00) 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 ENGINEERING

The Department of Agricultural Engineering offers a curriculum in Farm Structures and a curriculum in Drainage, Irrigation and Soil Conservation. Both of these curricula 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. For a description of these curricula, see 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 317 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

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 con-

tribute 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	Mech. 112—Airplane stress analysis	3
Mech. 113—Design of airplane parts	2		
M.E. 37—Welding	2	M.E. 171—Gas turbines and jet propulsion	3
M.E. 169—Internal combustion engines	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
Military Training	0	Physical Education	0
Physical Education	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 51—General physics	5	Physics 52—General physics	5
Ch.E. 20—Industrial chemistry	3	Ch.E. 18—Fundamentals of chemical engineering	2
Chem. 120—Organic chemistry	2	Chem. 14—Quantitative analysis	5
Chem. 121—Organic chemistry laboratory	3	Chem. 122—Organic chemistry	2
Speech 7—Public speaking	2	Military Training	0
Military Training	0		
	19		18

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
Ch.E. 12—Technical analysis	2	Chem. 130b—Physical chemistry	2
Chem. 130a—Physical chemistry	2	Chem. 131b—Physical chemistry laboratory	1
Chem. 131a—Physical chemistry laboratory	1	M.E. 66—Heat-power engineering	2
M.E. 65—Thermodynamics	3	M.E. 76—Heat engine testing	2
Mech. 4—Statics and dynamics	4	Mech. 5—Mechanics of materials	3
Electives	2	Mech. 53—Materials of construction	2
		Junior inspection trip	0
	19		19

SENIOR YEAR

Agr. Bact. 127—Industrial Microbiology	4	Biochemistry electives	3-4
Ch.E. 101—Applied electrochemistry	4	Ch.E. 111b—Unit operations	3
Ch.E. 111a—Unit operations	3	Ch.E. 116—Material and energy balances	4
Ch.E. 117—Process measurements and control	3	E.E. 9—Electrical machinery	3
Ch.E. 142—Chemical engineering materials of construction	3	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. DEGREE IN BIOCHEMICAL ENGINEERING

Agr. Bac. 125—Food bacteriology	4	Agr. Bact. 226—Physiology of bacteria	4
or		Biochemistry electives	3-4
Biochemistry electives in second semester	3-4	or	
Ch.E. 200—Thesis	3	Agr. Bact. 125—Food bacteriology, 4 cr., in first semester	
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	Military Training	0
Military Training	0	Physical Education	0
Physical Education	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 51—General physics	5	Physics 52—General physics	5
Ch.E. 20—Industrial chemistry	3	Ch.E. 18—Fundamentals of chemical engineering	2
Chem. 120—Organic chemistry	2	Chem. 14—Quantitave analysis	5
Chem. 121—Organic chemistry laboratory	3	Chem. 122—Organic chemistry	2
Speech 7—Public speaking	2	Military Training	0
Military Training	0		
	19		18

JUNIOR YEAR

Ch.E. 99—Engineering reports	3	Ch.E. 12—Technical analysis	2
Ch.E. 111a—Unit operations	3	Ch.E. 111b—Unit operations	3
Ch.E. 117—Process measurements and control	3	Ch.E. 116—Material and Energy balances	4
Chem. 130a—Physical chemistry	2	Chem. 130a—Physical chemistry	2
Chem. 131a—Physical chemistry laboratory	1	Chem. 130b—Physical chemistry laboratory	1
M.E. 65—Thermodynamics	3	M.E. 66—Heat-power engineering	2
Mech. 4—Statics and dynamics	4	M.E. 76—Heat engine testing	2
		Mech. 5—Mechanics of materials	3
		Junior inspection trip	0
	19		19

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
Mech. 53—Materials of construction	2	Electives	7-6
Electives	3	Senior inspection trip	0
	19		19

NEW CIVIL ENGINEERING CURRICULUM

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CIVIL ENGINEERING)

FRESHMAN YEAR

Freshmen entering the Civil Engineering Course in the Fall of 1950 will follow the new curriculum. Students who have completed one or more semesters of the Civil Engineering Course will be gradually shifted from the old curriculum (see page 318) to the new curriculum in a manner which will not handicap them in scheduling courses leading to the B.S. degree.

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Draw. 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	Eng. 1b—Freshman composition	3
C.E. 15—Elementary surveying	2	C.E. 16—Elementary surveying	2
Military Training	0	Military Training	0
Physical Education	0	Physical Education	0
	17		17

SOPHOMORE YEAR

First Semester		Second Semester	
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—Topographic 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

First Semester		Second Semester	
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

First Semester		Second Semester	
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 including thesis.

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*—City planning	2	C.E. 141*—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*—City planning	2	C.E. 141*—City planning	2
C.E. 144—Municipal engineering practice	2	C.E. 142—Advanced city planning	2
Econ. 168—Highway transportation	3	C.E. 145—Traffic control	2
M.E. 101—Motor vehicle testing and practice	3	C.E. 162—Highway bridges and culverts	2
		M.E. 101*—Motor vehicle testing and practice	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. 176*—Testing of hydraulic machines	2
C.E. 184—Water power engineering	2	C.E. 177—Fluid mechanics	3
C.E. 270**—Hydraulic engineering seminar	1	C.E. 183—Hydraulic design	2
		C.E. 270**—Hydraulic engineering seminar	1

MUNICIPAL ENGINEERING

C.E. 139—Airports	2	C.E. 134—Bituminous materials testing	3
C.E. 141*—City planning	2	C.E. 141*—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. 192*—Sewage treatment	3
C.E. 194**—Sanitary engineering seminar	1	C.E. 194**—Sanitary engineering seminar	1

SANITARY ENGINEERING

C.E. 192*—Sewage treatment	3	C.E. 192*—Sewage treatment	3
C.E. 193*—Water and sewage analysis	3	C.E. 193*—Water and sewage analysis	3
C.E. 194**—Sanitary engineering seminar	1	C.E. 194**—Sanitary engineering seminar	1
		C.E. 196—Water treatment	3
		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 structures	2	Mech. 106—Advanced mechanics of materials	3
Mech. 101—Advanced statics	2	Mech. 108—Advanced materials of construction	2-5
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		

GENERAL

C.E. 102—Estimates and costs	2	C.E. 104—Engineering valuation	2

*Course may be taken in either the first or the second semester.
**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 are offered that 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 315.

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*—Advanced city planning	2
Econ. 117*—Outlines of land economics	3	Econ. 130*—Economics statistics	3
C.E. 141*—City planning	2	Econ. 179*—Urban land economics	3
C.E. 72—Elementary hydraulics	4	Geography 129*—Urban geography	3
		Sociology 171*—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*—Municipal engineering practice	2	C.E. 191—Sewerage and sewage treatment	3
Art History 131*—American architecture	3	C.E. 145*—Traffic control	2
Econ. 124a*—Public finance	3	C.E. 103—Economic selection	2
Pol. Science 13*—Municipal government	3	Pol. Science 163*—Local planning administration	3
Sociology 163*—Modern population problems	3	Speech 7*—Public speaking	2
		Junior Trip (C.E.)	0
	20		19

FIFTH YEAR

C.E. 139*—Airports	2	C.E. 54—Structural design	2
C.E. 143*—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		
	19		17

Total 190

The degree of Bachelor of Science in Civil Engineering and Bachelor of Science in City Planning will be granted at the end of the fifth year upon completion of requirements.

*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 an asterisk in the combined course curriculum.

OLD CIVIL ENGINEERING CURRICULUM

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CIVIL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Drawing 1—Elements of drawing	3	Drawing 2—Elements of drawing	3
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
C.E. 11—Elementary surveying	2	C.E. 12—Elementary surveying	2
Freshman lectures	0	Military Training	0
Military Training	0	Physical Education	0
Physical Education	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. 13—Land surveying	3	C.E. 22—Route surveying	3
C.E. 21—Engineering curves	2	C.E. 114—Advanced surveying	3
Military Training	0	Military Training	0
Physical Education	0	Physical Education	0
	17		18

SUMMER CAMP (6 WEEKS)

C.E. 116—Summer survey....4 credits. C.E. 122—Route surveying....2 credits.

JUNIOR YEAR

Mech. 3—Mechanics of materials	4	Mech. 52—Materials of construction	2
Mech. 51—Materials of construction	2	Econ. 1a—General economics	4
Drawing 3—Descriptive geometry	3	C.E. 1b—Junior reports	1
Geol. 9—Engineering geology	3	C.E. 52—Structural analysis	4
C.E. 1a—Junior reports	1	C.E. 132—Highway engineering	3
C.E. 72—Elementary hydraulics	4	C.E. 163—Masonry	2
C.E. 181—Hydrology	2	C.E. 191—Sewerage	2
		Electives	2
		Inspection trip	0
	19		20

SENIOR YEAR

C.E. 2a—Senior reports	1	C.E. 2b—Senior reports	1
C.E. 53—Structural design	3	C.E. 54—Structural design	2
C.E. 155—Reinforced concrete	3	C.E. 101—Contracts and specifications	2
C.E. 195—Water supply	3	C.E. 164—Substructures	1
M.E. 67—Thermodynamics	2	E.E. 10—D.C. machinery	3
M.E. 77—Heat engine testing	2	E.E. 60—D.C. laboratory	1
Thesis	1	Thesis	2-4
Electives	4	Electives	7-5
Inspection trip	0		
	19		19

NEW 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	Military Training	0
Military Training	0	Physical Education	0
Physical Education	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 (1)—Electrodynamics	3	E.E. 22 (1)—Electrodynamics	3
E.E. 21 (51)—Electrodynamics laboratory	1	E.E. 23 (51)—Electrodynamics laboratory	2
Military Training	0	Military Training	0
	17		18

PROFESSIONAL OPTION

JUNIOR YEAR

E.E. 30 (3)—Alternating-current circuits	4	E.E. 32 (2)—Direct-current machinery	3
E.E. 31 (53)—Alternating-current circuits laboratory	2	E.E. 33 (52)—Direct-current machinery laboratory	1
Mech. 3—Mechanics of materials	4	E.E. 34 (5)—Fundamental electronics	4
Mech. 53—Materials of construction	2	E.E. 35 (55)—Fundamental electronics laboratory	2
M.E. 64—Thermodynamics and heat-power	3	E.E. 36 (156)—Advanced circuits and networks	4
M.E. 74—Heat-power laboratory	2	Electives**	6
Math. 111—Higher mathematics	3	Junior Inspection Trip	0
	20		20

** It is expected that a new required course in engineering design will replace 3 of these credits when it is available.

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
E.E. 40 (4)—Alternating-current machinery	3	Physics 106—Atomic physics	3
E.E. 41 (54)—Alternating-current machinery laboratory	1	E.E. 99—Professional expression	3
E.E. 42 (122)—Electrical measurements	4	E.E. 138*—Power system analysis	3
Professional problems	1	C.E. 71*—Hydraulics	3
E.E. 127*—Electrical central stations	3	E.E. 184 (157)**—Advanced communications engineering	4
E.E. 151*—Industrial electronics	3	E.E. 185**—Advanced communications engineering laboratory	2
E.E. 182 (154)**—Communications engineering	4	Electives	6
E.E. 183**—Communications engineering laboratory	2		18
Electives	3		
Senior Inspection Trip	0		
	19		

* Required for Power Major.
** Required for Electronics and Communications Major.

NOTE: It is recommended that at least 6 of the elective credits be taken in non-professional courses.

†For those who entered as freshmen in September, 1949 and later. Those who entered as freshmen in September, 1948 and earlier will follow the curriculum in Electrical Engineering shown on page 322.

PROFESSIONAL ELECTIVES:

(1) E.E. 101 — Fundamentals of electroacoustical engineering
(2) E.E. 112 — Electrical conduction through gases and vacuum
(3) E.E. 120 — Dielectrics and high voltage insulation
(4) E.E. 133 — Illumination and photometry
(5) E.E. 137 — Power distribution
(6) E.E. 160 — Advanced communications engineering design
(7) E.E. 180 — Advanced independent study
(8) E.E. 116 — Advanced electric transients
(9) E.E. 115 — Open and closed cycle control systems
(10) E.E. 111 — Advanced alternating current machinery theory

GENERAL OPTION

JUNIOR YEAR

	Credits
E.E. 30 (3)—Alternating-current circuits	4
E.E. 31 (53)—Alternating-current circuits laboratory	2
Mech. 3—Mechanics of materials	4
Mech. 53—Materials of construction	2
M.E. 64—Thermodynamics and heat-power	3
M.E. 74—Heat-power laboratory	2
Electives	3
	20

	Credits
E.E. 32 (2)—Direct-current machinery	3
E.E. 33 (52)—Direct-current machinery laboratory	1
E.E. 34 (5)—Fundamental electronics	4
E.E. 35 (55)—Fundamental electronics laboratory	2
Psych. 3—Psychology for engineers	3
Electives†	7
Junior Inspection Trip	0
	20

† It is expected that a new required course in engineering design will replace three of these credits when it is available.

SENIOR YEAR

First Semester	Credits
E.E. 40 (4)—Alternating-current machinery	3
E.E. 41 (54)—Alternating-current machinery laboratory	2
E.E. 42 (122)—Electrical measurements	4
E.E. 127—Electrical central stations	3
Electives	6
Professional Problems	1
Senior Inspection Trip	0
	19

Second Semester	Credits
E.E. 99—Professional expression	3
E.E. 102—Principles of electrical communication	3
C.E. 71—Hydraulics	3
Technical electives	6
Electives	3
	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

In the foregoing revised Electrical Engineering curriculum, the following numbering system has been followed:

Courses Required in Both Options in Electrical Engineering

Nos. 20-29 Sophomore year
Nos. 30-39 Junior year
Nos. 40-49 Senior year
Even numbers for recitation sections
Odd numbers for laboratory sections

A laboratory section associated with a given recitation section will bear the next consecutive number above that given to the recitation section.

Where a course remains the same in content, the old number is given in parentheses following the new one. This is true even though there may be a change in the number of credits for a given course. Any new course is simply given a new number in accordance with the foregoing numbering scheme.

OLD ELECTRICAL ENGINEERING CURRICULUM*

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Drawing 1—Elements of drawing	3	Drawing 2—Elements of drawing	3
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Speech 8a or M.E. 32—Machine practice	2	M.E. 32—Machine practice or Speech 8a	2
Freshman lectures	0	Military Training	0
Military Training	0	Physical Education	0
Physical Education	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 53—General physics	5	Physics 54—General physics	5
Drawing 3—Descriptive geometry	3	E.E. 1—Electrodynamics	4
Economics 1a—General economics	4	E.E. 51—Electrodynamics laboratory	2
Elective (M.E. 37 recommended)	2	Mech. 1—Statics	3
Military Training	0	Military Training	0
Physical Education	0	Physical Education	0
	18		18

JUNIOR YEAR

Mech. 2—Dynamics	3	Mech. 3**—Mechanics of materials	4
Physics 55—Advanced electricity and magnetism	3	E.E. 2—Direct-current machinery	3
E.E. 3—Alternating-current circuits	4	E.E. 52—Dynamo laboratory	1
E.E. 53—Alternating-current circuit laboratory	2	E.E. 5—Fundamental electronics	4
Electives (Math. 111 recommended)	6	E.E. 55—Electronics laboratory	2
		M.E. 63—Thermodynamics	3
		Electives	3
		Junior Inspection Trip	0
	18		20

SENIOR YEAR

E.E. 4—Alternating-current machinery	4	M.E. 45—Machine elements	3
E.E. 54—Alternating-current laboratory	2	M.E. 75**—Advanced heat engine testing	1
Mech. 53—Materials of construction (or E.E. 25—Seminar)	2	E.E. 25—Engineering papers (or Mech. 53—Materials of construction)	2
M.E. 64—Heat-power engineering	3	C.E. 71—Elementary hydraulics	3
M.E. 74—Heat-power laboratory	2	Electives	10
Electives	6		
Senior Inspection Trip	0		
	19		19

ELECTIVES

Of the 27 elective credits:

9 credits, designated as "free electives," may be chosen without restriction;

9 credits, designated as "non-professional electives," must be chosen in subjects which are non-professional in the sense that they are not prerequisite to the more technical phases of engineering work — such subjects as economics, political science, history, literature, language, logic, ethics, psychology, philosophy, sociology, geology, and the like;

9 credits, designated as "professional electives," must be chosen from electrical engineering courses of the 100 series. (See course descriptions in this section.)

*Will remain in effect for those students who entered as freshmen in September of 1948 and who should graduate in June 1952. Those who entered as freshmen in September of 1949 or later will follow the new curriculum in Electrical Engineering shown on page 319.

** For those students whose major interest is in communication engineering: E.E. 156 should be taken in the second semester of the junior year. Mechanics 3 may be postponed until the first semester of the senior year. Provided at least 6 credits have been taken in elective communications courses, an elective credit may be substituted for M.E. 75.

NEW MECHANICAL ENGINEERING CURRICULUM

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)

FRESHMAN YEAR (Effective September, 1949)

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	Military Training	0
Military Training	0	Physical Education	0
Physical Education	0		
	18		18

SOPHOMORE YEAR (Effective September, 1950)

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 (Effective September, 1951)

First Semester		Second Semester	
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 lab. I	2
Mech. 53—Materials of construction	2	E.E. 6—Electrical circuits	4
M.E. 12—Princ. of industrial engr.	3	E.E. 56—Electrical circuits lab.	1
C.E. 71*—Hydraulics	3	M.E. 13—Engr. & mfg. cost analysis	3
		M.E. 99—Tech. report writing	3
		Junior inspection trip	0
	18		19

* May be deferred to first semester, senior year.

SENIOR YEAR (Effective September, 1952)

First Semester		Second Semester	
M.E. 44—Advanced machine design	3	M.E. Electives**	6
M.E. 52—Machine design lab.	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 lab. II	2	Free electives	6
E.E. 7—Electrical machinery	4		18
E.E. 57—Elec. machinery lab.	1		
Professional problems	1		
Free elective	3		
Senior inspection trip	0		
	19		

** 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)	
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	3
M.E. 168—Heating and ventilating	3
M.E. 169—Internal combustion engines	3
M.E. 170—Flow of compressible fluids	3
M.E. 171—Gas turbines & jet propulsion	3
M.E. 174—Advanced heat power lab.	1
M.E. 178—Heating & ventilating lab.	2

OLD MECHANICAL ENGINEERING CURRICULUM*

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Drawing 1—Elements of drawing	3	Drawing 2—Elements of drawing	3
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Speech 8a—Extempore speaking	2	Speech 8b—Extempore speaking	2
Freshman lectures	0	Military Training	0
Military Training	0	Physical Education	0
Physical Education	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Physics 51—General physics	5	Physics 52—General physics	5
M.E. 25—General machine practice	3	Drawing 3—Descriptive geometry	3
M.&M.E. 33—Foundry	2	Mech. 2—Dynamics	3
M.E. 41—Mechanism	3	M.E. 42—Machine design practice	2
Mech. 1—Statics	3	Military Training	0
Military Training	0		
	20		17

JUNIOR YEAR

Mech. 3—Mechanics of materials	4	E.E. 6—Electrical machinery	3
Mech. 53—Materials of construction	2	E.E. 56—Direct-current laboratory	2
M.E. 37—Welding	2	C.E. 71—Elementary hydraulics	3
M.E. 43—Machine elements	4	M.E. 44—Advanced machine design	4
M.E. 61—Thermodynamics	4	M.E. 52—Machine testing	2
Electives**	3	or	
	19	Mech. 107—Mechanical vibrations	3
		M.E. 62—Heat-power engineering	4
		M.E. 72—Heat-power laboratory	2
			20-21

SENIOR YEAR

E.E. 7—Electrical machinery	3	M.&M.E. 8—Metallography	2
E.E. 57—Alternating-current laboratory	2	M.E. 106—Power-plant economics and design	3
M.E. 73—Advanced heat-power testing	2	M.E. 124—Advanced heat-power testing	1
M.E. 105—Manufacturing and production methods	3	Electives**	12 or 11
M.E. 107—Heat-power calculations	2		
Economics 1a	4		
Electives**	3		
	19		18 or 17

INSPECTION TRIPS REQUIRED FOR MECHANICAL ENGINEERS

Junior Trip, Second semester. Prerequisite: Junior standing.
Senior Trip, First Semester. Prerequisite: Senior standing.

* This curriculum will be followed by all students who *enter* as freshmen prior to September, 1949, as sophomores prior to September, 1950, as juniors prior to September, 1951, and as seniors prior to September, 1952.

** General electives must include at least 2 credits from Mechanical Engineering courses numbered 100 or over.

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
Military Training	0	Military Training	0
Physical Education	0	Physical Education	0
Freshman Lectures	0		
	18		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Phys. 51—General physics	4	Phys. 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*—Petrology	5	M.&M.E. 127—Principles of extractive metallurgy	3
or			
Geol. 112#—Stratigraphy	3	Mech. 5—Mechanics of materials	3
and		Mech. 53—Materials of construction	2
Geol. 133—Sedimentation	3	Electives #* in Geology and	
M.&M.E. 99—Engineering expression	3	or	
Electives	2	Hydraulic Engineering	5
	17 or 18		19

* For students who plan to elect the Mining Engineering or the Metallic Minerals Geology Option.

\# For students who plan to elect the Petroleum Geology Option.
Summer inspection trip required. To be resumed in 1952.

SENIOR YEAR

A. MINING ENGINEERING OPTION

First Semester	Credits	Second Semester	Credits
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—Mineragraphy	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	Military Training	0
Military Training	0	Physical Education	0
Physical Education	0		
	17		17

SOPHOMORE YEAR

Math. 102a—Calculus	4	Math. 102b—Calculus	4
Phys. 51—General physics	4	Phys. 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	Military 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	2
Chem. 130a—Physical chemistry	2	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	5
	19		19

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	4	E.E. 153—Electronics	3
		Electives	2
	19		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; 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.

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 that college.

CHEMICAL ENGINEERING

Professors Ragatz, *chairman*, Hougen; Associate Professors Altpeter, Marshall, Neill, Watson; Assistant Professor Kirk; Instructors Garver, Hammersley, Harris, Holcomb.

12. Technical Analysis. I, II; 2 cr. Examinations of fuels, gases, and water. Prerequisite: Chemistry 11a or 14. Mr. Kirk, Mr. Harris.

18. Fundamentals of Chemical Engineering. I, II; 2 cr. Elementary chemical engineering calculations pertaining to density, composition, pressure, the gas laws, gas-vapor mixtures, material balances, and heat balances. Prerequisites: Chemistry 11a or 14 or concurrent registration, Mathematics 52, Physics 51. Mr. Neill.

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.

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; 3 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. Neill, Mr. Kirk.

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 Process 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; 4 cr. Application of physical and chemical principles to the solution of thermal problems in the chemical industries. Prerequisite: Ch.E. 18. Mr. Ragatz.

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. Hougen, Mr. Ragatz.

121. Chemical Plant Projects. II; 3 cr. Practice in laying out processes, choice of materials of construction, and calculations of sizes of equipment, etc. Prerequisite: Ch.E. 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.

124. Industrial Microscopy. I; 3 cr. Microscopic and microchemical examination of selected industrial products. Prerequisites: Physics 52 and Chemistry 122. Mr. Altpeter.

129. Corrosion. II; 2 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 non-metallic 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. Prerequisites: Ch.E. 111b, 118, or consent of instructor. Mr. Hougen.

220. DISTILLATION. I; 3 cr. The design and analysis of fractionation equipment for binary and complex mixtures. Prerequisites: 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, extraction and drying. Prerequisite: Ch.E. 111b or consent of instructor. Mr. Hougen.

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. Prerequisites: 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. Marshall.

231. SEMINAR. I, II; 1 cr. A study of various problems in chemical engineering. Staff.

232. ADVANCED CORROSION. II; 2 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. Prerequisites: 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, WAGNER; ASSISTANT PROFESSOR VILLEMONTE; INSTRUCTORS BRYAN, BUER, DAVIDSON, HAAS, KALLSEN, LAWTON, RHUDE, SELL, SLATER; LECTURERS EASTON, NICHOLS.

GENERAL

2a. SENIOR REPORTS. I; 1 cr. Practice in preparing technical papers and reports. (Will not be given after 1950.) Staff.

99. ENGINEERING REPORTS. 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 310.) 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 the instructor. Mr. Crandall.

180. Advanced Independent Study (undergraduate). (See page 310.)

200. Thesis (Graduate). I, II; 5–8 cr. Required in civil engineering for the M.S. and Ph.D. degrees. (See page 303.) Prerequisite: Graduate standing. Staff.

280. Advanced Independent Study (graduate). (See page 310.)

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

13. Land Surveying. I, II; 3 cr. Field and office work in land surveying and city platting; use and adjustment of sextant and plane table. Prerequisites: Trigonometry and C.E. 12. Mr. Wagner and staff. (Will not be given after 1951.)

15. Elementary Surveying. I; 2 cr. Taping; differential and profile leveling; use of compass. Mr. Wagner and staff.

16. Elementary Surveying. II; 2 cr. Transit traverses; elementary triangulation; contour mapping by transit and stadia; computation of areas. Prerequisites: Trigonometry and C.E. 15. Mr. Wagner and staff.

17. Topographic and Land Surveying. I; 3 cr. Includes also field astronomy; use of planimeter; underground and hydrographic surveys. Prerequisite: C.E. 16. Mr. Wagner and staff.

114. Advanced Surveying. I, II; 3 cr. Field and office work in topographic, hydrographic, and mining surveying and field astronomy. Prerequisite: C.E. 13. Mr. Wagner and staff.

116. Summer Survey. 4 cr. Four weeks of field and office practice in summer camp. Prerequisite: C.E. 17, or 114, 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.

118. Short Course in Surveying. I, II; 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 114, or 118. Mr. Wagner

TRANSPORTATION

21. Engineering Curves. I, II; 2 cr. The computation and field location of various curves used in civil engineering practice. Prerequisites: Trigonometry, Drawing 12, C.E. 12, or 16. Mr. Kallsen. (This course will be discontinued after 1950.)

22. Theory of Route Surveying. I, II; 3 cr. The principles of location as applied to highways, railways, pipelines, transmission lines and canals. Prerequisite: C.E. 21 or concurrent registration. Mr. Rhude. (This course will be discontinued after 1951.)

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, turnouts, earthwork calculations, haul and the mass diagram, and economy in grades and curves. Prerequisites: Mathematics 51, Drawing 12, C.E. 16. Mr. Rhude, Mr. Kallsen.

122. Practice in Route Surveying. 2 cr. Two weeks of field and office practice in summer camp. Prerequisites: C.E. 21 and 22, or 23. Mr. Wagner and staff.

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. 21 or 23 and Mechanics 3. Mr. Rader, Mr. Davidson.

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. Davidson.

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, Mr. Davidson.

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, Mr. Davidson.

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. 13 or 17. Mr. Rader, Mr. Davidson.

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. Davidson.

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* Students desiring work in planning and planting of public grounds, parks, and home grounds see courses in Horticulture, College of Agriculture.

STRUCTURAL ENGINEERING

52. Analysis of Simple Structures. I, II; 4 cr. Stresses in simple structures and frameworks. Prerequisite: Mechanics 3. Mr. Cottingham 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 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. Given when demand warrants. 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. Given when demand warrants. 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.

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 design in timber; grading, farm factors, built-up and spaced columns, ring connectors, and treatment of timber. Prerequisite: Mechanics 3. Mr. Crandall.

160. Reinforced Concrete. I; 3 cr. Continuation of C.E. 155 which is prerequisite. Mr. Cottingham.

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.

163. Masonry. I, II; 2 cr. The design and construction of dams and retaining walls. Prerequisite: Mechanics 3. Mr. Rhude. (This course will be discontinued after 1951.)

164. Foundations. I, II; 1 cr. The principles of foundation design and construction. Prerequisite: C.E. 163 or concurrent registration. Mr. Rhude. (This course will be expanded to 2 credits beginning in 1951.)

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. Special problems of measurements and flow of fluids; static and dynamic forces exerted by fluids. 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; 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, II; 2 cr. Methods of hydraulic machine testing. Tests are made of water wheels and of centrifugal, reciprocating and air-lift 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. Prerequisites: C.E. 71 or 72, 182. 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.

SANITARY ENGINEERING

191. Sewerage. II; 2 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. (Beginning in 1951 this course will be 3 credits.)

192. Sewage Treatment and Municipal Waste Disposal. I, II; 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, II; 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 DOYLE, LEIDEL.

3. DESCRIPTIVE GEOMETRY. I, II; 3 cr. Fundamental theory of point, line and plane, with applications to solids. Generation and classification of lines and surfaces; tangent planes; sections, intersections and developments, and perspective. Millar and Shiels' *Descriptive Geometry*. Prerequisite: Drawing 2. Staff.

10. ELEMENTS OF DRAWING. I, II; 3 cr. Use of instruments, third-angle projection, lettering, tracing, shades and shadows, perspective, house construction and planning. 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. I, 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 BAIRD, RIDEOUT, WEBER; ASSISTANT PROFESSORS HAFSTROM, IMM, NEMETZ, PARENT, RETHERFORD; INSTRUCTORS CALDWELL, JOERGER, KING, LEVINTHAL, MILLER, OLESON, RUSSELL, SCHEIBE, SCHMITZ, SIMON, SWENSON, WASSERMAN.

New course numbers are followed by the old numbers in parentheses, ( ).

1. FUNDAMENTALS OF ELECTRODYNAMICS. I, II; 4 cr. An introductory course for sophomore electrical engineers dealing with the derivation and application of the basic ideas and laws relating to electrostatic and electromagnetic phenomena. Open to students of other colleges. Prerequisites: Physics 53 and Mathematics 102a. Mr. Weber.

6. ELECTRICAL CIRCUITS. I, II; 4 cr. A study of general circuit theory including circuit parameters, direct current circuits, alternating current circuits. Primarily for mechanical engineers. Prerequisite: Physics 52. Mr. Imm.

7. Electrical Machinery. I, II; 4 cr. A study of the theory and applications of direct current machinery, alternating current machinery, electronics and control. Primarily for mechanical engineers. Prerequisite: E.E. 6. Mr. Imm.

8. Electrical Machinery. I; 3 cr. Laws of the electric and magnetic circuit and the characteristics of direct current machinery. With laboratory work. Primarily for mining and chemical engineers. Prerequisite: Physics 52. Mr. Russell.

9. Electrical Machinery. II; 3 cr. Alternating current theory and machinery. With laboratory work. Primarily for mining and chemical engineers. Prerequisite: E.E. 8. Mr. Russell.

10. Elementary Electrical Engineering. II; 3 cr. With laboratory work (E.E. 60). Primarily for civil engineers. Staff.

20. (1) 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.

22. (1) Elementary Electrodynamics. I, II; 3 cr. A continuation of E.E. 20. Electrostatic and magnetostatic fields. Prerequisite: E.E. 20.

25. Engineering Papers. I, II; 2 cr. Preparation and presentation of technical papers. Open to engineering seniors.

30 (3). Alternating Current Circuits. I, II; 4 cr. Single-phase and polyphase circuits. With laboratory work. Prerequisite: E.E. 22 (1). Mr. Higgins.

32 (2). Direct Current Machinery. I, II; 3 cr. A continuation of E.E. 1. Construction and operation of direct current machinery. Prerequisite: E.E. 22 (1). Mr. Baird.

34 (5). Fundamental Electronics. I, II; 4 cr. Fundamental theory and basic application of high-vacuum tubes, gas-filled tubes, cathode-ray tubes, photo tubes, rectifiers, amplifiers, control circuits and oscillators. Prerequisite: E.E. 30 (3) or senior standing in physics. Mr. Parent.

36 (156). Advanced 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 (3). Mr. Koehler.

40 (4). Alternating Current Machinery. I, II; 4 cr. Synchronous machinery, transformers, induction motors. Prerequisite: E.E. 30 (3). Mr. Baird.

42 (122). Electrical Measurements. I; 3 cr. A comprehensive study of the construction, basic principles, pertinent mathematical theory, and application of modern electrical measuring instruments. The electrical measurement of temperature and basic magnetic measurements are considered in less detail. Prerequisite: E.E. 30 (3). Mr. Higgins, 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. Scheibe.

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. Mr. Swenson.

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 (3) and E.E. 34 (5), 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 (2). 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. Mr. Nemetz.

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 (4) and Math. 111. Mr. Baird.

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 (5) or consent of instructor. Mr. Benedict.

115. Open- and Closed-Cycle Control Systems. II; 3 cr. An analytical 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 (4) or concurrent registration, or consent of instructor. Mr. Schmitz.

116. 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 non-linear circuits. With laboratory work. Prerequisite: E.E. 30 (3). 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. With laboratory work. Prerequisite: E.E. 30 (3). Mr. Benedict.

127. Electric Central Stations. I; 3 cr. Introduction to the electric power industry; technical problems of electric power networks. Prerequisite: E.E. 40 (4) 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 (3). Mr. Larson.

137. Power Distribution. I; 3 cr. Symbols, definitions, historical matters, electrical and mechanical properties of metals, distribution voltage, 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 (3). Mr. Larson.

138. Power-System Analysis. II; 3 cr. Power-system circuit analysis, calculation of transmission line constants; calculation of unbalanced-fault current by means of symmetrical components; per cent and per unit quantities. Prerequisite: E.E. 40 (4). 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. Two recitations per week plus one 3-hour laboratory every two weeks. Prerequisites: E.E. 32 (2) and 34 (5) or consent of instructor. Concurrent registration in E.E. 40 (4) is desirable. Mr. Benedict.

153. ELECTRONICS. II; 3 cr. Theory and industrial applications of high-vacuum and gaseous tubes, photo tubes, and other electronic devices. With laboratory work. Prerequisites: E.E. 30 (3), 6, 8, or junior standing in physics. Mr. Benedict.

155. COMMUNICATION ELECTRONICS. II; 3 cr. Fundamental theory and basic applications of the high-vaccum tube, gas-filled tubes, cathode-ray tubes, photo tubes, kinescopes and iconoscopes. With laboratory work. Prerequisite: E.E. 30 (3) 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 (157). 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 (157) or consent of instructor. Mr. Koehler.

180. ADVANCED INDEPENDENT STUDY. I, II; *cr. See page 18. Staff.

182. (154) 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 several kinds of amplifiers, oscillators, modulation, demodulation and other related topics. Prerequisites: E.E. 34 (5) and E.E. 36 (156). Mr. Rideout.

184. (157) 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.

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 (4). Mr. Baird.

214. ADVANCED DYNAMO LABORATORY. II; 3 cr. Advanced laboratory tests with direct and alternating current machinery. Prerequisite: E.E. 40 (4). Mr. Imm.

215. SERVOMECHANISMS. II; 3 cr. Dynamics of closed cycle control systems; sinusoidal response analysis; synthesis in terms of linear coordinates and logarithmic coordinates. Stability criteria and their application. Prerequisites: Mathematics 111 or E.E. 116, and E.E. 153 or 155. Mr. Higgins.

217. OPERATIONAL METHODS. I; 3 cr. Determination of the transient and steady-state responses 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's Transform Theory. Prerequisites: 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 Poincaire; topological 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 protection and protective relaying are briefly analyzed. Prerequisites: E.E. 127, E.E. 138, or equivalent, and graduate standing. Mr. Baird.

232. Advanced Theory of Electric Circuits. I; 3 cr. The analysis and synthesis of electrical networks used in communication engineering. Filters, attenuators, interstage networks, phase and amplitude equalizers and feedback loops. The course will also include the study of noise in communication networks, and an introduction to information theory. Prerequisites: Mathematics 111 and E.E. 184 (157), 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; 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 communications circuits. Prerequisite: E.E. 158 or consent of instructor. Mr. Rideout.

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 (3) 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 (157) or equivalent. Mr. Koehler.

250. Analog Computing. II; 3 cr. Solution of ordinary differential equations by means of analog machines. Prerequisite: Graduate standing or consent of instructor. Mr. Peterson, 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 (154) and E.E. 116 or Math. 111 strongly recommended or consent of instructor. Mr. Parent.

280. Advanced Independent Study. I, II; *cr. See page 310. Staff.

LABORATORY COURSES

21. (51) Electrodynamics Laboratory. I, II; 1 cr. Elementary circuit experiments and measurements. To accompany E.E. 20.

23. (51) Electrodynamics Laboratory. I, II; 2 cr. Elementary electric and magnetic field experiments. To accompany E.E. 22.

31 (53). Alternating Current Circuit Laboratory. I, II; 2 cr. To accompany E.E. 30 (3).

33 (52). Dynamo Laboratory. I or II; 1 cr. Tests of direct current dynamos and appliances. To accompany E.E. 32 (2).

35 (55). Fundamental Electronics Laboratory. I, II; 2 cr. Basic experimental electronics; emission, static and dynamic characteristics, performance of amplifiers, rectifiers, and oscillators. To accompany E.E.34 (5).

41 (54). 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 (4).

56. Electrical Circuits Laboratory. 1 cr. Primarily for mechanical engineers. Prerequisite: Concurrent registration in E.E. 6. Mr. Imm.

57. Electrical Machinery Laboratory. 1 cr. Primarily for mechanical engineers. Prerequisite: Concurrent registration in E.E. 7. Mr. Imm.

60. Elementary Electrical Engineering Laboratory. II; 1 cr. To accompany E.E. 10.

183. (154 Lab.) Electronics and Communications Engineering Laboratory. I; 2 cr. An experimental study of the basic components treated in E.E. 182. Prerequisite: Concurrent registration in E.E. 182. Staff.

185. (157 Lab.) Advanced Electronics and Communications Engineering Laboratory. II; 2 cr. An experimental study of the systems treated in E.E. 184. Prerequisite: Concurrent registration in E.E. 184.

MECHANICAL ENGINEERING

Professors Elliott, *chairman*, Hyland, Larson, McNaul, Nelson, Wilson; Associate Professors Daggett, Gilpin, Harker, Leutwiler, Myers, Rose; Assistant Professors Buroker, Farber, Feiereisen, Gage, Livermore, Schweitzer, Uyehara; Instructors Adkins, Akerman, Allison, Bonow, Bridge, Engelman, Fleming, Griswold, Holmes, Lindberg, Lovington, Mann, Peters.

METAL PROCESSING

21. Bench Work and Welding. 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. Machine Shop Practice. 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.

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 of gas, electric arc, thermit, and resistance welding. Hard surfacing, metal spraying, methods of testing, stress relief. Mr. Adkins, Mr. Lindberg, Mr. Peters and staff.

126 (26). 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. 25 or consent of instructor. Mr. Gilpin and staff.

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. Mr. Buroker and staff.

43. MACHINE ELEMENTS. I; 3 cr. Study of the application of the principles of mechanics and empirical methods to the design of machine elements for mechanical engineers. Commercial drafting-room practice. Prerequisites: M.E. 41; Mechanics 1; Mechanics 3 or concurrent registration. Mr. Hyland and staff.

44. ADVANCED MACHINE DESIGN. I, II; 3 cr. A continuation of M.E. 43 including design problems involving deflections, stresses, fatigue inertia, balancing, vibration, and 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. Prerequisites: Mechanics 1 and 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. 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. 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 310.

INDUSTRIAL ENGINEERING

12 (105). 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. For engineers. Prerequisite: Junior standing. Mr. Gage.

13 (113). 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. Mr. Gage.

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. Prerequisite: M.E. 12 or consent of instructor. 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. Prerequisite: Junior standing. 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. 105. 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. 105 and consent of instructor.

122 (82). 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: Sophomore standing. 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 310.

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. Wilson, Mr. Farber, Mr. Myers 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. Wilson, Mr. Farber, Mr. Myers 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. Elliott, Mr. Rose 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. Allison.

66. HEAT-POWER ENGINEERING. I, II; 2 cr. A study of stokers, boilers, steam engines, steam turbines, internal combustion engines, air compressors and refrigeration equipment. For chemical engineers. Prerequisite: M.E. 65.

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, Mathematics 102b or concurrent registration.

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. Prerequisite: M.E. 63 or concurrent registration and M.E. 72. Mr. Feiereisen, Mr. Myers, Mr. Schweitzer and staff.

74. HEAT POWER LABORATORY. 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.

75. ADVANCED TESTING OF HEAT ENGINES. I, II; 1 cr. Continuation of M.E. 74, covering fuel and gas analysis, and more complex types of heat engines including air compressors, refrigeration machinery, boiler plant and Diesel engine tests. 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: Registration in M.E. 66. 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. Prerequisite: Junior standing. 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.

160 (110). ADVANCED HEATING, VENTILATING AND AIR CONDITIONING. I, 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. 108. Mr. Larson.

161 (111). ADVANCED THERMODYNAMICS FOR MECHANICAL ENGINEERS. I, II; 3 cr. A rigorous, detailed study of the first and second laws of thermodynamics, and of ideal and actual thermodynamics processes. Prerequisite: M.E. 62. Mr. Farber, Mr. Myers.

162 (112). REFRIGERATION. I, 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. Prerequisites: M.E. 62, 64, 66 or 67. Mr. Wilson.

164 (114). INDUSTRIAL HEAT TRANSFER. I, II; 3 cr. Application of heat transfer principles to mechanical engineering processes involved in power generation heating, and air conditioning. Prerequisites: M.E. 62, 64, or 67. Mr. Farber.

166 (106). 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: Senior standing. Mr. Hyland and staff.

167 (107). HEAT-POWER CALCULATIONS. I, II; 3 cr. Calculations used in practice for engines, boilers, and condensers including economic selection of equipment. Also fundamental psychrometric calculations in relation to cooling towers, drying processes, condensation, etc. Prerequisite: M.E. 62 or 64. Mr. Larson, Mr. Rose.

168 (108). HEATING AND VENTILATING. I, II; 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. Prerequisites: M.E. 62, 64, 66 or 67. Mr. Nelson, Mr. Akerman.

169 (109). INTERNAL COMBUSTION ENGINES. I, II; 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. Prerequisites: M.E. 62, 64, 66 or 67. Mr. Rose, Mr. Wilson.

171 (118). GAS TURBINES AND JET PROPULSION. I, 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. 62. Mr. Engelman.

172 (160). FLOW OF COMPRESSIBLE FLUIDS. I, 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: Senior standing. Mr. Farber.

174 (124). 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 (128). HEATING AND VENTILATING LABORATORY. I, 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 310.

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. I, II; 3 cr. A study of the theoretical and experimentally determined facts underlying combustion in all types of internal combustion engines. Mr. Myers, Mr. Uyehara.

203. GRADUATE SEMINAR IN HEAT POWER. I, II; 1 cr.

217. Engine Instrumentation. I, II; 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 310.

NOTE: Numbers in parentheses are those prior to Sept., 1951.

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.

DEPARTMENT OF MECHANICS

Professors Kommers, *chairman*, Roark, Thomson, Wendt (Also Associate Director—Engineering Experiment Station), Withey (Also Dean); Associate Professor Washa; Assistant Professor Fluck; Instructors Boettcher, Haft, Holtzman, May, Orloff, Petersen, Saemann, Tibbitts, Tiedemann, 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; Mathematics 102a or concurrent registration.

2. Dynamics. I, II; 3 cr. Prerequisites: Mechanics 1; Mathematics 102b or concurrent registration.

3. Mechanics of Materials. I, II; 4 cr. Prerequisites: Mechanics 1 or 4; Mathematics 102b or concurrent registration.

4. Statics and Dynamics. I; 4 cr. Prerequisites: Physics 51; Mathematics 102b or concurrent registration. For chemical, electrical, and mining engineers.

5. Mechanics of Materials. II; 3 cr. Prerequisites: Mechanics 1 or 4; Mathematics 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 or II; 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.

102. Advanced Dynamics. I or II; 3 cr. Continuation of Mechanics 2. Kinematics and kinetics of plane, spherical, and general motion; linear and angular impulse and momentum; D'Alembert's principle. Prerequisites: Mechanics 2 and 3. Mr. Roark.

106. Advanced Mechanics of Materials. I or 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. Thomson.

108. MATERIALS OF CONSTRUCTION. I, II; 2–5 Cr. Laboratory research on materials. Research on concrete, plain and reinforced. Prerequisites: Mechanics 51 and 52, or 53. Mr. Washa.

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 or Mr. Tiedemann.

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.

113. DESIGN OF AIRPLANE PARTS. I; 2 cr. Design of spars, struts and other structural elements of airplanes. Aircraft materials. Prerequisite: Mechanics 112. Mr. Roark.

117. VIBRATION LABORATORY. I, 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. Thomson or Mr. Boettcher.

180. ADVANCED INDEPENDENT STUDY. I, II; *cr. See page 310.

200. THESIS RESEARCH. I, II; 2–5 cr. Staff.

215. APPLIED ELASTICITY. I or II; 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; Mathematics 110 or 112. Mr. Thomson.

216. ENGINEERING APPLICATIONS OF OPERATIONAL METHODS. I or 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; Mathematics 111; or consent of instructor. Mr. Thomson.

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; ASSISTANT PROFESSORS HEINE, MACK, RUNDLE; INSTRUCTORS KEMPKA, MONSON.

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 practice 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 cr. 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 sub-aqueous 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, 107. Mr. Shorey.

121. Assaying. I, II; 3 cr. The assays of ores with special reference to slag calculations and slag properties. Prerequisite: Chemistry 2b. Mr. Rundle.

122. Principles of Metallurgy. I; 3 cr. A study of the fundamental principles of metallurgy. Physical properties of metals and alloys. Simple equilibrium diagrams. Prerequisite: Chemistry 2b. 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 2b; Physics 52. 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. 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. Mr. Rosenthal.

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. 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. Prerequisite: 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 courses M.&M.E. 33 and 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. Mr. Barker.

147. Alloy Structures. II; 3 cr. Lectures and laboratory practice illustrating the application of fundamental principles to alloy systems. Ternary alloys, metastable systems. Prerequisite: Senior standing. 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. Barker.

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 310.

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 in General. I, II; 3 cr. The heat treatment considered from the broader viewpoint of composition, furnace atmosphere, grain size, furnaces, etc. 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. (Graduate standing in metallurgy required.) Mr. Mack.

249. Advanced Foundry Metallurgy. I, II; 3 cr. This course covers advanced developments 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. (Graduate standing in metallurgy required.) Mr. Rosenthal.

280. Advanced Independent Study. I, II; *cr. See page 310. 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.

COLLEGE OF AGRICULTURE

RUDOLPH K. FROKER, Dean and Director
VINCENT E. KIVLIN, Associate Dean
NOBLE CLARK, Associate Director of Experiment Station
WARREN W. CLARK, Associate Director of Extension
MISS FRANCES ZUILL, Director of Home Economics
A. J. HAAS, Executive Secretary

FACULTY

ABBOTT, RICHARD WILLIAM, *B.S.F.*, Assistant Professor of Agricultural Engineering
ABRAMS, FENTON NEALE, *B.S.*, Instructor in Agricultural Education
ADAMS, JOHN LESTER, JR., *B.S.*, Instructor in Poultry Husbandry
AHLGREN, HENRY LAWRENCE, *Ph.D.*, Professor of Agronomy
ALBERT, ARTHUR ROBERT, *B.S.*, Associate Professor of Soils
ALLEN, NATHAN NEWTON, *Ph.D.*, Professor of Dairy Husbandry
ALLEN, OSCAR NELSON, *Ph.D.*, Professor of Agricultural Bacteriology
ALLEN, THOMAS CORT, *Ph.D.*, Professor of Economic Entomology
ANDREW, ROBERT HARRY, *Ph.D.*, Assistant Professor of Agronomy
ANNIN, GERALD EVERETT, *M.S.*, Assistant Professor of Poultry Husbandry
APPLE, JAMES W., *Ph.D.*, Associate Professor of Economic Entomology
ARAWINKO, ZIGMUND MARION, *B.S.*, Instructor in Agronomy
ARNY, DEAN CEDRIC, *Ph.D.*, Assistant Professor of Agronomy and Plant Pathology
ATTOE, OSBORNE JAMES, *Ph.D.*, Associate Professor of Soils

BACKUS, MYRON PORT, *Ph.D.*, Professor of Plant Pathology and Botany
BAKKEN, HENRY HARRISON, *M.A.*, Associate Professor of Agricultural Economics
BARTON, JOHN RECTOR, *B.A.*, *B.D.*, Associate Professor of Rural Sociology
BAUMANN, CARL AUGUST, *Ph.D.*, Professor of Biochemistry
BAUMEISTER, GEORGE F. *B.S.*, Associate Professor of Agricultural Extension
BAYLEY, NED DUANE, *B.S.*, Instructor in Dairy Husbandry
BEACH, BURR ABRAHAM, *D.V.M.*, Professor of Veterinary Science
BECK, GAIL EDWIN, *M.S.*, Instructor in Horticulture
BECK, STANLEY D., *M.S.*, Instructor in Economic Entomology
BEELER, ROBERT S., *M.S.*, Assistant Professor of Agricultural Journalism
BERGE, ORRIN IRWIN, *B.S.*, Assistant Professor of Agricultural Engineering
BERGER, KERMIT CARL, *Ph.D.*, Professor of Soils
BERMAN, DAVID THEODORE, *B.A.*, *D.V.M.*, Assistant Professor of Veterinary Science
BEWICK, THOMAS LYMAN, *Ph.B.*, Emeritus Professor of Agricultural Extension and Agricultural Education
BJORAKER, WALTER T., *M.S.*, Assistant Professor of Agricultural Education
BLISS, MILTON EDWARD, *B.S.*, Assistant Professor of Agricultural Journalism
BOHSTEDT, GUSTAV, *Ph.D.*, Professor of Animal Husbandry
BRANDLY, CARL ALFRED, *D.V.M.*, Professor of Veterinary Science
BRANN, JOHN WILLIAM, *M.S.*, Emeritus Assistant Professor of Plant Pathology
BRAY, ROBERT WOODBURY, *Ph.D.*, Assistant Professor of Animal Husbandry
BRIGGS, GEORGE MCSPADDEN, *B.S.*, Professor of Agronomy
BRINK, ROYAL ALEXANDER, *M.S.*, *Sc.D.*, Professor of Genetics

BRUHN, HJALMAR DIEHL, *M.S.*, Professor of Agricultural Engineering
BRUNS, EDWARD GEORGE, *B.S.*, Assistant Professor of Agricultural Engineering
BUCHHOLTZ, KENNETH PAUL, *Ph.D.*, Associate Professor of Agronomy
BURCALOW, FRANK VICTOR, *M.S.*, Professor of Agronomy
BURRIS, ROBERT HARZA, *Ph.D.*, Associate Professor of Biochemistry

CALBERT, HAROLD E., *Ph.D.*, Assistant Professor of Dairy Industry
CARSTENSEN, VERNON, *Ph.D.*, Associate Professor of Agricultural Economics and History
CARTTER, BRUCE LANPHER, *M.S.*, Associate Professor of Agricultural Extension
CASIDA, LESTER EARL, *Ph.D.*, Professor of Genetics
CHAPMAN, ARTHUR BARCLAY, *Ph.D.*, Professor of Genetics
CHAPMAN, CLINTON JOSEPH, *B.S.*, Professor of Soils
CHAPMAN, R. KEITH, *Ph.D.*, Assistant Professor of Economic Entomology
CLARK, WARREN WILLIAM, *M.S.*, Professor of Agricultural Extension; Associate Director of Agricultural Extension
CLARK, (WILLIAM) NOBLE, *M.S.*, Professor; Associate Director of the Agricultural Experiment Station
CLODIUS, ROBERT L., *Ph.D.*, Assistant Professor of Agricultural Economics
COBBS, HAROLD V., *B.S.*, Instructor in Dairy Husbandry
COLLENTINE, ARTHUR O., *B.S.*, Assistant Professor of Dairy Husbandry
COMBS, OVA BEETEM, *M.S.*, Professor of Horticulture
COOK, HUGH L., *M.S.*, Associate Professor of Agricultural Economics
COOPER, DELMER CLAIR, *Ph.D.*, Professor of Genetics
CRAMER, ALBERT JULIUS, *B.S.*, Assistant Professor of Dairy Husbandry
CRAVENS, WILLIAM WINSOR, *Ph.D.*, Associate Professor of Poultry Husbandry
CROW, JAMES F., *Ph.D.*, Assistant Professor of Genetics and Zoology

DALE, HOMER E., *M.S., D.V.M.*, Instructor in Veterinary Science
DARLING, HENRY MELVIN, *Ph.D.*, Associate Professor of Plant Pathology
DAVENPORT, ROBERT E., *B.S.*, Instructor in Agricultural Education
DAY, LEE, *M.S.*, Assistant Professor of Agricultural Economics
DICKE, ROBERT J., *Ph.D.*, Associate Professor of Economic Entomology
DICKSON, JAMES GEERE, *Ph.D.*, Professor of Plant Pathology
DOGGER, JAMES R., *M.S.*, Instructor in Economic Entomology
DUDGEON, ROBERT HAROLD, *B.S.*, Instructor in Agricultural Engineering
DUFFEE, FLOYD WALDO, *B.S.*, Professor of Agricultural Engineering

EBLING, WALTER HENRY, *Ph.D.*, Assistant Professor of Agricultural Economics
EKERN, PAUL C., *Ph.D.*, Instructor in Soils
ELFNER, JOSEPH SHERBURNE, *B.S.*, Assistant Professor of Horticulture
ELLARSON, ROBERT SCOTT, *M.S.*, Instructor in Wildlife Management
ELVEHJEM, CONRAD ARNOLD, *Ph.D.*, Professor of Biochemistry; Dean, Graduate School
ENGELBERT, LINCOLN E., *Ph.D.*, Instructor in Soils

FARRAR, CLAYTON LEON, *Ph.D.*, Professor of Economic Entomology
FISHER, ELLSWORTH H., *Ph.D.*, Associate Professor of Economic Entomology
FLUKE, CHARLES LEWIS, JR., *Ph.D.*, Professor of Economic Entomology
FOLLETT, ALBERT OSCAR, *B.S.*, Assistant Professor of Agricultural Economics
FOSTER, EDWIN MICHAEL, *Ph.D.*, Associate Professor of Agricultural Bacteriology
FRAZIER, WILLIAM CARROLL, *Ph.D.*, Professor of Agricultural Bacteriology
FROKER, RUDOLPH KNUGAARD, *M.S.*, Professor of Agricultural Economics; Dean, College of Agriculture; Director of Agricultural Experiment Station and Agricultural Extension
FROST, WILLIAM DODGE, *Ph.D., Dr. P.H.*, Emeritus Professor of Agricultural Bacteriology
FULLER, JAMES GARFIELD, *M.S.*, Professor of Animal Husbandry
FULTON, ROBERT WATT, *Ph.D.*, Assistant Professor of Horticulture

GABLEMAN, WARREN H., *Ph.D.*, Assistant Professor of Horticulture
GARD, ROBERT E., *M.A.*, Associate Professor of Rural Sociology
GERHARDT, ROBERT WILLIAM, *M.S.*, Instructor in Agricultural Administration
GRABER, LAURENCE FREDERICK, *Ph.D.*, Professor of Agronomy
GRAUL, EDWARD JOHN, *M.S.*, Professor of Soils
GRUMMER, ROBERT HENRY, *Ph.D.*, Associate Professor of Animal Husbandry

HAAS, ALFRED JOHN, Professor; Executive Secretary, College of Agriculture
HAGEDORN, DONALD J., *Ph.D.*, Assistant Professor of Agronomy and Plant Pathology
HALL, ISAAC FULTS, *Ph.D.*, Professor of Agricultural Economics
HALPIN, JAMES GARFIELD, *B.S.*, Professor of Poultry Husbandry
HALVORSON, HARLOW W., *M.S.*, Associate Professor of Agricultural Economics
HANSON, ROBERT PAUL, *Ph.D.*, Assistant Professor of Veterinary Science
HARRIS, ROY THEODORE, Emeritus Assistant Professor of Dairy Husbandry
HART, EDWIN BRET, *B.S.*, Emeritus Professor of Biochemistry
HASTINGS, EDWIN GEORGE, *M.S., D.Sc.*, Emeritus Professor of Agricultural Bacteriology
HATCH, KIRK LESTER, *B.S.*, Emeritus Professor of Agricultural Extension
HAUSER, EDWARD RICHARD, *Ph.D.*, Assistant Professor of Animal Husbandry
HAYES, JOHN BARRY, *B.S.*, Professor of Poultry Husbandry
HAZARD, MRS. ALINE, *B.S.*, Instructor in Agricultural Journalism
HEAN, CLARENCE SCOTT, *B.A.*, Professor; Librarian, College of Agriculture
HEIZER, EDWIN ELBERT, *Ph.D.*, Professor of Dairy Husbandry
HEMBRE, INGVALD O., *B.S.*, Assistant Professor of Agricultural Extension
HENDRICKSON, FREDOLPH ARTHUR, *M.S.*, Instructor in Dairy Husbandry
HERRICK, CHESTER ALBERN, *Ph.D., Sc.D.*, Professor of Zoology and Veterinary Science
HERRLING, EUGENE H., *B.S.*, Instructor in Plant Pathology
HIBBARD, BENJAMIN HORACE, *Ph.D.*, Emeritus Professor of Agricultural Economics
HICKEY, JOSEPH J., *Ph.D.*, Associate Professor of Wildlife Management
HILDEBRANDT, ALBERT C., *Ph.D*, Assistant Professor of Plant Pathology
HILL, GEORGE WILLIAM, *Ph.D.*, Professor of Rural Sociology
HOBSON, ASHER, *Ph.D.*, Professor of Agricultural Economics
HODGES, LAWRENCE HERBERT, *B.S.*, Instructor in Agricultural Engineering
HOLDEN, EUGENE DAVENPORT, *M.S.*, Associate Professor of Agronomy
HOLM, LEROY G., *Ph.D.*, Assistant Professor of Horticulture
HOPKINS, ANDREW WINKLE, *B.L.*, Professor of Agricultural Journalism
HOUGAS, ROBERT WAYNE, *Ph.D.*, Assistant Professor of Genetics
HUGHES, CLARENCE E., Instructor in Agricultural Engineering
HULL, HAROLD HAIGHT, *M.S.*, Assistant Professor of Soils

IRWIN, MALCOLM ROBERT, *Ph.D.*, Professor of Genetics
IRVINE, DONALD MACLEAN, *B.S.*, Instructor in Dairy Industry

JACKSON, HOWARD CAMPBELL, *Ph.D.*, Professor of Dairy Industry
JACKSON, MARION L., *Ph.D.*, Associate Professor of Soils
JAMES, JOHN AMBROSE, *B.S.*, Professor of Agricultural Education
JAMES, REUBEN, *B.S.*, Assistant Professor of Agronomy
JOHNSON, JAMES, *Ph.D.*, Professor of Plant Pathology and Horticulture
JOHNSON, M. MILDRED, *M.S.*, Instructor in Agricultural Bacteriology
JOHNSON, MARVIN JOYCE, *Ph.D.*, Professor of Biochemistry
JONES, ALICE, *B.S.*, Instructor in Agricultural Journalism
JONES, EDWARD DAVID, *B.S.*, Instructor in Plant Pathology
JORGENSEN, EMIL A., *M.S.*, Associate Professor of Agricultural Education
JORNS, BYRON CHARLES, Assistant Professor of Agricultural Journalism

KAESBERG, PAUL J., *Ph.D.*, Instructor in Soils
KEARL, BRYANT EASTHAM, *M.S.*, Associate Professor of Agricultural Journalism
KEITT, GEORGE WANNAMAKER, *Ph.D., Sc.D.*, Professor of Plant Pathology
KIVLIN, VINCENT EARL, *M.S.*, Professor of Agricultural Education; Associate Dean, College of Agriculture.
KNIGHT, STANLEY GLENN, *Ph.D.*, Assistant Professor of Agricultural Bacteriology
KOLB, JOHN HARRISON, *Ph.D.*, Professor of Rural Sociology
KREITLOW, BURTON W., *Ph.D.*, Assistant Professor of Agricultural Education
KROSS, JOHN I., *B.S.*, Associate Professor of Agricultural Economics
KUEHNER, CONRAD LOUIS, *B.S.*, Associate Professor of Horticulture
KUNTZ, JAMES E., *Ph.D.*, Assistant Professor of Plant Pathology

LACEY, JAMES JEROME, *B.S.*, Professor of Animal Husbandry
LANGDON, GRACE ELIZABETH, *M.A.*, Assistant Professor of Agricultural Journalism
LANGORD, LEONARD, *B.S.*, Instructor in Horticulture
LARDY, HENRY ARNOLD, *Ph.D.*, Associate Professor of Biochemistry
LAROCK, MAX JAMES, *B.A.*, Professor of Agricultural Engineering
LARSON, RUSSELL HAROLD, *Ph.D.*, Assistant Professor of Plant Pathology
LEBEN, CURT C., *Ph.D.*, Assistant Professor of Plant Pathology
LEDERBERG, JOSHUA, *Ph.D.*, Assistant Professor of Genetics
LEITH, BENJAMIN DONALD, *B.S.* Emeritus Professor of Agronomy
LINK, KARL PAUL, *Ph.D.*, Professor of Biochemistry
LONGENECKER, GEORGE WILLIAM, *M.S.*, Professor of Horticulture; Executive Director, University Arboretum
LOOMER, CHARLES W., *Ph.D.*, Associate Professor of Agricultural Economics
LUTHER, ERNEST LEONARD, *B.S.*, Emeritus Professor of Agricultural Extension

MCCABE, ROBERT ALBERT, *Ph.D.*, Assistant Professor of Wildlife Management
MCCOY, ELIZABETH FLORENCE, *Ph.D.*, Professor of Agricultural Bacteriology
MCGIBBON, WILLIAM HENRY, *Ph.D.*, Associate Professor of Poultry Husbandry
MCKENZIE, THOMAS, Instructor in Animal Husbandry
MCNALL, PRESTON ESSEX, *Ph.D.*, Professor of Agricultural Economics
MCNEEL, WAKELIN, *B.S.*, Professor; State Leader of Boys and Girls Clubs
MCNUTT, SAMUEL H., *D.V.M.*, Professor of Veterinary Science
MARKS, MRS. EVA K., *B.A., M.S.*, Instructor in Agricultural Journalism
MEDLER, JOHN THOMAS, *Ph.D.*, Assistant Professor of Economic Entomology and Agronomy
MILWARD, JAMES GARFIELD, *M.S.*, Professor of Horticulture
MITCHELL, DONALD RICHARDS, *M.S.*, Assistant Professor of Agricultural Economics
MOLL, TORBJORN, *D.V.M.*, Instructor in Veterinary Science
MOORE, JAMES GARFIELD, *M.S.*, Professor of Horticulture
MOORE, JOHN DUAIN, *Ph.D.*, Associate Professor of Plant Pathology
MORSE, ERSKINE V., *Ph.D.*, Assistant Professor of Veterinary Science
MORTENSON, WILLIAM PETER, *Ph.D.*, Associate Professor of Agricultural Economics
MOULTON, FRANK S., *B.S.*, Lecturer in Agricultural Engineering
MUCKENHIRN, ROBERT JOHN, *Ph.D.*, Professor of Soils; Asst. Director of Experiment Station
MUCKS, ARLIE MAX, *B.S.*, Professor; Assistant Director of Agricultural Extension

NEAL, NORMAN PERCY, *Ph.D.*, Professor of Agronomy and Genetics
NEITZKE, CARL HERMAN, *B.E.*, Assistant Professor of Agricultural Engineering
NICHOLS, ROY E., *Ph.D., D.V.Sc.*, Lecturer in Veterinary Science
NIEDERMEIER, ROBERT PAUL, *Ph.D.*, Assistant Professor of Dairy Husbandry

OGDEN, WILLIAM BUTLER, *M.S.*, Assistant Professor of Horticulture

PALLETT, RAYMOND B., *B.S.*, Professor of Agricultural Extension
PARSONS, KENNETH HERALD, *Ph.D.*, Professor of Agricultural Economics
PENN, RAYMOND J., *Ph.D.*, Professor of Agricultural Economics
PETERSON, WILLIAM HOWARD, *Ph.D.*, Professor of Biochemistry
PHILLIPS, PAUL HORRELL, *Ph.D.*, Professor of Biochemistry
POPE, ARTHUR LLOYD, *Ph.D.*, Associate Professor of Animal Husbandry
POUND, GLENN SIMPSON, *Ph.D.*, Associate Professor of Plant Pathology
PRICE, WALTER VAN, *Ph.D.*, Professor of Dairy Industry

RAUP, PHILIP M., *M.S.*, Assistant Professor of Agricultural Economics
RICHARDS, CLARICE AUDREY, *Ph.D.*, Lecturer in Plant Pathology
RIEMAN, GUSTAV HERMAN, *Ph.D.*, Professor of Genetics, Horticulture and Plant Pathology
RIKER, ALBERT JOYCE, *Ph.D.*, Professor of Plant Pathology
ROBERTS, RAY HARLAND, *Ph.D.*, Professor of Horticulture
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 Agricultural Bacteriology
SCHAARS, MARVIN ARNOLD, *Ph.D.*, Professor of Agricultural Economics
SCHWALBACH, JAMES ALFRED, *M.S.*, Lecturer in Rural Sociology
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 D., *Ph.D.*, Associate Professor of Economic Entomology
SHOEMAKER, KARL, *M.A.*, Associate Professor of Agricultural Economics
SIMON, JOSEPH, *D.V.M.*, Instructor in Veterinary Science
SMITH, DALE W., *Ph.D.*, Assistant Professor of Agronomy
SMITH, DAVID CLYDE, *Ph.D.*, Professor of Agronomy
SMITH, VEARL ROBERT, *Ph.D.*, Associate 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, *D.V.M.*, Instructor in Veterinary Science
SPENCER, GUY ROGER, *Ph.D.*, Assistant Professor of Veterinary Science
SPITZE, ROBERT GEORGE, *B.S.*, Instructor in Agricultural Economics
STAHMANN, MARK A., *Ph.D.*, Associate Professor of Biochemistry
STALLARD, J. EARL, *B.S.*, Assistant Professor of Dairy Husbandry
STANLEY, DUANE D., *B.S.*, Instructor in Agricultural Education
STEENBOCK, HARRY, *Ph.D., Sc.D.*, Professor of Biochemistry
STORMONT, CLYDE J., JR., *B.A.*, Assistant Professor of Genetics
STRANG, ALLEN JOHN, *B.A.*, Lecturer in Agricultural Engineering
STROMMEN, ARTHUR M., *M.S.*, Professor of Agronomy
STRONG, FRANK MORGAN, *Ph.D.*, Professor of Biochemistry
STRUCKMEYER, BURDEEN ESTHER, *Ph.D.*, Assistant Professor of Horticulture
SUMNER, WILLIAM ALLISON, *Ph.M.*, Professor of Agricultural Journalism
SUND, JULIAN MAGNUS, *M.S.*, Instructor in Agronomy
SUNDE, MILTON LESTER, *B.S.*, Instructor in Poultry Husbandry
SWANSON, ARTHUR MARTIN, *Ph.D.*, Associate Professor of Dairy Industry
SWANSON, RANDALL COVER, *B.S.*, Assistant Professor of Agricultural Engineering
SWINGLE, CHARLES FLETCHER, *Ph.D.*, Assistant Professor of Horticulture

TANNER, CHAMP B., *Ph.D.*, Instructor in Soils
THOMAS, JOHN EUGENE, *Ph.D.*, Assistant Professor of Plant Pathology
THOMSEN, LOUIS CHARLES, *B.S.*, Professor of Dairy Industry
TORRIE, JAMES HIRAM, *Ph.D.*, Professor of Agronomy
TRENK, FRED BENJAMIN, *M.S.*, Professor of Agricultural Engineering
TRUOG, EMIL, *M.S.*, Professor of Soils
TURNER, FORREST HAVEN, *M.A.*, Instructor in Soils

VANDERVEST, WALTER LOUIS, *M.S.*, Assistant Professor of Agronomy
VAUGHAN, RICHARD ENGLISH, *M.S.*, Emeritus Professor of Plant Pathology
VERGERONT, GLEN WALLACE, *B.A.*, Assistant Professor of Dairy Husbandry

WADE, EARL K., *M.S.*, Assistant Professor of Plant Pathology
WALKER, JOHN CHARLES, *Ph.D.*, Professor of Plant Pathology
WALLENFELDT, EVERT, *M.S.*, Professor of Dairy Industry
WECKEL, KENNETH GRANVILLE, *Ph.D.*, Professor of Dairy Industry
WERNER, GEORGE MCKINLEY, *B.S.*, Associate Professor of Dairy Husbandry
WILDE, SERGIUS ALEXANDER, *F.E., Sc.D.*, Professor of Soils
WILEDEN, ARTHUR FREDERICK, *M.S.*, Professor of Rural Sociology
WILKINSON, J. FRANK, *B.S.*, Associate Professor of Agricultural Education; Director, Farm Short Course
WILLIAMS, DAVID H., *B.S.*, Associate Professor of Animal Husbandry
WILSON, JOE BRANSFORD, *Ph.D.*, Associate Professor of Agricultural Bacteriology
WILSON, PERRY WILLIAM, *Ph.D.*, Professor of Agricultural Bacteriology
WINDER, WILLIAM C., *M.S.*, Assistant Professor of Dairy Industry
WINSLOW, NANCY S., *M.S.*, Instructor in Veterinary Science
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
WRIGHT, ANDREW HAMILTON, *M.S.*, Professor of Agronomy
WRIGHT, GEORGE L., *B.S.*, Associate Professor of Agricultural Extension

ZEASMAN, OTTO REINHART, *B.S.*, Professor of Agricultural Engineering and Soils
ZEHNER, CLOYD ERNEST, *B.S.*, Instructor in Dairy Husbandry
ZIEGLER, GEORGE ALBERT, *B.S.*, Instructor in Horticulture

COLLEGE OF AGRICULTURE

The College of Agriculture performs three distinct funtions for the citizens of Wisconsin:

(1) It provides, with the cooperation 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 section, pages 7–12.

STUDENT EXPENSE

For information regarding living costs, tuition and fees, and student employment, consult the General Information section.

LOAN FUNDS AND UNDERGRADUATE SCHOLARSHIPS

Students should consult the General Information section for a list of available scholarship 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 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.

Cooperative Houses For Men. The University owns and operates five cooperative 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.

The Babcock House, a cooperative 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 $200 per year. Residents of the house, approximately 38 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 commerical, 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.

FEES, BOOKS, AND MISCELLANEOUS COSTS—The student in Agriculture who is a resident of the state of Wisconsin should expect to spend from $100.00 to $150.00 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.

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 to have 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.*

* Figures in parentheses ( ) apply to students in agriculture who entered college before September 1, 1939.

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 Husb.[2]	3	Agronomy or Animal-Dairy Husb.	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

Agr. Bact. 1—General survey	4	Agr. Economics 4—Prin. of agr. econ.[2]	3
Econ. 1a—General economics	4	Biochemistry 1—Elem. biochem[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 363.

4 See information on Military Science and Physical Education Requirements on page 363.

5 A choice is offered between Soils 1 and Biochemistry 1. Only one is required but both may be taken if desired.

Freshman and Sophomore Electves 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.

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 361). 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 (or Band) 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 fifteen 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 taken.

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
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
Agron. 1—Prin. and practices in crop production	3	Botany 1—General botany	5
Math. 1a—Algebra or Math. 3a—Algebra and trigonometry	4	Econ. Ent. 1—Elem. ent. (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 365.

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
* Agr. Bact. 1—General survey	4	Agr. Econ. 4	3
Econ. 1a—General economics	4	Zoology 1	5
* Soils 1—Soils & soils 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 economic 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
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
Agronomy or Animal-Dy. Husb. 1	3	Agronomy or Animal-Dy. Husb. 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
Biochem. 1—Elem. Biochem.	4	Elective	4
Econ. 1a—General economics	4	Agr. Econ. 4—Prin. 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	Agric. Bact. 1—Gen. Survey	4
Military Science	0	Speech 7—Public Speaking	2
		Military Science	0
	15-17		17-18

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. See Home Economics.

GRADUATE WORK IN AGRICULTURE AND HOME ECONOMICS

Graduate work is offered in each of the nineteen departments in Agriculture and in the Department of Home Economics. 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, any one 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, Madson 6, Wisconsin.

SHORT SERVICE 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
Four-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.

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 361 and pages 395-401.

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 361.

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 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 than 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 parenthesis ( ) 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.

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 cases 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 BACTERIOLOGY

PROFESSORS ALLEN, BALDWIN, FRAZIER, *chairman*, FRED, MCCOY, SARLES, P. W. WILSON; ASSOCIATE PROFESSORS FOSTER, J. B. WILSON; ASSISTANT PROFESSOR KNIGHT.

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, Agricultural 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. J. B. Wilson, Mr. S. G. Knight.

107. HEREDITY IN MICROORGANISMS. I; 2 cr. (Double listed with Genetics 107.) Genetic problems in bacteria, fungi and protozoa. Mutation and variation; adaptation and natural selecton. 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: Agricultural 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: Agricultural Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. Frazier, Mr. Foster.

123. SOIL BACTERIOLOGY. I; 4 cr. Study of soil microorganisms. Prerequisites: Agricultural 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: Agricultural Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. Frazier, Mr. Foster.

127. INDUSTRIAL MICROBIOLOGY. I; 4 cr. (Complementary with BIOCHEMISTRY 127.) 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: Agricultural Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Miss McCoy.

128. INFECTION AND IMMUNITY IN ANIMAL DISEASE. II; 4 cr. (Same as VETERINARY SCIENCE 128.) 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. Mr. Allen.

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: Agricultural Bacteriology 1, 103, or Medical Microbiology 102, and consent of instructor. Mr. P. W. Wilson.

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: Agricultural 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.

AGRICULTURAL ECONOMICS

PROFESSORS BEUSCHER (also Law), FROKER, HALL, HOBSON, MCNALL, PARSONS, PENN *chairman*, SCHAARS; ASSOCIATE PROFESSORS BAKKEN, CARTENSEN (also History), COOK, HALVORSON, KROSS, LOOMER, MORTENSON, SHOEMAKER; ASSISTANT PROFESSORS CLODIUS, EBLING, FOLLETT, MITCHELL, RAUP; INSTRUCTOR SPITZE.

Agricultural Economics courses are intended to give students a knowledge of economic principles relating to agriculture. The courses deal with farm management, production, marketing, cooperation, 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.

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 ogranization 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 or 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. COOPERATION. I, II; 3 cr. Analysis of marketing organizations, methods and theory underlying producer and consumer cooperatives 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. COOPERATIVE MANAGEMENT PROBLEMS. II; 2 cr. Consideration of business structure of cooperative 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. 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.

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, Cooperation, 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. Mr. McNall.

211. Seminar in Farm Management. II; 2 cr. History and development of farm management; survey and evaluation of research and research methods. Mr. Day, Mr. McNall.

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. Mr. Clarenbach.

221. Land Economic Theory. II; 2 cr. Economics of land utilization, theories of rent, principles of land valuation and taxation. Mr. Penn, Mr. Loomer.

225. Seminar: Agricultural Marketing. I; 2 cr. Basic problems; organization and methods of marketing research; review of economic literature in marketing; marketing legislation. Offered in 1950-51 and alternate years. Mr. Schaars.

226. Seminar: Land Problems. Yr; 2 cr. Land tenure and utilization research and policy problems. Prerequisite: Graduate standing. Mr. Penn, Mr. Loomer.

227. Seminar: Legal-Economic Aspects of Cooperatives. II, 2 cr. (Joint listed with Law School) The relationship of economic and legal problems in cooperative organization, stressing similarities to and difference with general corporation law. Mr. Bakken, Mr. Bunn.

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. Mr. Bakken.

229. Seminar: Advanced Agricultural Economics. II; 3 cr. The field of agricultural economics with respect to its origin and main issues. 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.

280. Special Work in Agricultural Economics. I, II; *cr. Staff.

AGRICULTURAL EDUCATION

Professors James, *chairman*, Kivlin; Associate Professors Jorgensen, Wilkinson; Assistant Professors Bjorker, Kreitlow; Instructors Abrams, Davenport, Stanley.

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 isssued 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	3
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. Education 75 should definitely be completed before the beginning of the senior 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 four 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. II; 2 cr. Origin and development of vocational education for rural communities. Problems, principles, and practices of rural education. Prerequisite: Sophomore standing. Mr. James.

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. Prerequisites: Education 75 and junior standing. Mr. Bjorker, Mr. Abrams, Mr. Davenport, Mr. Stanley.

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. Mr. James, Mr. Bjorker, Mr Kivlin.

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. (Double listed with 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. 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. Bjorker, 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; ASSISTANT PROFESSORS ABBOTT, BERGE, BRUNS, NEITZKE, SWANSON, WOJTA; INSTRUCTOR HODGES; LECTURERS MOULTON, STRANG, WEILER.

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. Upon completion of four years of required work, including 45 credits in agriculture, the B. S. (Agriculture) degree is granted, with a B. S. degree in civil or mechanical engineering after the fifth year, if all requirements have been met. Freshman majors in professional agricultural engineering should consult the chairman of the department before or during the first semester, to arrange the proper sequence of courses.

Students interested in the Agricultural Equipment Industry should distribute their electives among the following courses: Agronomy 104 and 120; Animal Husbandry 126; Chemical Engineering 8; Dairy Industry 108; Economic Entomology 1; Physics 61; Plant Pathology 7 and 101; Poultry Husbandry 107; and Soils 26. They may also follow the electives outside the college by selecting from the following: Commerce 6, 8, 13, 15, 31, 43, 105, 109, 114, and 171; Economics 134 and 146; and Geography 106.

Students desiring to return to their farms are advised to major in nontechnical agricultural engineering. This major may be combined with other key subjects in agriculture, to provide thorough training for farm operation and management. Agricultural Engineering 40 may not be counted toward a department major.

1. SURVEYS AND STRUCTURES. I. II; 4 cr. Agricultural surveying, drainage; farm building economics, costs, requirements and planning. Mr. Witzel.

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.

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 I. Mr. Witzel.

18. ARCHITECTURAL DRAWING. I, II; 3 cr. 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. Mr. Strang, Mr. Weiler.

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 week-end field trip of two days' duration to a university woodland area required as part of the laboratory exercises. 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; Civil Engineering 11 and 12, or Civil Engineering 15 and 16. Offered 1950-51 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.

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. Muckenhirn.

121. SEMINAR. I; 1 cr. Review of current literature and studies of agricultural engineering problems. Prerequisite: Senior standing. Mr. Bruhn.

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

PROFESSORS HOPKINS, SUMNER; ASSOCIATE PROFESSOR KEARL, *acting chairman*; ASSISTANT PROFESSORS BEELER, BLISS, JORNS, LANGDON; INSTRUCTORS HAZARD, MARKS.

There is an increasing demand for graduates in Agriculture and in Home Economics who have had an adequate training in technical journalism. To render the greatest service most college graduates are making an increasing use of the printed page. The ability to write simply and understandingly is invaluable in many fields. Journalism, advertising and radio are playing an increasing part in the work of many university 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 take 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 and 3.

1. AGRICULTURAL NEWS WRITING. I, II; 3 cr. Prerequisite: Sophomore standing or consent of instructor. Mr. Kearl and staff.

2. PRACTICE IN EDITING. I, II; 1 cr. Prerequisite: A semester's work on the *Country Magazine* or consent of instructor. Mrs. Marks.

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. Prerequisite: Junior standing, Speech 110, or consent of instructor. Mr. Bliss.

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. Hopkins.

111. WRITING AGRICULTURAL FEATURES. 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. WRITING HOME ECONOMICS FEATURES. 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.

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. Mr. Hopkins, Mr. Sumner.

208. Seminar. Yr; 2 cr. Reader interest. Mr. Sumner.

212. Seminar. Yr; 2 cr. History of magazines. Offered 1952-53 and in alternate years. Mr. Sumner.

230. Seminar. I; 2 cr. Rural communications media. Mr. Kearl.

AGRICULTURAL LIBRARY

Professor Hean, *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. Hean.

AGRONOMY

Professors Ahlgren, *Chairman*, Briggs, Burcalow, Graber, Neal, H. L. Shands, R. G. Shands, D. C. Smith, Torrie, Wright; Associate Professors Buchholtz, Holden, W. K. Smith; Assistant Professors Andrew, Arny, Hagedorn, James, Medler, Dale Smith, Vandervest; Instructors Arawinko, Sund.

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, Economic 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, Mr. J. G. Moore.

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. Prerequisites: 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 in-

volved. 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; I 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; I cr. Graduate standing. Staff

ANIMAL HUSBANDRY

Professors Bohstedt, *chairman*, Fuller, Lacey; Associate Professors Grummaer, Pope, Williams; Assistant Professors Bray, Hauser.

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; as well as for livestock farming.

Majors in Animal Husbandry may specialize in the Meat and Poultry Products Industry and the Livestock Feed Industry by electing courses in Poultry Husbandry, Veterinary Science, and Agronomy.

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 and 103, 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. Fuller, and dairy husbandry staff.

2. History of Breeds. 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. Fuller.

3. Livestock Selection. II; 2 cr. Standards of excellence for market, showyard, and breeding animals. Prerequisites: Sophomore standing and Animal or Dairy Husbandry 1. Mr. Houser.

5. Meat Production and Carcass Value. I, II; 2 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, commerical livestock feeders, and leading markets. Prerequisite: Animal Husbandry 3. Mr. Houser.

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.

105. Meat, Selection and Use. II; 2 cr. 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. I; 4 cr. (Same as Dairy Husbandry 126.) 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, Mr. Fuller.

134. Livestock Breeding. I; 3 cr. (Same as Dairy Husbandry 134.) 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. Mr. Bohstedt.

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.

BIOCHEMISTRY

Professors Baumann, Elvehjem, *chairman,* Johnson, Link, Peterson, Phillips, Snell, Steenbock, Strong; Associate Professors Burris, Lardy, Stahmann.

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 specializa-

tion are open to undergraduates and graduates who have the necessary preliminary training. Courses in biochemistry should be preceded or accompained by work in organic chemistry, biology, bacteriology and physiologv.

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. Lardy.

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. Snell.

106. PRINCIPLES OF BIOCHEMISTRY. Laboratory. I; 2 cr. Prerequisite: Biochemistry 105 or concurrent registration. Mr. Snell.

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, compostion 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: Mr. Phillips, Mr. Burris.

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.

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. (Also listed 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. Peterson, Mr. Johnson.

228. Fermentation Biochemistry. Laboratory. II; 2 cr. Work on products of fermentation. Prerequisites: Biochemistry 106 and 227 or concurrent registration, and Agricultural Bacteriology 1. Mr. Johnson.

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;* Associate Professors Smith, Werner; Assistant Professors Cramer, Niedermeier, Stallard, Vergeront; Instructors Bayley, Cobbs, Hendrickson, 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. I, II; 3 cr. (Same as Animal Husbandry 1.) 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.

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.

100. Thesis. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

126. Livestock Feeding. I; 4 cr. (Same as Animal Husbandry 126.) 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. I; 3 cr. (Same as Animal Husbandry 134.) 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. Heizer, 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 (or concurrent registration) 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, presentation 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. Prerequiste: Dairy Husbandry 138 or its equivalent. Staff.

DAIRY INDUSTRY

Including Food Industries

Professors Jackson, *chairman*, Price, Sommer, Thomsen, Wallenfeldt, Weckel; Associate Professor Swanson; Assistant Professors Calbert, 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 the design and manufacture of equipment, the selling of supplies and machinery, the sales promotion of dairy and food products, products production, and technical control.

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.

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.

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 milk products. Prerequisite: Sophomore standing. Mr. Thomsen, Mr. Weckel.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

101. COMMERCIAL PROCESSING OF FOODSTUFFS. I; 4 cr. A study of 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 commerical food packs. 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. Commerical 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. Weckel.

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. Sommer.

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 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.) II; Lectures. 3 cr. Chemistry of milk secretion, composition of milk products, chemical changes in manufacture and storage, and analytical methods to determine compostion, deterioration and adulteration. Prerequisites: Chemistry 12, 120a, 121a, and Biochemistry 1 (or 105 and 106.) Mr. Sommer.

122. DAIRY CHEMISTRY. (Same as BIOCHEMISTRY 122.) II; Laboratory. 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. Mr. Weckel.

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 orignal articles of importance to the field of dairy science and reports on research work in the department. Prerequisite: Dairy Industry 123 or equivalent. Staff.

ECONOMIC ENTOMOLOGY

PROFESSORS ALLEN, *chairman*, FARRAR, FLUKE; ASSOCIATE PROFESSORS APPLE, DICKE, FISHER, SHENEFELT; ASSISTANT PROFESSORS CHAPMAN, MEDLER; INSTRUCTOR BECK.

Students majoring in economic 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 1950-51 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: Economic 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: Economic Entomology 1 or 102, or a course in zoology. Offered 1951-52 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: Economic Entomology 1 or 102, or a course in zoology. Offered 1950-51 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: Economic Entomology 50. Offered 1950-51 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: Economic Entomology 1 or a course in zoology. Offered 1951-52 and alternate years. Mr. Farrar.

110. Insect Physiology. (Same as Zoology 110.) II; 3 cr. Prerequisite: A course in entomology. Offered 1951-52 and in alternate years. Mr. Beck.

112. Medical Entomology. (Same as Zoology 112 and Veterinary Science 112.) I; 3 cr. Prerequisite: Zoology 1 or equivalent. Offered 1950-51 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: Economic Entomology 102 or equivalent. Mr. Medler.

123. Taxonomy of Immature Insects. I; 3 cr. The identification and morphology of immature insects. Prerequisite: Economic Entomology 102 or consent of instructor. Offered 1951-52 and alternate years. Mr. Dicke.

125. Insects in Relation to Plant Disease. 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 1950-51 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 1951-52 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: Economic Entomology 1 or 102, or a course in zoology. Offered 1951-52 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 economic 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: Economic Entomology 122 or concurrent registration. 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: Economic Entomology 122 or concurrent registration. 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: Economic Entomology 122 or concurrent registration. Offered 1950-51 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: Economic Entomology 122 or concurrent registration. Offered 1950-51 and each third year following. Mr. Medler.

214. Coleoptera. I; 3 cr. Classification and interrelationships of beetles with discussion of their general biology. Prerequisite: Economic Entomology 122 or concurrent registration. Offered 1951-52 and each third year following. Mr. Shenefelt.

215. Mallophaga, Anoplura and Siphonaptera. II; 3 cr. Classification and interrelationships of Mallophaga, Anoplura and Siphonaptera with discussion of their general biologies. Prerequisite: Economic Entomology 122 or concurrent registration. Offered 1951-52 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 363–364 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 cooperation 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 1951-52 and in alternate years. Staff.

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 alternate years. Miss Richards.

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, *chairman*, CASIDA, CHAPMAN, COOPER, IRWIN, NEAL, RIEMAN; ASSOCIATE PROFESSOR SMITH; ASSISTANT PROFESSORS CROW, LEDERBERG, SHACKELFORD, STORMONT

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. I; 3 cr. Principles of heredity and their application to plants, animals and man. Prerequisite: A college course in botany or zoology. Mr. Crow.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

102. GENETIC IMPROVEMENT OF LIVESTOCK. II; 2 cr. Genetic fundamentals particularly applicable in livestock improvement. Prerequisite: Genetics 6. Mr. Chapman.

103. REPRODUCTION OF FARM ANIMALS. II; 3 cr. The reproductive process in farm mammals and poultry; factors affecting the process; fertility; artifical insemination. Lecture, demonstration laboratory. Prerequisite: Genetics 6 or Physiology 3 or Veterinary Science 1. Mr. Casida and cooperating 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. Mr. Brink.

105. ADVANCED ANIMAL BREEDING. II; 3 cr. Principles underlying selection, inbreeding, pedigree evaluation, progeny testing; measuring inbreeding, relationship. Prerequisites: Genetics 6 and Agronomy 136. Mr. Chapman.

107. HEREDITY IN MICROORGANISMS. I; 2 cr. (Double listed with Agricultural Bacteriology 107.) 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. Offered 1951-52 and alternate years. Mr. Lederberg.

136. HUMAN GENETICS. II; 2 cr. (Double listed with Zoology 136.) Principles of heredity and variation in man. Prerequisite: Zoology 6 or Genetics 6. 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. Irwin, Mr. Shackelford. Plant genetics: Mr. Brink, Mr. Cooper, 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 1949-50 and alternate years. Prerequisite: Consent of instructor. Mr. Irwin and staff.

211. RECENT ADVANCES IN GENETICS. II; 2 cr. Offered 1950-51 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, 135, 137 and AGRONOMY 136.)

HORTICULTURE

PROFESSORS COMBS, *chairman*, JOHNSON, LONGENECKER, MILWARD, MOORE, RIEMAN, ROBERTS; ASSOCIATE PROFESSOR KUEHNER; ASSISTANT PROFESSORS ELFNER, FULTON, GABELMAN, HOLM, OGDEN, STRUCKMEYER, SWINGLE; INSTRUCTORS BECK, LANGORD, ZIEGLER.

The courses offered in horticulture permit the student to specialize in fruit growing, landscape architecture or vegetable production. The choice of electives taken in other departments to supplement horticultural courses will be determined by the specialization and the particular phase of the work the student expects to enter. Courses 1, 3, 5, 6, 7, and 12 should be of particular interest to students specializing in other departments who are fitting themselves to be county agents, teachers in vocational or high schools, or farm managers or operators.

Majors in horticulture may count a maximum of five credits toward the major requirement by electing Economic Entomology 103 or 105 and Plant Pathology 7.

Students majoring in landscape architecture are not required to count as credit in their major the following courses in the Department of Horticulture: Horticulture 1, 3, 5, and 16. Landscape majors may substitute Art Education 50 for Animal Husbandry 1. With the consent of the major adviser Agricultural Economics 117 may be substituted for Agricultural Economics 1. 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 tree fruits. Mr. Moore.

3. VEGETABLE GARDENING. II; 3 cr. The growing of vegetables out of doors. Practical work in the gardens. Mr. Moore.

5. SMALL FRUIT CULTURE. I; 2 cr. Culture of cane, bush and other small fruits. Offered 1950-51 and alternate years. Mr. Moore.

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. Mr. Moore.

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 1951-52 and alternate years. Mr. Moore.

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 1950-51 and alternate years. Mr. Longenecker.

14. Landscape Construction Problems. Yr; 3 cr. Prerequisite: Horticulture 6. Offered 1951-52 and alternate years. Mr. Longenecker.

16. Crop Identification and Standards. I; 2 cr. (Same as Agronomy 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 horticulture. Prerequisite: Junior standing. Mr. Moore, Mr. Holden.

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 1951-52 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 1951-52 and alternate years. Mr. Elfner.

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 with consent of instructor. Offered 1950-51 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 1950-51 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 1950-51 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 1950-51 and alternate years. Mr. Gabelmen.

109. Effect of Growth Regulators on Horticultural Crops. II; 3 cr. Principals and techniques involved in the use of growth regulators in the production and handling of horticultural crops. Prerequisite: Botany 146 or equivalent. Offered 1951-52 and alternate years. Mr. Holm.

110. Seminar. Yr; 1 cr. Prerequisite: Senior standing. Staff.

122. Advanced Pomology. I; 2 cr. Theory and practice of harvesting. distributing, storing and selling orchard fruits. Prerequisite: Horticulture 1 or consent of instructor. Offered 1950-51 and alternate years. Mr. Roberts.

123. Advanced Pomology. II; 2 cr. Theory and practice of commercial tree fruit production prior to harvest. Prerequisite: Horticulture I or consent of instructor. Offered 1950-51 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, Dickson, Johnson, Keitt, *chairman*, Rieman, Riker, Walker; Associate Professors Darling, Moore, Pound; Assistant Professors Arny, Hagedorn, Hildebrandt, Kuntz, Larson, Leben, Thomas, Wade; Lecturer Richards.

Courses 104, 220, and 249 (*) 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; 3 cr. The economic importance, appearance, cause, and means for controlling representative diseases of plants. Prerequisites: Botany 1 and Agricultural 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 Agricultural 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 the 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. I; 3 cr. (Same as Botany 104.) Prerequisite: Botany 1. 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 1951-52 and in alternate years. Mr. Keitt.

119. Fungus Deterioration of Forest Products. I; 2 cr. (Same as Forest Products 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. Miss. Richards.

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 1950-51 and in alternate years. Mr. Walker.

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. Yr; 2 or 3 cr. (Same as Botany 220.) Prerequisite: Plant Pathology 104 or equivalent. Offered 1950-51 and in alternate years. Mr. Backus.

223. Seminar. Yr; 1 cr. Mr. Keitt and staff.

*249. PHYSIOLOGY OF THE FUNGI. II; 2–4 cr. (Same as BOTANY 249.) Prerequisites: Plant Pathology 104 and Botany 146 (or Chemistry 1a and consent of instructor). Staff.

POULTRY HUSBANDRY

PROFESSORS HALPIN, *chairman*, HAYES; ASSOCIATE PROFESSORS CRAVENS, MCGIBBON; ASSISTANT PROFESSOR ANNIN; INSTRUCTORS 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 five 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. Cravens, Mr. McGibbon.

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.

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. McGibbon, Mr. Cravens.

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. Halpin.

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 HILL, KOLB, SEWELL, *chairman*, WILEDEN; ASSOCIATE PROFESSORS BARTON, GARD; LECTURER. SCHWALBACH.

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. Principles of Rural Sociology. I; 3 cr. Advanced course in study of rural society through systematic examination of important source materials from Europe and America with emphasis on the impact of urbanization on the rural population, its social organization and its culture. Prerequisites: An introductory course in rural or general sociology and junior standing. Mr. Sewell.

127. Rural Community Organization. II; 2 cr. History of the rural community and its social organization; principles including leadership and processes of conflict and cooperation; 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. 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, an introductory course in rural or general sociology or economics, or consent of instructor. Mr. Hill.

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.

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. Mr. Kolb and Mr. Hill.

SOILS

Professors Berger, Chapman, Graul, Muckenhirn, Truog, *chairman*, Wilde, Zeasman; Associate Professors Albert, Attoe, Jackson; Assistant Professors Hole, Hull; Instructors Ekern, Engelbert, Tanner, Turner.

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, Agricultural Bacteriology, Biochemistry, and Plant Pathology.

Not to exceed five credits from the following courses may be counted as a portion of the undergraduate major requirement in soils: Agricultural Bacteriology 123, Geology 1, Agronomy 102, Agronomy 106, and Meterology 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. I; 4 cr. (Same as Agricultural Engineering 106.) Causes and effects of soil erosion; soil management, engineering, and land use practices required for control. Fields 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. 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. I; 4 cr. Study of soil microorganisms. Prerequisites: Agricultural 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. First semester, Mr. Truog; second semester, Mr. Muckenhirn.

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 PROBLEMS. 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 physicochemical 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; ASSISTANT PROFESSORS BERMAN, HANSON, MORSE, SPENCER; INSTRUCTORS DALE, LOMBARD, MOLL, SIMON, SORENSEN, WINSLOW, WIPF; LECTURER NICHOLS.

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 fields closely related thereto.

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, Mr. Dale.

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. Staff.

100. THESIS. Yr; 2 cr. Prerequisites: Senior standing and consent of instructor. Staff.

112. MEDICAL ENTOMOLOGY. I; 3 cr. (Same as ZOOLOGY 112 and ECONOMIC ENTOMOLOGY 112). A study of arthropods and the diseases they cause or transmit. Arthropods of importance in animal diseases are stressed. Prerequisite: Sophomore standing. Offered 1950-51 and in alternate years. Mr. Herrick, Mr. Dicke.

120. HELMINTHOLOGY. I; 3 cr. (Same as ZOOLOGY 120.) A study of the helminths of various animals, including man. Prerequisite: Zoology 1 or Veterinary Science 1. Offered 1951–52 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. Staff.

128. INFECTION AND IMMUNITY IN ANIMAL DISEASES. II; 4 cr. (Also Agricultural Bacteriology 128). 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, and staff.

130. VETERINARY PATHOLOGY. I; 3 cr. Prerequisites: Courses in vertebrate anatomy, histology, animal physiology and consent of instructor. Mr. McNutt, Mr. Spencer.

131. VETERINARY PHYSIOLOGY. II; 3 cr. Prerequisites: Courses in vertebrate anatomy, histology, physiological chemistry 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.

201. PROSEMINAR. Yr; 1 cr. Staff.

220. SEMINAR. Yr; 1 cr. Graduate standing. Staff.

230. SEMINAR. ADVANCED. Yr; 1 cr. Surveys of the literature and reports on current research problems. Prerequisite: Graduate standing. Staff.

WILDLIFE MANAGEMENT

ASSOCIATE PROFESSOR HICKEY, *chairman;* ASSISTANT PROFESSOR MCCABE; 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. II; 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. Advanced Game Management. I; 3 cr. Animal population mechanisms and their control. Review 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 advisor 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: Agricultural Bacteriology, Animal Husbandry, Biochemistry, Dairy Husbandry, Dairy Industry, Economic 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
Agr. Bact. 121—Dairy bacteriology	4
Agr. Bact. 125—Food bacteriology	4
Agr. Bact. 120—Advanced General Microbiology	3
An. or Dy. Husb. 126—Livestock feeding	4
Biochem.-Dy. Ind. 121—Dairy chemistry (Lecture)	3
Biochem.-Dy. Ind. 122—Dairy chemistry (Laboratory)	2
Biochem. 124—Animal metabolism and vitamins (Lecture)	2
Biochem. 25—Animal metabolism and vitamins (Laboratory)	1 or 2
Dairy Ind. 124—Physical chemistry of dairy products	3
Econ. Ent. 102—Insect morphology and taxonomy	3
Econ. Ent. 140—Insect ecology	3
Genetics 6—Heredity	3
Genetics 105—Animal genetics	3
Poultry Husb. 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: Agricultural Bacteriology, Agronomy, Biochemistry, Economic 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
Agr. Bact. 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
Econ. Ent. 102—Insect morphology and taxonomy	3
Econ. Ent. 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 Path. 7—Elementary plant pathology	3
Plant Path. 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 agricultural products	3
Agr. Econ. 126—International trade in agr. prod.	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 agr. and home ec.	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 is also desirable.

* 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 antropology	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 cooperation 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.
Phys. Ed. & Mil. Sci.	0 cr.	Phys. Ed. & Mil. Sci.	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.
Quan. Chemistry 11a or 12	3 cr.	Econ. Ent. 1 (Insects)	3 cr.
Soils 1	4 cr.	Horticulture 3 (Vegetables)	3 cr.
		Commerce 8 (Accounting)	3 cr.
	16		17

* 15 credits from the group of italicized courses will satisfy the minimum course requirements for a Food Industry Major.

Third Year

Food Industry 3 (Food Product Ingredients)	3 cr.	Agricultural 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

Fourth Year

Food Industry 101 (Food Processes)	4 cr.	*Food Industry* 102 (Food Processes)	4 cr.
Food Bacteriology 125	4 cr.	*Food Equipment Mechanics* 108	3 cr.
Economic 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.
Mil. Sci. & Phys. Ed.	0 cr.	Mil. Sci. & Phys. Ed.	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.	Agricultural 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	6-7 cr.
Elective Courses	3-4 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

* 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.

*Fifth Year***

Industrial Microbiology 127	3 cr.	Dairy Chemistry 121	2-5 cr.
Thesis	4 cr.	Fermentation Chemistry 227	2-4 cr.
Elective Courses	8 cr.	Food Equip. Mechanics 108	3 cr.
		Thesis	4 cr.
	15	Elective Courses	0-6 cr.
			17

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 perfer 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 Engr. 1 or 40	4 or 3	Phys. Educ. & Mil. Sci.	0
Phys. Educ. & Mil. Sci	0		
	16 or 15		16

Sophomore Year

Agricultural Bacteriology 1	4	Agricultural Economics 4	3
Economics 1a	4	Economic 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

Soils 106	4	Agronomy 101	3
Agricultural Econ. 117	3	Geography 128	3
Agronomy 102	2	Wildlife Management 118	3
Electives	6	Agricultural Economics 10	3
		Electives	4
	15		16

Senior Year

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 curriculm 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.

** 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.

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 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		Second Semester	
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 Elect. (b)	4-5
Freshman Elective (a)	3-5	P. E. & Mil. Science	0
P. E. & Mil. Science	0		
	15-17		15-16

Second Year

First Semester		Second Semester	
Agric. Bact.	4	Agr. Econ. 4	3
Econ. 1a	4	Rural Soc. 27	2
Soils 1	4	or Biochemistry 1	4
Soph. Elect. (b)	3-5	Phy. Ed. 16	1
Mil. Science	0	Mil. Science	0
		Soph. Elect. (d)	4-5
		Agric. Elective	2
	15-17		16-17

Third Year

First Semester		Second Semester	
Psychology 1	4	Health Education	3
Education 14	2	Agric. Electives	4
Education 73	3	Psychology 105	3
Rural Sociology 25	3	Recr. Resource	6
Recr. Resource	4		
	16		16

Fourth Year

First Semester		Second Semester	
Agric. Electives	2	Agric. Electives	3
Rural Educ. 155	3	Rural Soc. 127	2
Rural Soc. 125	3	Educ. 113	3
Educ. 113	3	Educ. 114	3
Recr. Resource	5	Recr. 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 Col. of Agr. plus possible recreation resource areas.

A major in Rural Sociology with 10 credits in Rural Soc., 3 credits in Rural Education, and 3 credits in Agr. Economics.

22 credits in social sciences including 3 courses in Rural Sociology, 2 courses in Economics and Agr. Economics, and 2 courses in Psychology.

20 credits in recreation resource areas with a possibilty 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 Agr. Ed. 155 and Rural Soc. 127 for Educ. 74 and Educ. 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 twenty-four 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

Economics 1a	4	Agricultural Economics 4	3
Agricultural 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

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

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 of 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.)

HOME ECONOMICS

FRANCES ZUILL, DIRECTOR

FACULTY

AIMEN, MRS. JUNE, *B.A.*, Assistant in Home Economics
ALLEN, HELEN LOUISE, *M.A.*, Associate Professor of Home Economics
BECKWITH, CORNELIA L., *M.A.*, Assistant Professor of Home Economics
BLAU, MRS. GUITTA, *B.S.*, Assistant in Home Economics
BLOOM, MRS. ANNE, *B.S.*, Instructor in Home Economics
COOPER, MARGARET MOORE, *Ph.D.*, Associate Professor of Home Economics
COWLES, MAY LOUISE, *Ph.D.*, Professor of Home Economics
CRAMER, HELEN M., *M.A.*, Assistant Professor of Home Economics
DAVIS, MRS. RUTH FLORENCE, *M.S.*, Assistant Professor of Home Economics
DAWE, HELEN CLEVELAND, *Ph.D.*, Professor of Home Economics
DOLL, DOROTHY, *B.S.*, Assistant in Home Economics
GROSKOPF, GRACE, *M.S.*, Instructor in Home Economics
GROVES, NANCY ALICE, *B.S.*, Assistant in Home Economics
HANNING, FLORA MAY, *Ph.D.*, Professor of Home Economics
HENDERSON, RUTH ADELE, *M.A.*, Associate Professor in the Teaching of Home Economics
HILL, MRS. JULIA LOWTH, *M.S.*, Assistant Professor of Home Economics
HOESLY, OLGA MARIE, *M.A.*, Instructor in Home Economics
HUSSEMANN, DOROTHY LILLIAN, *Ph.D.*, Professor of of Home Economics
JENSON, EVA MAE, *B.S.*, Instructor in Home Economics
JONES, MRS. NELLIE KEDZIE, *M.S., LL.D.*, Emeritus Professor of Home Economics
JUAIRE, MARIAN ABBIE, *M.S.*, Professor of Home Economics
JUDY, SHARON LEE, *B.A.*, Assistant in Home Economics
LEINDORFF, MRS. AGNES OLSON, *M.S.*, Associate Professor of Home Economics
LEWIS, WINNIFRED MILDRED, *M.A.*, Instructor in Home Economics
LIESCH, GERALDINE DOLORES, *M.S.*, Instructor in Home Economics
LOHR, MRS. KATHRYN RICE, *M.S.*, Assistant Professor in Home Economics
MANNING, HAZEL, *M.S.*, Professor of Home Economics
MAXFIELD, SUSAN ERNISSE, *M.S.*, Assistant Professor of Home Economics
MENDENHALL, MRS. DOROTHY REED, *M.D.*, Emeritus Lecturer in Home Economics
MORTIMER, MRS. IVA RANKIN, *Ph.D.*, Associate Professor of Home Economics
MYRLAND, RUTH HENRIETTA, *B.A.*, Assistant Professor of Home Economics, Assistant to the Director
PARSONS, HELEN TRACY, *Ph.D.*, Professor of Home Economics
PATTON, STELLA TROUT, *M.S.*, Assistant Professor of Home Economics
POLLOCK, JOSEPHINE H., *M.A.*, Professor of Home Economics (Assistant State Leader)
REYNOLDS, MRS. MAY STATLER, *Ph.D.*, Professor of Home Economics
SIGGELKOW, MRS. LOIS VANDALL, *M.S.*, Instructor in Home Economics
SPAULDING, MRS. PHYLLIS FLOSSIE, *B.S.*, Instructor in Home Economics
THORNTON, MADELINE J., *M.D.*, Lecturer in Home Economics
VANDENBERGH, MATHILDA ELSIE, *M.S.*, Assistant Professor of Home Economics
ZUILL, FRANCES LOUISE, *M. A.*, Professor of Home Economics; Director of Home Economics

The home economics department is concerned with both the general and professional education of young women. At the undergraduate level the primary objectives are education for personal development, family living and professional training for gainful em-

ployment. Home economics is a broad field. The principal areas of study within the field are family relations, family economics, home management, child development, housing, interior design, textiles and clothing, foods and nutrition. The types of professional work growing out of home economics are sufficiently varied so that most 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, as well as a common core of home economics subjects which are valuable in preparation for home and family life.

In addition to the general requirements for all students each professional curriculum includes courses planned to meet the specific needs of the different vocations.

CURRICULA IN HOME ECONOMICS

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (HOME ECONOMICS) OR BACHELOR OF SCIENCE (HOME ECONOMICS AND EDUCATION)

Curricula are planned for:

1. Undergraduates who desire a knowledge of home economics as a part of a general education for home and family life.

2. Undergraduates who wish to prepare for teaching home economics in secondary and vocational schools and for the extension service.

3. 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.

4. Undergraduates who wish to prepare for vocations that combine home economics with journalism, nursing, recreation or bacteriology.

5. Undergraduates who wish to prepare for research or graduate work in the various phases of home economics.

GENERAL REQUIREMENTS

The degree of Bachelor of Science (Home Economics) 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.

Two years of physical education are required of all women students.

Certain foreign language requirements must be met by students who major in Applied Bacteriology, as well as 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 the general professional major 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 the Letters and Science section.) 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.

Students earning a grade of *A* in English 1a are excused from further work in freshman English and are absolved from taking the full year of freshman English if successful in passing the attainment examination in English. (See Letters and Science.)

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.

Home Economics 1 is required of all freshmen and may be elected by first-semester sophomores for credit.

A student given partial credit in a required course and who completes a more advanced required course for which the partially credited course is a prerequisite may substitute electives to make up the deficiency.

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. Undergraduates may not take courses numbered 200 or above. Undergraduates below the rank of senior are not permitted to carry special problems (Home Economics 180).

Candidates for a degree are given the privilege of presenting a thesis. A thesis must represent original work upon 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.

ADMISSION

Requirements for admission will be found in General Information.

STUDENT EXPENSE

For information regarding living costs, tuition and fees, and student employment, consult General Information.

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.

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 Christine Margaretha Steenbock fellowship, the Borden home economics scholarship, the Dorothy Roberts Memorial scholarship, the Catherine Oertel scholarships, the Phi Omega Pi scholarship, the Kroger Company scholarships, the

Sears-Roebuck Foundation scholarships, the Peter Young Fund, the Abby Marlatt Memorial Award, the Bess Tyrrell Burns Award, and the Hazel Manning loan fund.

Graduate students in home economics should consult the bulletin of the Graduate School for detailed information relative to scholarships, fellowships and assistantships.

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. 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.

HOME ECONOMICS ORGANIZATIONS

The Euthenics Club is open to all students in home economics and is affiliated with the College Club section of the American 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.

FACILITIES FOR INSTRUCTION

The Department of Home Economics is located on the five floors of the east wing of the Home Economics Building. Laboratories, class and lecture rooms, and offices are provided here for related art, textiles and clothing, foods and nutrition, institutional management and research.

Adjacent to the Home Economics Building is the Home Management House completely equipped with modern furnishings and appliances. The house has been 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 income division, account keeping, management of time and work, use of labor-saving devices, marketing, preparing and serving food, and entertaining.

The University Nursery School, located in a residence on Linden Drive, opposite the Home Management House, serves as a laboratory where junior students in nutrition and dietetics gain experience in child nutrition, and where senior students study child care and training and have an opportunity to observe behavior problems of children.

The practice in institution management is provided in the Home Economics Building, in the cafeterias in the University Hospital and the Memorial Union, and is supplemented by trips to inspect and study food problems in hospitals, hotels, restaurants and wholesale houses. Graduate work is carried on in co-operation with the Division of Residence Halls where the student does intensive work for at least a semester.

MAJORS IN HOME ECONOMICS

A major in home economics may not have less than 26 nor more than 48 credits in home economics courses. The education courses are not counted as home economics.

The majors (outlined in detail below) in the field of home economics are: (1) general

professional major—(including the teaching of home economics), (2) foods and nutrition major—(experimental foods, hospital dietetics or institution management), (3) clothing and textile major, (4) related art major, (5) home economics–journalism major, (6) child development major, (7) combined major in home economics and nursing, (8) applied bacteriology major, and (9) the nonprofessional major, including the major in community leadership in recreation and home economics.

GENERAL PROFESSIONAL MAJOR
(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 Department of Home Economics. See the following pages for specific regulations.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a—General chemistry	5	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
Elective	4	Physical Education	0
Physical Education	0		
	16		14

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 7—Housing	2
Home Econ. 50—Textile chemistry	3	Home Econ. 11—Applied dress design	3
Physiology 1—Elements of physiology	4	Agr. Bact. 1—General survey	4
Sociology 1—Introductory sociology##	3	Psychology 1—Introduction to psychology	4
Speech ** or elective	3	Elective	2
Physical Education	0	Physical Education	0
	16		15

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 8—House planning and furnishing	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 YFAR

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 elect Education 156 for 4 credits to qualify for vocational schools will elect Education 52 for 3 credits only.

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 at 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 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. See School of Education for other academic minors.

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 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 and may take Education 75 for 3 credits.

Students entering with advanced standing in Education 52 are advised to take Education 188, Seminar in Home Economics Education.

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 general professional major and the University Teachers' Certificate and in addition the required courses in vocational education. All candidates must be recommended for teaching by the Department 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 teaching major 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, horticulture, and other courses recommended by the home economics extension staff.

GENERAL PROFESSIONAL MAJOR

This major may be taken for general education or may be directed toward home economics extension, 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.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a—General chemistry	5	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	Electives	3
Physical Education	0	Physical Education	0
	16		14-17

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 11—Applied dress design	3
Home Econ. 50—Textile chemistry	3	Agr. Bact. 1—General survey	4
Physiology 1—Elements of physiology	4	Psychology 1—Introduction to psychology	4
Sociology 1—Introductory sociology#	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. 8—House planning and furnishing	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 6.
\# Sociology 2 may be substituted for Sociology 1.

HOME ECONOMICS IN BUSINESS. Students interested in the commercial field should include such courses as Home Economics 114, 126, 135, 141, 145, 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

The major in foods and nutrition is 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

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
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		
	16		15

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Home Econ. 3—Introduction to food study	3	Home Econ. 7—Housing	2
Physics 65**	3	Physics 65**	3
Chemistry 120-121 xx—Organic chemistry	4	Agr. Bact. 1—General survey	4
Physiology 1—Elements of physiology	4	Electives	6
Electives	2	Physical Education	0
Physical Education	0		
	16		15

JUNIOR YEAR

	Credits		Credits
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	
Psychology 1—Introduction to psychology	4	Home Econ. 22 xx—Marketing and large quantity cookery	2
Biochemistry 1	4	Education 75 xx—The nature and direction of learning	3
		Electives	4
	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	Home Econ. 133 xx—Practice in institution management	3
Home Econ. 125—Diet therapy	3	Electives	10
Home Econ. 122 xx—Organization and administration of institutions	3		
Electives	6		
	16		15

** Physics 61, 5 cr. may be substituted.
xx Required by the American Dietetic Association for admission as student dietitians in approved hospitals but not required for the B.S. degree.

INSTITUTION MANAGEMENT

FRESHMAN YEAR

Firts 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
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		
	16		15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Home Econ. 7—Housing	2
Physics 65**	3	Home Econ. 50—Textile chemistry	3
Chemistry 120-121 xx—Organic chemistry	4	Physics 65**	3
Physiology 1—Elements of physiology	4	Agr. Bact. 1—General survey	4
Electives	2	Electives	
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
Psychology 1—Introduction to psychology	4	Home Econ. 110—Family economics	3
Biochemistry 1	4	Education 75 xx—The nature and direction of learning	3
		Electives	4
	15		16

SENIOR YEAR

First Semester	Credits	Second Semester	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. 122—Organization and administration of institutions	3	Additional nutrition xx	2
Electives	9	Electives	8
	16		15

xx Required by the American Dietetic Association for students preparing to take graduate training courses in administration. Food chemistry may be substituted for physiological chemistry in this major.
** Physics 61, 5 cr. may be substituted.

EXPERIMENTAL FOODS

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
Home Econ. 1—Orientation	1	Home Econ. 5—Introduction to clothing study	3
Home Econ. 2—Introduction to related art	3	Electives	4
Electives	3	Physical Education	0
Physical Education	0		
	15		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
Agr. Bact. 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 120a-121a—Organic chemistry	4
Physiology 1—Elements of physiology	4	Psychology 1—Introduction to psychology	4
Electives	2-3	Electives	3
Physical Education	0	Physical Education	0
	15-16		16-17

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 or 61 ##	3-5	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 (See below)

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

Physics 61 offered second semester only.

A further requirement for an experimental foods major is acceptable experience in foods 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 the food service of 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 Director of Home Economics.

Related professional or technical courses are: Agricultural Bacteriology 125; Agricul-

tural Journalism 112; Biochemistry 105; Chemistry 11a or 12, 146, 147; Commerce 15; Dairy 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 merchandising 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.

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 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		
	16		14-15

SOPHOMORE YEAR

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
Economics 1a—General economics	4	Agr. Bact. 1—General survey	4
Eltctives	5	Electives	5
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
Sociology 1—Introduction to sociology#	3	Home Econ. 110—Family economics	3
Electives	7	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 nursey school	2
Home Econ. 140—Clothing economics	2	Electives	12
Electives	10		
	16		16

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.

Textile majors who take organic chemistry should take Biochemistry 1 first semester of junior year.

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.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	5
Chemistry 1a—General chemistry	5	Chemistry 1b—General chemistry or Biochemistry 3	5-4
Home Econ. 1—Orientation	1		
Home Econ. 2—Introduction to related art	3	Home Econ. 5—Introduction to clothing study	3
Electives	4	Electives	5
Physical Education	0	Physical Education	0
	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
Sociology 1—Introductory sociology#	3	Physical Education	0
Physical Education	0		
	16-17		16-17

JUNIOR YEAR

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

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

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 journalism as a profession.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a—General chemistry	5	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	4
Electives	4	Physical Eduaction	0
Physical Education	0		
	16		14

SOPHOMORE YEAR

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	Agr. Bact. 1—General survey	4
Sociology 1—Introduction to sociology#	3	Psychology 1—Introduction to psychology	4
Electives	3	Electives	3
Physical Education	0	Physical Education	0
	16		16

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Journalism 2—Reporting	3	Agr. Journ. 112—Home economics feature 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
Electives	2	Home Econ. 110—Family economics	3
Economics 1a—General economics	4	Electives	5-6
	16		16

SENIOR YEAR

Journalism 3—Copy editing	3	Journalism 123—Women's fields in newspapers and magazines, or Journalism 105a—Writing and selling of feature articles	3
Home Econ. 109—Humanics	2	Agr. Journ. 103—Publicity methods	2
Home Econ. 112—Home management	2	Home Econ. 119—Development of the young child in home and nursery school	2
Home Econ. 126—Adult program in home economics	2	Electives	8
Home Econ. 140—Clothing economics	2		
Electives	4		
	15		15

* May substitute Home Economics 117.
# Sociology 2 may be substituted for Sociology 1.

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. Students in the School of Nursing who plan to specialize in the care of children may fulfill the requirements of the core curriculum. In addition to the core curriculum outlined below students in home economics 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 below. Among the courses suggested are Home Economics 2, 3, 5, 109, 110, and 112.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Science: Science elective#	4-5	Zoology 1—Animal biology	5
English 1a—Freshman composition	3	English 1b—Freshman composition	3
Physical Education	0	Sociology 1—Introduction to sociology ##	3
		Physical Education	0
	7-8		11

SOPHOMORE YEAR

Physiology 1—Elements of human physiology	4	Psychology 1—Introduction to psychology	4
Zoology 6—Heredity	2	English 2a—Intermediate composition or literature course	3
Sociology 139—Social psychology	3	Physical Education	0
Physical Education	0		
	9		7

JUNIOR YEAR

Education 119—Child development or Psychology 147—Child psychology	3	Education 120—Child development: adolescene or Psychology 148—Psychology of adolescence	3
Education 125—The exceptional child: educational social deviates	3	Sociology 132, Psychology 130, or Education 112—Statistics	3
Home Econ. 119—Development of the young child in home and nursery school	2	Home Econ. 117—Survey of nutrition principles	3
	8		9

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
Psychology 141—Psychological testing or Education 130—Diagnosis of scholarship and behavior problems	3	Education 170—School and community health problems	3
Psychology 25—Experimental psychology or Psych. 154—Physiological psychology	3-4	Social Work 149—Social services to individuals	3
Social Work 162—Child welfare	3	Home Economics 179—Field work	3
Home Economics 179—Field work	3		
	12-13		9

Since Chemistry 1a is a prerequisite for Home Economics 3, it is advisable for students to take Chemistry 1a.
Sociology 2 may be substituted for Sociology 1.

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.

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
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		
	16		15

SOPHOMORE YEAR

Home Econ. 3—Introduction to food study	3	Biochemistry 3	4
Economics 1a—General economics	4	Med. Microbiology 4‡—Bacteriology for nurses	3
Physiology 4**—Physiology for nurses	4	Physics 65 xxx	3
Physics 65 xxx	3	Electives	5
Electives	2	Physical Education	0
Physical Education	0		
	16		15

JUNIOR YEAR

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	Sociology 2—Introduction to social problems	3
Psychology 1—Introduction to psychology	4	English or Speech	3
Home Econ electives	2-3	Home Econ. 6*—Nutrition and dietetics	4
Electives	2-3	Home Econ. electives	2
		Nursing 1	3
	14-16		17

xxx Physics 61 (5 cr.) may be substituted.
‡ Agricultural Bacteriology 1 may be substituted.
* May substitute Home Economics 117.
** If Physiology 1 is taken, Physiology 4 must later be taken for 1 cr.

A total of 129 credits and 129 grade-points is required for graduation. This includes 94 required by the Department of Home Economics and 35 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 35 credits as follows:

Therapeutics 1 ..... 3 credits
Medicine & Surgery 1, 2, 3, 4, 5, 6, and 7....19 credits
Principles of Nursing 2, 3, 4, and 5 .....10 credits
Psychology 144 ..... 3 credits

Careful selection of courses will make it possible for majors in home economics and nursing also to fulfill the requirement of the core course in child development.

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 Agricultural Bacteriology or Medical Microbiology.

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—General chemistry	5	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		
	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	Agr. Bact. 1—General survey	4
Physiology 1—Elements of physiology	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
Economics 1a—General economics	4	Psychology 1—Introduction to psychology	4
Electives	7	Electives	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	Electives	13
Electives	11		
	15		15

* See page 6.
** Physics 61, (5 cr.) may be substituted.

In this major 15 credits in bacteriology must be elected from the following:

Agr. Bact. 100—Thesis	2	Agr. Bact. 100—Thesis	2
Agr. Bact. 123—Soil bacteriology	4	Agr. Bact. 121—Dairy bacteriology	4
Agr. Bact. 125—Food bacteriology	4	Agr. Bact. 128—Infection and immunity or Med. Microbiology 104—Immunology	4
Agr. Bact. 131—Seminar	1	Agr. Bact. 131—Seminar	1
Med. Microbiology 102—Medical microbiology	5	Agr. Bact. 129—Presentation of bacteriological reports	2
Agr. Bact. 120—Advanced general	3		
Agr. Bact. 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 may be elected in home economics. Early in the sophomore year a student should plan a logical sequence of courses with her adviser. This is not a teaching major.

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—General chemistry	5	Chemistry 1b—General chemistry or Biochemistry 3	5-4
Home Econ. 1—Orientation	1		
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	Home Econ. 50—Textile chemistry	3
Biochemistry 3 or Physiology 1	4	or Agr. Bact. 1 or Physics 61 or 65	4-6
English 30, 32, 33 or 40—Literature	3	Psychology 1—Introduction to psychology	4
Sociology 1—Introduction to sociology#	3	Electives	3
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	Electives	13
Electives	9		
	15		16

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 119—Developmtnt of the young child in home and nursery school	2
Home Econ. 112—Home management	2	Electives	14
Electives**	12		
	16		16

* See page 6.
** Two of these credits must be in home economics to meet the minimum requirements for a major in home economics.
# Sociology 2 may be substituted for Sociology 1.

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 non-professional course in home economics by arranging her courses according to the following plan:

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—General chemistry	5	Chemistry 1b—General chemistry or Biochemistry 3	5-4
Home Econ. 1—Orientation	1		
Home Econ. 2—Intro. to related art	3	Home Econ. 5—Intro. to clothing study	3
Physical Education	0	Physical Education	0
	16		14-15

SOPHOMORE YEAR

Home Econ. 3—Intro. to food study	3	Rural Soc. 27—Rural organization	2
Physiology 1, Agr. Bact. 1, Physics 61 or 65	4-6	Home Econ.—Elective	2-3
		Psychology 1—Intro. to psychology	4
English 30, 32, 33 or 40—Literature	3	Home Econ. 7—Housing	2
Sociology 1 or 2	3	Recreation resource course	3
Education 14—Intro. to recreation	2	Phs. Ed. 16—First aid and safety	1-2
Physical Education	0	Physical Education	0
	15-17		14-15

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Home Econ. 117—Survey of nutrition	3	Education 169—Health education for teachers	3
Economics 1a—General economics	4	Home Econ. 110—Family economics	3
Recreation resource course	3	Psych. 105—Human adjustment	3
Education 73—The child, his nature and his needs	3	Recreation resource course	5
Rural Soc. 25—Rural life	3	Elective	2
	16		16

SENIOR YEAR

Home Econ. 109—Humanics	2	Home Econ. 119—Development of young child in home and nursery school	2
Home Econ. 112—Home management	2	Rur. Soc. 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 course	6
Agr. Ed. 155 or Educ. 155—Adult education	3		
	16		16

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 16 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 from the following Home Economics courses: 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 or extend their professional education in a special phase of home economics, or prepare for teaching in institutions of higher learning.

Write to the Director 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 enonomics are offered during the eight-week summer session. Detailed information concerning the summer session is given in the summer school bulletin. For information in regard to courses offered only in the summer session and not included in this bulletin, write to the Director 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 carry topical work. (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 COWLES, DAWE, HANNING, HUSSEMANN, PARSONS, REYNOLDS, ZUILL, *chairman;* ASSOCIATE PROFESSORS HENDERSON, MORTIMER; ASSISTANT PROFESSORS BURNS, CRAMER, LOHR, MAXFIELD, PATTON; LECTURERS POLLOCK, THORNTON; INSTRUCTORS BLOOM, BLAU, HOESLY, JENNY, LEWIS, LIESCH, SPAULDING, SIGGELKOW; ASSISTANT AIMEN.

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 and may be elected for credit by first-semester sophomores. Miss Zuill.

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. Miss Hussemann.

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.

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, the use of laboratory animals and metabolism studies. Prerequisites: Home Economics 3, Physiology 1 and Biochemistry 1 or 3. Mrs. Reynolds.

100. THESIS. Yr; 4 cr. Prerequisites: Senior standing and consent of instructor. Miss Zuill 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. Mrs. Reynolds, Mrs. Siggelkow.

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 Liesch.

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, Misss Hussemann.

145. Experimental Food Study. II; 2 cr. Evaluation of literature in experimental foods; reports. Development of an individual laboratory problem. Prerequisites: Home Economics 135 or consent of instructor. Miss Hanning, 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, Miss Parsons, Mrs. Reynolds.

235. Seminar in Experimental Foods. Yr; 1 cr. Prerequisite: Home Economics 135 or consent of instructor. Miss Hanning.

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. Miss Parsons, Mrs. Reynolds.

INSTITUTION MANAGEMENT

22. Marketing and Large Quantity Cookery. I, II; 2 cr. Time study, economic study, and marketing study in the selection, purchase, and preparation of food in large quantities. Prerequisite: Home Economics 4 or concurrent registration. Miss Patton, Miss Liesch.

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 Patton.

133. Practice in Institution Management. I, II; 3–4 cr. Study of organization and operation of dining services and cafeterias. Laboratory work in institution practice, including experience in University Hospital and Memorial Union. Field inspection trips. Prerequisites: Home Economics 6 and 22 or concurrent registration. Miss Patton, Miss Liesch.

180. Special Problems in Institution Management. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Miss Patton.

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 Patton and Mr. Burns.

THE HOME AND THE FAMILY

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 Jenny.

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 Zuill and staff.

109. HUMANICS. I, II; 2 cr. Home and family in contemporary society. Emphasis on family relationships. Prerequisites: Senior standing and consent of instructor. Miss Zuill and staff.

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. Lohr.

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 house. 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 Dawe.

180. SPECIAL PROBLEMS IN HOUSING AND FAMILY ECONOMICS. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Staff.

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

PROFESSORS JUAIRE, MANNING, *chairman;* ASSOCIATE PROFESSOR COOPER; ASSISTANT PROFESSOR HILL; INSTRUCTOR GROSKOPF; ASSISTANT GROVES.

5. INTRODUCTION TO CLOTHING STUDY. I, II; 3 cr. Historical background, production, and manufacture of commercial fibers. Construction and study of cotton garments. Miss Manning, Mrs. Hill, Miss Groskopf.

11. APPLIED DRESS DESIGN. I, II; 3 cr. Application of art and economic principles to the selection and construction of costume suitable for each individual. Prerequisite: Home Economics 5. Miss Juaire, Mrs. Hill.

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. Miss Groskopf.

50. Textile Chemistry. I, II; 3 cr. Microscopical, 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, Miss Groskopf.

97. Advanced Applied Dress Design. I, II; 2 cr. Selection and use of design in modeling and draping outer garments in wool and silk. Independent work; students required to complete problems outside. Prerequisites: Home Economics 11 and senior standing. Miss Juaire, Mrs. Hill.

100. Thesis. Yr; 4 cr. Prerequisites: Senior standing and consent of instructor. Miss Manning and 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 Manning.

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 Manning.

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. Miss Manning.

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. Miss Manning.

151. Advanced Textile Chemistry. I; 2 cr. Laboratory study of chemical processes in manufacture of some man-made fibers, quantitative analysis of fabrics, methods and theories of dyeing textiles. Prerequisites: Chemistry 120a, 2 cr., and 121a, 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 Textile Chemistry. I, II; *cr. Prerequisites: Graduate standing and consent of instructor. Miss Cooper.

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

Associate Professors Allen, Leindorff, *chairman;* Assistant Professors Beckwith, Davis, Vandenbergh; Assistants Doll, Judy.

2. Introduction to Related Art. I, II; 3 cr. Basic course in color and design as foundation for other courses in related art. Lectures, discussions; laboratory work with materials to discover their uses in creative design. Mrs. Davis and staff.

8. House Planning and Furnishing. I, II; 3 cr. Study of the home unit. Fundamentals of art underlying the use of materials in the house. Lectures and demonstra-

tions. Laboratory includes analysis, criticism, and drawing of house plans. Prerequisites: Course in design and sophomore standing. Mrs. Leindorff.

18. Interior Design. I, II; 2 cr. Problems of planning and furnishing the home considering different economic and social aspects. Laboratory, demonstrations, field trips. Prerequisite: Home Economics 2 or a course in design. Miss Vandenbergh.

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: 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, Miss Vandenbergh.

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. Miss Allen.

94. Decorative Textiles. II; 3 cr. Problems in design and application to textiles. A study of traditional textile arts and modern developments. One lecture and 4 hours of laboratory. Prerequisites: Course in design and sophomore standing. Occupational Therapy majors take course for 2 cr. Miss Allen.

95. Weaving: Development and Construction. I, II; 2 cr. Planning of problems in design, color, texture and their execution on the hand loom. Lectures and laboratory work. Prerequisite: Course in design. Miss Allen.

100. Thesis. Yr; 4 cr. Prerequisites: Senior standing and consent of instructor. Staff.

114. Technique of Interior Design. II; 2 cr. Shop practice through actual problems in interior design in stores and homes. Prerequisites: Senior standing, Home Economics 18 and Home Economics 115 or 116. Mrs. Leindorff.

115. Traditional Interiors. I; 2 cr. Study of traditional interior design. Furniture, textiles and accessories. Lectures, demonstrations. Prerequisites: Home Economics 8 or 118 and junior standing. Miss Allen.

116. Contemporary Interiors. II; 2 cr. Study of contemporary interior design. Furniture, textiles and accessories. Lectures, demonstrations, field trips. Prerequisites: Home Economics 8 or 118 and junior standing. Mrs. Leindorff.

121. Advanced Costume Design. II; 2 cr. Problems to develop orginality, discrimination and techniques in costume illustration. Development of individual style of designing. Prerequisites: Course in costume design or consent of instructor and senior standing. 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. Analysis and interpretation of art problems; creative approach to organic design using actual materials; experience in assembling materials for home decoration, displays and demonstrations. 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. Historical backgrounds; economic and practical aspects of art problems in the field of interior, costume, and food service. Prerequisites: Graduate standing and consent of instructor. Miss Allen.

RELATED 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, Education 75. Open also to seniors minoring in home economics. Miss Henderson, Miss Post.

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. Extension staff.

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: Permission of director. 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 Henderson.

180. SPECIAL PROBLEMS IN HOME ECONOMICS EDUCATION. I, II; *cr. Prerequisites: Senior standing and consent of instructor. Miss Henderson, Miss Zuill.

188. (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 Zuill.

Additional elective courses are offered in the summer session, a description of which may be found in the bulletin of the Summer Session. 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; 195, Studies in decorative textiles; 197, Advanced applied costume design; EDUCATION 154, Problems in home economics in vocational programs, and 288, Workshop in home economics and education.

SCHOOL OF COMMERCE

FAYETTE H. ELWELL, DEAN
ERWIN A. GAUMNITZ, ASSISTANT DEAN
ETHEL O. BRUMM, ASSISTANT TO DEAN

FACULTY

(Department of Commerce only)

ANDREWS, RICHARD BRUCE, *M.A.*, Instructor in Commerce
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BETH, HILARY RAYMOND, *M.B.A.*, Instructor in Commerce
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CENTER, CHARLES CONVERSE, *Ph.D.,CLU*, Professor of Commerce
CONTENT, HERMAN WILSON, *M.B.A.*, Instructor in Accounting
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FRAINE, HAROLD GEORGE, *Ph.D.*, Professor of Commerce
GAUMNITZ, ERWIN ALFRED, *Ph.D.*, Assistant Dean of the School of Commerce, Professor of Commerce
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GOODMAN, OSCAR RODION, *M.S.*, Instructor in Commerce
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HOSLER, RUSSEL JOHN, *Ed.D.*, Associate Professor of Commerce and Education
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KUBLY, HAROLD EDWARD, *Ph.D.*, Associate Professor of Business Administration
LARSON, ROBERT EARL, *M.A.,FSA*, Instructor in Commerce
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LAUTENSCHLAGER, JOHN, *M.B.A.*, Instructor in Commerce
LINS, ANGELINE GENEVIEVE, *B.A.*, Associate Professor of Accounting
MOBERLY, RUSSELL LOUIS, *Ph.D.*, Professor of Commerce
PETERSEN, EDWIN BENDIX, *M.A.*, Assistant Professor of Commerce
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SCHUCK, HARRY MICHAEL, *M.A.,LL.B.*, Associate Professor of Commerce
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TRUMBOWER, HENRY ROSCOE, *Ph.D.*, 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. Postgraduate 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 given 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, labor management, marketing, advertising, merchandising, public utility management, real estate, insurance, statistics and accounting—the success of hundreds of Wisconsin commerce men and women attest the soundness of a school of business administration organized as it is at Wisconsin.

But the University of Wisconsin has 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, the Commerce School worked jointly with the Extension Division of the University and the Wisconsin Manufacturers' Association in organizing the Industrial Management Institutes in the fall of 1944 to fill a need for specialized training of supervisors in industry. Originally it was the purpose of this institute to hold two one-week sessions to provide training which would increase productivity for war effort. However, the results fom the first institutes were so encouraging that the demand for the program has continued. In 1944–45, 23 institutes were held with 28 companies sending 386 men. In the 1948–49 period, 45 institutes were presented with 233 companies sending 1,259 men.

Another illustration of an adult educational program is the School for Banking 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 are to be solved and submitted between sessions. Enrollment for the first year was 47 students from 3 states. In 1949 there were 600 students from 28 states and the District of Columbia.

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.

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; Commercial Photographers; Church Leaders; Life, Fire, and Casualty Insurance Agents; Automotive Dealers; Certified Public Accountants; Retail Lumber Dealers; and Resort Owners.

Details concerning any of the institutes scheduled for the immediate future are available by writing directly to Professor Roy J. Colbert, Bureau of Community Development, 208 Extension Building, 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, however, should address inquiries to the Dean of the School of Commerce.

STUDENT EXPENSE

For a full statement regarding living costs, fees and tuition, housing, student employment, and loans and scholarships, consult General Information.

In brief, a semester fee of $60 for residents and $210 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. Stephen W. Gilman, for years professor of business administration, was in charge of the placement work during these years.

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. In addition, 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 1949 were placed with 328 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. These assistantships correspond approximately to half-time employment and carry a stipend commensurate with that of similar assistantships throughout the University. At present this stipend amounts to $950 for an academic year, or $1,150 on the twelve-months' basis. Research associate appointments are also available to people with exceptional backgrounds, with correspondingly higher stipends.

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*—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

Students should consult General Information for a list of available scholarship and loan funds. 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 for 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 and the *A. C. Nielsen* scholarships which may be awarded either to juniors or seniors for graduate study, the following scholarships are awarded to second-semester juniors, subject to their returning as seniors.

Anonymous Scholarships—Two 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.

A. C. Nielsen Scholarship—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.

Albert Trathen Scholarship Fund—One annual scholarship of $150. Awarded to student majoring in banking and finance.

Wilbur Lumber Company Scholarship—One of $250. Awarded to student in Light-Building Industry curriculum.

Wisconsin Retail Lumbermen's Association Scholarships—Two of $250. Awarded to students in Light-Building Industry curriculum.

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 member as an adviser. (See page 440 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.

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 catalog.

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, Advanced Standing, Mrs. Helen G. Cannon, Chief Examiner, 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 last 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.

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 p. 438 and School of Education section). These credits must include the specific requirements for admission listed on page 429 as well as the basic courses and the major requirements listed below. See page 429 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

*Formerly Commerce 13

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 directed 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:

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	2
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. 148—Business and financial policy	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. 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.

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	3
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. 82—Industrial inspection methods	2
*MECH. ENGR. 105—Principles of industrial organization	3
MECH. ENGR. 115—Industrial plant design	3
MECH. ENGR. 116—Time and motion study	3
MECH. ENGR. 120—Materials handling and control	3
CIV. ENGR. 103—Economic selection	2
PSYCH. 115—Industrial psychology	3
PSYCH. 129—Personnel psychology	3

IV. 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.

V. 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.

*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. 105 may not take Commerce 111 for credit.

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, 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 (or 13), and in addition are required to take Commerce 114, 115 (or 15), and 170, as well as two additional courses from the following list:

	Credits
Com. 112—Marketing methods (formerly Commerce 13)	3
Com. 113—Problems in market analysis	3
Com. 114—Marketing management	3
Com. 115—Principles of advertising (formerly Commerce 15)	2
Com. 116—Problems in national advertising	3
Com. 119—Industrial marketing	2
Com. 120—Price policies	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.

VI. 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.

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—Railway rates and traffic	3
Com. 195—Public utility management	3
Com. 266—Seminar in public utilities	2

VII. 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 business 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 an essential for executives in all types of business for the problems of land development, site selection, financing, leasing, land purchase and sale are pervasive.

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
Agr. Econ. 226—Seminar in land problems	3
Pol. Sci. 270—Seminar in public planning	3
Soc. 174—The modern city	3

VIII. 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 examinations 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 further selection of *two* of the following courses:

	Credits
Com. 121—Fire and casualty insurance	3
Com. 138—Life insurance	3
Com. 139—Principles of insurance	3
Com. 140—Advanced life insurance	2
Com. 141—Group, pension and profit-sharing plans	3
Com. 160—Advanced property and casualty insurance	2
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

IX. 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 the 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. 101a—Calculus	4
MATH. 101b—Calculus	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. 137a—Elementary 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.

X. TEACHER PREPARATION IN BUSINESS 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 to 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.

COURSE IN MUNICIPAL FINANCE AND ADMINISTRATION

1. The student should complete the work outlined under Requirements for Admission (page 429) and the following courses, preferably by the close of the junior year:

	Credits
COM. 6—Business communication	3
COM. 8–9—Accounting (sophomore year)	8
COM. 31—Business statistics	3
COM. 105—Money and banking	3
COM. 137—Corporation finance	3
COM. 142—Public utilities	3
ECON. 1a—General economics (sophomore year)	4
POL. SCI. 7—American government and politics	3
LAW—Municipal corporations (senior year)	2
MATH. 7—Theory of investment (freshman or sophomore year)	4

2. Completion of a major by upper-group students as stated above. This major shall include 12 credits selected from the following:

COM. 187—Governmental accounting (this course for majors in this group for 3 credits)	3
COM. 124a—Public finance—taxation	3
POL. SCI. 135—Municipal administration	3
POL. SCI. 143—Introduction to public administration	3
POL. SCI. 213—Seminar in local government	2

Suggested courses for electives are:

COM. 110—Investments	3
COM. 184—Auditing	3
COM. 195—Public utility management	3
ECON. 146—Government and business	3
EDUC. 171—School of finance	3

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, a total of not to exceed 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 duly 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

In view of the fact that at present the School of Commerce accepts, conditionally, 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 students' progress would be greatly facilitated, however, if Economics 1a, Commerce 8 and Commerce 9 would have been taken.

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. Thus a student may have a double major in Commerce and Naval Science.

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. Art Education 18
3. Mathematics through Math. 101a
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 his 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 99 credits plus 29 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)	16
English	6
Physics	10
Drawing	6
Economics	4
Accounting	8
Mechanics	11
Real Estate (Land economics)	6
Agricultural Engineering	4
Marketing	5
Architecture	9
Forest Products (Properties of wood)	5
Commercial Law	6
Labor (Personnel management)	3
Total	99
Electives	29
Grand Total	128

SUGGESTED COURSES OF STUDIES

FRESHMAN YEAR

FIRST SEMESTER	Credits	SECOND SEMESTER	Credits
Math. 1a, 3a, or 51	4	Math. 1b, 3b, or 52	4
English 1a	3	English 1b	3
Drawing 10 (for non-engineering students)	3	Agricultural 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. 101a or 102a—Calculus	4	Math. 101b or 102b—Calculus	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. 29—Home architecture II	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	2
Com. 109a—Commercial law	3	Com. 109b—Commercial law	3
Com. 122—Labor problems or Com. 171—Personnel management	3	Com. 176—Real estate finance	3
Forest Products 101—Properties of wood	5	Electives	8
Electives	3		
	17		16

MASTERS' DEGREES

The Master of Business Administration Degree

(For general regulations and regulations of the Division of Social Sciences see the Graduate School bulletin.) Work for the Master of Business Administration centers in research seminars in the fields of accounting, finance, industrial management, labor management, marketing and merchandising, public utilities and transportation, real estate and urban land economics, risk and insurance, and statistics, subject to the following regulations: Each student must select 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; and (3) courses of graduate grade selected from the other fields mentioned above or in the School of Commerce or the Department of Economics outside of these fields, or a combination of the two sufficient, together with the credits granted for the work done under the heads (1) and (2), to aggregate not less than 20 credits for the year.

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 same undergraduate requirements for the B.B.A. degree as are required 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 outlind above or in connection with it. Such students will require additional time to the two semesters of residence regularly required for the completion of the course, the additional time to depend upon the number of credits earned during their undergraduate years toward the undergraduate major.

Two-Year Program for the Degree of Master of Business Administration. The School of Commerce of the University of Wisconsin 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 the student would be required to register

for one or both semesters as a special student in the School of Commerce to remove the undergraduate deficiencies. While classified as an undergraduate the student may take up to 17 credits without special permission which will enable him to remove deficiencies more rapidly than if classified as a graduate student. The maximum load for graduate students is 12 credits per semester. Graduate work presupposes a thorough background preparation and involves independent reading on a broad scale. Students admitted to this program must have good scholastic records; the general grade-point average required for admission to the Graduate School is 1.75. Such students are admitted as special students in the School of Commerce and must complete the following year-program in order to qualify for admission to the Graduate School in Commerce:

	I	II
Econ. 1a—General economics	4	
Com. 8–9—Elementary and intermediate acounting	4	4
Com. 6—Business communication	3	
Com. 112—Marketing methods		3
Com. 31—Business statistics		3
Com. 105—Money and banking		3
Com. 109a—Commercial law	3	
Com. 137—Corporation finance		3
Com. 142—Public utilities	3	

Some of the above requirements may be waived by the Dean of the School of Commerce upon presentation by the student of suitable evidence of scholastic work covering substantially the same material.

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 will be 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 will be required to attend evening classes in specialized phases of retailing. After the training period the students will 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. It is not necessary for an applicant to have majored in marketing to be eligible for this program. However, every student in the program must have completed an acceptable course in Principles of Marketing, Retailing, and Advertising before entering upon the store-training period of the program. 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 24 credits of graduate work are required, to be distributed as follows:

(a) *Twelve* 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. 162—The improvement of instruction in the basic business education subjects	3
EDUC. 173—Basic principles in business education	3

(b) *Twelve* credits in the School of Commerce. The student may select courses from one or two of the major fields in Commerce but should have at least 8 credits in one concentration. 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 24 credits, the candidate must write a term report without credit. This term report will be prepared under the guidance of the student's 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.

For the preliminary examination the candidate must offer himself for intensive examination in economic theory and its development given by the Department of Economics and in his field of concentration which may be any of the above fields. He must also pass an examination in a secondary field within the department. Fields 2, 4, 6, and 9 will be administered by the Department of Economics in conjunction with the members of the Commerce faculty teaching in these respective fields.

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. degee in Commerce shall *not* minor in economics or vice versa. 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 Administation 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 115 is open to students in the School of Journalism.

ACCOUNTING

★8. Elements of Accounting. I, II; 4 cr. Principles of double-entry bookeeping. Use of the fundamental books; the treatment and proper statement 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 is placed 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, Mr. Cramer.

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. Mr. Cramer.

183. Accounts of Consolidations and Income Taxes. I; 2 cr. Accounts and statements of amalgamations, mergers, and holding companies. Problems based upon 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, Mr. Content

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. This course includes a discussion of the advanced principles and concepts of current accounting problems which confront the teacher of business subjects. Bookkeeping forms, accounting systems, procedures used in different lines of business, and problems of taxation affecting businesses and individuals will be studied. 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. Content.

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; 2 cr. Emphasis on top-management problems of commercial banks: management of assets so as to meet conflicting needs for liquidity and earnings; policies with respect to loans and investments; adequacy of capital; financial statements; relations with public and with supervisory agencies. Prerequisite: Commerce 105. Mr. Fraine.

110. Investment Principles. I, II; 3 cr. Principles of analysis of investment media, such as stocks and bonds. Exploration of other channels of investment, such as savings accounts, investment trusts, life insurance, annuity contracts, trust funds, and mutual funds. Emphasis is on the problems of the small-scale investor. Prerequisite: Commerce 137. Mr. Fraine.

124a. Public Finance—Taxation. I, II; 3 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; 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.

143. THE SECURITIES MARKET. I, II; 3 cr. The mechanism by which securities are transferred betweeen issuers and investors and between one investor and another. Techniques of trading. Problems of investment bankers, brokers, dealers, stock exchanges. Relation of above to price movements and manipulation and to regulation of the securities market. Prerequisite: Commerce 137. Mr. Graner.

147. INVESTMENT MANAGEMENT. I, II; 3 cr. Emphasis is on the investment problems of large-scale investors (such as banks, insurance companies, foundations, pension funds). Adaptation of investment policy to the nature, business, and liabilities of the institution; cycles of prosperity and depression; changes in the levels of interest rates and securities prices; structure of interest rates. Prerequisite: Commerce 110 or consent of instructor. Mr. Fraine.

148. BUSINESS AND FINANCIAL POLICY. II; 3 cr. Integration of principles acquired by the student from courses in such disparate fields of instruction as marketing, finance, personnel, production, accounting, and purchasing. Top-management problems emphasized. Discussion of case material. Prerequisite: Senior or graduate standing. Mr. Fraine and staff.

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 upon 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 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 regidities, 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: Consent of instructor. Mr. Fraine.

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 73 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.

FOREIGN TRADE

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. 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: 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 1950–51 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 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 V, MARKETING.)

134. INDUSTRIAL STATISTICS. II; 3 cr. (See Group IX, STATISTICS.)

171. PERSONNEL MANAGEMENT. I, II; 3 cr. (See Group IV, 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. The students will be assigned special problems in the field of advanced management. Prerequisite: Consent of instructor. Mr. Kubly.

See also related courses in 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. I; 3 cr. Protective legislation dealing with wages, hours, child labor, old-age benefits, accident and unemployment compensation. Legal status of trade unions. 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 the human-relations problems involved in the following leadership situations; business and industrial, education, church, and others. Some of the techniques discussed are: organizational relationships; knowing oneself; knowing others; selection and placement, including testing; job analysis and evaluation; training; safety and health; research; services; etc. Prerequisites: Economics 1a and junior standing. Mr. Moberly, Mr. Lescohier.

172. MANAGEMENT AND LABOR RELATIONS. II; 3 cr. Collective bargaining and contract negotiations; management development; union development; governmental reg-

ulations 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. Moberly.

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, forms and controls for business and industrial executives. Prerequisite: Commerce 171. 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, and programs and their evaluation. Analysis of personnel services. Problems encountered in the growth of a typical business. Prerequisite: Commerce 171. 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 will be reviewed. Prerequisite: Graduate standing or senior standing with consent of instructor. Mr. Moberly.

MARKETING

★6. BUSINESS COMMUNICATION. I, II; 3 cr. Practical application of good letter-form and effective communication principles to current business situations (orders, inquiries, acknowledgments, sales, credit and collection, adjustment, applications); special attention to organization and presentation of business reports; trends and techniques in modern business communication. Prerequisite: Junior standing. Mr. Petersen.

★112. MARKETING METHODS. (Formerly COMMERCE 13.) I, II; 3 cr. An introductory course in the fundamentals of marketing. Functions, institutions, and organizations are examined from the viewpoint of their impact on distribution of goods. Prerequisites: Economics 1a and junior standing. Mr. Westing.

113. PROBLEMS IN MARKET ANALYSIS. I; 3 cr. A study of the 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 and Mr. Werner.

114. MARKETING MANAGEMENT. II; 3 cr. The course includes a consideration of marketing organizations, the planning and execution of sales programs and campaigns, control and supervision of the sales force, and product research and development. Prerequisite: Commerce 112. Mr. Westing and Mr. Baechler.

★115. PRINCIPLES OF ADVERTISING. (Formerly Commerce 15.) II; 2 cr. An introductory course presenting advertising from the businessman's point of view, with some consideration given to the social and economic aspects of advertising; advertising media; practical advertising problems; coordination of advertising and other marketing activities. Prerequisite: Commerce 112 (or 13). Mr. Petersen.

116. PROBLEMS IN NATIONAL ADVERTISING. I; 3 cr. An advanced course dealing with the techniques of advertising; advertising agencies; copy and layout; budgeting and scheduling; development and presentation of campaigns; and measuring the effectiveness of advertising. Prerequisites: Commerce 112 (or 13) and 115 (or 15), or Commerce 112 (or 13) and enrollment in the School of Journalism. Mr. Petersen.

118. RADIO IN COMMERCE. 3 cr. A study of the uses of radio in business; listeners' rights and interests; program types and techniques; program construction; preparation of advertising copy with special reference to the elimination of abuses; testing audience response; the complete radio merchandising campaign; consumer considerations. Prerequisite: Commerce 115 (or 15). (Will not be offered in 1950–51.)

119. INDUSTRIAL MARKETING. I; 2 cr. A consideration of the principles and practices employed in distributing goods to the industrial market. The course includes a consideration of industrial procurement techniques, the agencies and middlemen involved in the sale of industrial goods, the techniques employed in analyzing the industrial market, service policies employed by industrial marketers and promotional, credit and inventory policies. Prerequisites: Commerce 112 (or 13) 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, and 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. The point of view taken in this course is the practical application of economic theories of pricing. Prerequisites: Upper-group status and consent of instructor. Mr. Knight.

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 (or 13). 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. Course 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. A study of the special accounting problems encountered in maintaining the records for and presenting the 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 in the course 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, RETAIL MANAGEMENT. Yr; 2 cr. A course designed for graduate students enrolled in the Co-operative Retail Training Program. Consideration will be 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. Trumbower.

136. TRANSPORTATION PROBLEMS. II; 3 cr. Emphasis on the economic aspects of all forms of commercial transportation: railways, highway, water and air carriers—survey of recent and present-day regulatory and operating problems. Prerequisite: Economics 1a. Mr. Trumbower.

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. Trumbower.

169. AIR TRANSPORTATION. II; 3 cr. A treatment of 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 country's national transportation program. Prerequisite: Economics 1a. Mr. Trumbower.

189. RAILWAY 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. Trumbower.

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. Trumbower.

REAL ESTATE AND URBAN LAND ECONOMICS

28. HOME ARCHITECTURE I. I; 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.

29. HOME ARCHITECTURE II. II; 3 cr. This course deals with 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. This is a problems course with each student 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: Home Architecture II or consent of instructor.

175. VALUATION OF REAL ESTATE. I; 3 cr. This course will deal with the economic theories of value applied to real estate; valuation as a guide to business decisions; the factors and forces in the real-estate market which affect value; the principles underlying the valuation method; variations in the valuation method; the selection, collection and analysis of evidences of value; special valuation problems in appraising residential and income properties. Prerequisite: Commerce 179. Mr. Ratcliff, Mr. Andrews.

176. REAL-ESTATE FINANCE. II; 3 cr. This course covers 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. This course deals with 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 are covered, including such topics as rent schedules, maintenance, tenant relationships, modernization and problems of unprofitable properties. Prerequisite: Commerce 179. Mr. Ratcliff, Mr. Zillman.

178. HOUSING AND PLANNING PROBLEMS II; 3 cr. This course centers on the major problems of urban land utilization with 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. In addition, 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. Ratcliff.

279. SEMINAR IN URBAN LAND PROBLEMS. Yr; 2 cr. This course is designed for senior and graduate students in both Commerce and Economics. The students will select for intensive study special problems relating to land development and land utilization in urban areas. The course will provide an opportunity for students to apply land theory to specific business, social, and economic problems. Prerequisite: Commerce 179. Mr. Ratcliff.

RISK AND INSURANCE

121. FIRE 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. Gaumnitz, 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, Mr. Struck.

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. I; 2 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. General consideration of all plans on group basis designed to provide old-age security. Prerequisite: Commerce 139. Mr. Center.

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; 2 cr. A course considering (1) advanced problems in the fire, casualty and marine fields and (2) some coverages in these fields not studied in Commerce 121. Prerequisite: Commerce 121. Mr. Gaumnitz.

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, valuation of liabilities. Prerequisites: Commerce 138 and Mathematics 138, or concurrent registration, or consent of instructor. Mr. Larson.

162b. ACTUARIAL THEORY AND PRACTICE. II; 3 cr. Continuation of Commerce 162a. Prerequisite: Commerce 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. 161—Problems in Insurance and Real Estate

COM. 166—Property, Wills, Trusts, Estates and Taxation

See Economics Department for

ECON. 121—Social security; Mathematics Department for Math. 24—Theory of Life Insurance and 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. Course 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 concentrating on a selected phase of the common subject. Mr. Fox, Mr. Gaumnitz.

See also the following courses in the Mathematics department:

MATH. 101a and b—Calculus

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—Elementary mathematical statistics

MATH. 138—Actuarial mathematics

TEACHER PREPARATION IN BUSINESS EDUCATION

*63. BEGINNING TYPEWRITING. I; 2 cr. Development of the basic skills in typewriting; simple business-letter forms, centering and tabulation. Prerequisite: Junior standing. Mr. Hosler, Mr. Latimer.

*64. ADVANCED TYPEWRITING. II; 2 cr. Development of vocational competency in typewriting; business-letter forms; manuscript writing; rough drafts; financial reports; composition on the typewriter. Prerequisite: Commerce 63 or exemption from Commerce 63. Mr. Hosler, Mr. Latimer.

*65. FUNDAMENTALS OF SHORTHAND. I; 4 cr. The fundamental principles of Gregg shorthand; speed-building program is based on simple business letters. Prerequisite: Junior standing. Mr. Hosler, Mr. Latimer.

*66. ADVANCED SHORTHAND. II; 4 cr. An intensive course to develop vocational competency in taking dictation at high speeds; and introduction to transcription of mailable copy. Prerequisites: Commerce 63 and Commerce 65 or exemption from these courses. Mr. Hosler, Mr. Latimer.

*163. SECRETARIAL TECHNIQUES. I; 3 cr. Integration of the skills and knowledge in shorthand, typewriting, and English in the transcription of letters in acceptable mailable form; a study of the duties and responsibilities of the office secretary, personal qualities of the secretary, human relations in the business office. Prerequisites: Commerce 63, 64, 65, and 66 or exemption from these courses. Mr. Hosler, Mr. Latimer.

*164. OFFICE PROCEDURES. II; 3 cr. A study of the purposes and uses of the various filing systems; a survey of the different business machines to include a reasonable degree of skill in operating the computing, duplicating, and transcribing machines; a study of certain aspects of office management. Prerequisite: Commerce 163. Mr. Hosler, Mr. Latimer.

*Enrollment for credit in these courses is limited to those students enrolled in the Teacher Preparation in Business Education major.

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 Chmeistry
GREEN, MELVIN W., *Ph.D.*, Associate Professor of Pharmaceutical Chemistry
GREEN, RAY E., *Ph.D.*, Associate Professor of Pharmacology
HIGUCHI, TAKERU, *Ph.D.*, Associate Professor of Pharmacy
PARKS, LLOYD MCCLAIN, *Ph.D.*, Professor of Pharmaceutical Chemistry
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
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 application 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, Mrs. Helen G. Cannon, Chief Examiner, 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 the 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—Gen. chemistry	5	Chemistry 1b—Gen. 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

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 credits 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. Uhl 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. R. Green.

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. Urdang.

159. History of Pharmacopoeias. II; 2 cr. A survey of the development of official pharmaceutical standards. Prerequisite: Senior standing. Mr. Urdang.

160. Pharmaceutical Literature. II; 2 cr. A study of the evolution of pharmaceutical literature and its influence on the development of the profession. Mr. Urdang.

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 absorption. 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 and 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 of 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 natural drug plant principles and products 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. M. Green.

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

21. Doses of Vegetable and Animal Drugs. I, II; 1 cr. A general consideration of the various items associated with doses of medicines. Prerequisites: Botany 1, Chemistry 1. Mr. Swintosky.

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.

LAW SCHOOL

OLIVER S. RUNDELL, *LL.B.*, Dean and Professor of Law

FACULTY

CARL A. AUERBACH, *B.A., LL.B.*, Associate Professor of Law
VERNA E. BAERTSCHY, *Ph.B.*, Librarian
JACOR HENRY BEUSCHER, *A.B., LL.B., S.J.D.*, Professor of Law
FRANK TILDEN BOESEL, *Ph.B., LL.B.*, Emeritus Lecturer in Law
ABNER BRODIE, *LL.B.*, Assistant Professor of Law
RAY ANDREWS BROWN, *A.B., LL.B., S.J.D.*, Professor of Law
CHARLES BUNN, *A.B., LL.B.*, Professor of Law
RICHARD VALENTINE CAMPBELL, *A.B., LL.B., S.J.D.*, Professor of Law
JACK RICHARD DEWITT, *B.A., LL.B.*, Assistant Professor of Law
EMILY POMEROY DODGE, *B.A., M.A., LL.B.*, Assistant Librarian and Instructor in Legal Bibliography
RICHARD WAYNE EFFLAND, *B.A., LL.B., LL.M.*, Associate Professor of Law
NATHAN PAUL FEINSINGER, *A.B., J.D.*, Professor of Law
HOWARD LEWIS HALL, *A.B., LL.B.*, Professor of Law
JAMES WILLARD HURST, *A.B., LL.B.*, Professor of Law
DELMAR KARLEN, *B.A., LL.B.*, Associate Professor of Law
WILLIAM HERBERT PAGE, *A.B., LL.B., LL.M., S.J.D.*, Jackson Professor of Law
FRANK JOHN REMINGTON, *B.S., LL.B.*, Assistant Professor of Law
WILLIAM GORHAM RICE, JR., *M.A., LL.B., S.J.D.*, Professor of Law
JOHN CLOES STEDMAN, *A.B., LL.B., LL.M.*, Professor of Law
GEORGE HOOPER YOUNG, *B.A., LL.B.*, Associate Professor of Law

ADMISSION

CANDIDATES FOR THE LL.B. DEGREE. Applicants for admission to the Law School who expect to become candidates for the degree of Bachelor of Laws are required (1) to have satisfactorily completed 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 of this University (see Letters and Science section), or (2) the first three years of a course leading to the bachelor's degree in either the College of Engineering or the School of Commerce of this University. The satisfactory completion of three years of work in a general course toward a bachelor's degree in arts, philosophy, or science in any college or university officially recognized by the University of Wisconsin will be regarded as satisfying requirement (1). Applicants for admission to the Law School from such a college or university should send a transcript of their credits, for evaluation, to the office of Admissions, Bascom Hall, University of Wisconsin.

In addition, applicants for admission, other than those who have served in the armed forces of the United States in World War II, 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); or

(b) A bachelor's degree, with a grade-point average of at least 1 (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.

NOTE: Nonresidents: The pressure of numbers has compelled the University to apply special limitations upon the admission of nonresident students. To ascertain what the current regulations are, application should be made to the Law Office of Admissions.

ADVANCED STANDING. Applicants who are qualified to enter the Law School as candidates for a degree, and who have satisfactorily completed one or more years 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 a student whose last year only 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.

ENTRANCE IN FEBRUARY. Students may, with the special permission of the Dean, enter the Law School in February.

FEES AND EXPENSES

See section entitled Student Expense, beginning on page 13.

PRE-LEGAL STUDIES

The law faculty believes that a student who has a particular bent should major in the department of his choice. If a student does not have a particular bent, the law faculty recommends the major in American Institutions in the Division of History and the Social Sciences. For detailed recommendations of particular courses within the requirements of this major, attention is directed to the bulletin of the Law School.

COMBINED COURSE: LETTERS AND SCIENCE AND LAW

As described in detail in the Letters and Science section, students of that college who have completed the requirements of the first three years of one of the general courses may, in their senior year, elect the subjects required of first-year students in the Law School and credit this work toward both the arts and the law degrees.

COMBINED COURSE: ENGINEERING AND LAW

By arrangement with the College of Engineering, students who desire to obtain a training in the fundamental principles both of engineering and of law may, by pursuing the Engineering-Law courses qualify for the degree of Bachelor of Science in Engineering at the end of four years, and for the degree of Bachelor of Laws at the end of an additional two and one-half years. For details of this plan students should consult the section of the College of Engineering.

A course in patent law is given in the Law School which should be of particular interest to students with engineering training.

COMBINED COURSE: COMMERCE AND LAW

Students in the School of Commerce of this University are permitted to begin to elect work toward the degree of Bachelor of Laws while in their senior year in the School of Commerce. Work thus taken may be applied to the extent of 30 credits toward their Commerce degree.

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. The Law School has a summer session of ten weeks in which the equivalent of one third of a year's credit can be earned.

(3) An apprenticeship of not less than six months in a law office, except as provided below. This requirement must be satisfied at a time when the candidate is not in attendance at the University. At the option of the candidate the requirement may be met by two periods of not less than three months each. The requirement must be entirely absolved after the student shall have received credit for not less than twenty semester hours in the Law School. Credit for office study will not be granted unless the student complies 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 began. (b) A like certificate showing the date of completion of the clerkship must be filed at the completion of the period. (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 also be filed.

The office apprenticeship requirement may be absolved by satisfying either of the following two substitutes therefor:

(a) Completed courses aggregating 88 credits with a weighted average of 77, maintained residence for three and one-third academic years in law schools of good standing, the last year at least being in this School, and obtained credit for the course in Evidence and two of the following: Jurisdiction of Courts; Pleading and Pre-Trial Practice; Trials, Judgments and Appeals; or

(b) Completed courses aggregating 80 credits with a weighted average of 77, maintained residence for three and one-third academic years in law schools of good standing, the last year at least being at this School, obtained credit for the course in Evidence, and completed satisfactorily the course, "Summer Work in Legal Problems," in the Law School.

(4) The apprenticeship requirement is waived as to all veterans of World War II who had begun their law studies before entering the armed forces of the United States.

Students completing the course with distinguished excellence may be recommended for the degree with honor.

ADMISSION TO THE BAR

The statutes of the State provide in effect that any resident graduate of the Law Department of the University of Wisconsin 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.)

THE LL.M. DEGREE

The degree of Master of Laws (LL.M.) will be awarded to students who have completed the requirements for a certificate in law in the Law School, or the equivalent thereof at another law school having similar requirements, and who thereafter successfully complete an additional year's work of 26 credits in the Law School with a weighted average of 80.

THE S.J.D. DEGREE

The following are minimum requirements for the degree. For more detailed information the Law School Announcement should be consulted.

Applicants for admission as candidates for the S.J.D. 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 alternately 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.

SUMMER SESSION

The work of the summer session of ten weeks is carried on in the same manner as during fall and spring semesters. Courses are arranged to meet the needs of beginning and advanced students. They carry full credit toward the law degree. For fees consult the office of the Director of the Summer Session.

DEPARTMENTS OF INSTRUCTION

The Law School curriculum includes the following courses:

FIRST YEAR

CONTRACTS. 6 cr. I. Mutual assent, consideration, illegal and void contracts. II. 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. 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. 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. 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. 1 cr. 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 organizing and expressing the results of legal research in terms of written memoranda and briefs. The course includes one lecture per week; a series of weekly assignments, some of which are objective exercises, others individual projects involving research and writing; and a final examination.

PERSONAL PROPERTY. 2 cr. Findings, gifts, bailments, liens, pledges, fixtures.

REAL PROPERTY. 2 cr. 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. Intentional harms to persons and property; invasion of interests in reputation, privacy and freedom from perversion of judicial process.

TORTS (b). 4 cr. Unintentional harms to persons and property.

SECOND AND THIRD YEARS

ACCOUNTING PRINCIPLES 108 (a). 3 cr. An introductory course in accounting with particular reference to financial statements, estate and corporate accounting.

ACCOUNTING PRINCIPLES 108 (b). 2 cr. A specialized course in income taxation, open only to those who have taken 108 (a) or some equivalent course.

ADMINISTRATIVE LAW. 4 cr. The function and procedure of administrative boards and commissions; judicial relief from their decisions and orders.

AUTOMOBILE ACCIDENTS. 3 cr. Liability and compensation for automobile accidents. Wisconsin law is stressed.

BILLS AND NOTES, AND BANKING. 4 cr. 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. 4 cr. Elements of the law of agency and partnership.

CONFLICT OF LAWS. 3 cr. 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.

CONSTITUTIONAL LAW. 4 cr. Separation of powers, the federal system, civil rights, due process, etc.

CORPORATIONS. 4 cr. An introduction to the law of private business corporations.

CREDITORS' RIGHTS. 3 cr. Judgments, executions, attachments, garnishments, assignments for the benefit of creditors, receiverships and bankruptcy.

DAMAGES. 2 cr. Measurements of compensatory damages; exemplary damages; costs of litigation; procedural aspects.

DOMESTIC RELATIONS AND PERSONS. 2 cr. 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. 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. 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 especial 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. 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. 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. 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.

JURISDICTION OF COURTS. 3 cr. 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. 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. Strikes, picketing, boycotts, injunctions; the National Labor Relations Act and analogous state acts; collective bargaining.

LABOR LAW II (Rights of Individual Workers). 3 cr. 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.

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. Not recommended for students having less than 50 credits or having taken or planning to take the summer session 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. 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. Legal and equitable mortgages of real and personal property.

MUNICIPAL CORPORATIONS. 4 cr. The general nature and rights and liabilities of public corporations (counties, cities and towns).

PATENT LAW. 2 cr. The substantive and procedural law of patents; the nature and the scope of the patent right.

PLEADING AND PRE-TRIAL PRACTICE. 3 cr. A study of pleading and related processes, preliminary to the trial of issues of fact.

PUBLIC UTILITIES. 3 cr. The public utility status and the right and duties incident thereto; valuation; state and federal regulation; the holding company.

RESTITUTION. 3 cr. Relief at law and in equity for misrepresentation, mistake and duress.

SALES OF CHATTELS. 3 cr. Contracts resulting in the transfer of title to personal property and the special rights and remedies of buyer and seller.

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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. 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 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. Rights incidental to possession; profits; easments; licenses; covenants running with the land; rents.

SUMMER WORK IN LEGAL PROBLEMS. Alternative to office apprenticeship. 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. Rights and obligations among principal debtor, his creditor, and his surety.

TAXATION. 4 cr. The general principles of property, inheritance and income taxation.

TRADE REGULATION. 3 cr. 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. Practice and procedure in state and federal courts, from the beginning of trial through appeal.

TRUSTS. 4 cr. 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. 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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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 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 copy of his premedical credentials to the Dean of the Medical School not later than March 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: premedical, preclinical and clinical. At the University of Wisconsin three years are required for the premedical 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.

PREMEDICAL REQUIREMENTS

The premedical 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 Premedical Courses. The student who enters the College of Letters and Science with the intention of studying medicine arranges at the office of the Assistant Dean of the Medical School a schedule of studies which will enable him to complete the required premedical college work within the period which he desires to devote to preparation for the medical course.

The minimum time required for the premedical work at Wisconsin is three years. If four years are spent in premedical work, the student has the choice either of broadening his course of study or of taking more advanced work in some special line. If a student expects to take his medical course or to complete the clinical part of it elsewhere, he

should keep in mind the special requirements of other medical schools to which he may wish to transfer, when arranging the premedical schedule.

The general regulations governing freshmen, sophomores and juniors in the College of Letters and Science apply to premedical students.

PREMEDICAL COURSE

PREMEDICAL REQUIREMENTS. The following courses and electives, to make a total of 90 credits, are required for admission to the University of Wisconsin Medical School: English composition, 6 credits; English or American literature, 6 credits; general chemistry, 8—10 credits; organic chemistry, 6—8 credits; zoology, 5 credits; embryology, 3—5 credits; physics, 8–10 credits; quantitative chemistry, 3–4 credits; mathematics, one semester in college, 3–4 credits; a reading knowledge of either French or German which may be satisfied by the completition with a grade of *C*, of the fourth semester of French or German at the University of Wisconsin or an accredited college, or by passing a reading-knowledge or attainment examination in either language to be given by the appropriate department at the University of Wisconsin; and General Classics 38, Greek and Latin derivations of scientific terms, 3 credits, required of those who have not had two years of Latin in high school.

The candidates for the B.S. degree, Medical Science, must complete at least 90 credits including those indicated in the preceding paragraph, and a major in Medical Science with a total of 120 credits.

The candidates for the B.A. degree, Medical Science, must meet the specific requirements mentioned above, the special requirements of the B.A. degree in the General Course, and a major in Medical Science with a total of 120 credits.

MAJOR. A major in Medical Science is provided for the students in the premedical courses who pursue the regular three-year premedical sequence and who meet both the premedical and special degree requirements. The work of the major consists of a minimum of 25 credits in closely related medical subjects. This major is open only to students who have been admitted to the Medical School. In their senior year such students register in the Medical School as well as in the College of Letters and Science.

PREMEDICAL CURRICULA

RECOMMENDED SEQUENCE FOR THE THREE-YEAR COURSE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE, MEDICAL SCIENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b—Freshman English	3
Chemistry 1a or 5—General chemistry	3-5	Chemistry 1b—General chemistry	5
French 1a or German 1a	4	French 1b or German 1b	4
Mathematics 1a or 3a	3-4	Electives	3-4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	13-16		15-16

SOPHOMORE YEAR

English 30a, 32a, 33a, or 40a	3	English 30b, 32b, 33b, or 40b	3
Zoology 1—Animal biology	5	Chemistry 122—Organic chemistry	2
Chemistry 120—Organic chemistry	2	Chemistry 123—Organic chemistry	2
Chemistry 121—Organic chemistry	2	French 10b or German 10b	3
French 10a or German 10a	3	Zoology 105—Embryology	5
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	15		15

JUNIOR YEAR

General Classics 38—Origins of Greek and Latin medical terms	3	Chemistry 15—Quantitative chemistry	4
Physics 1a—General physics	5	Physics 1b—General physics	5
Electives	7-9	Electives	6-9
	15-17		15-17

SUGGESTED SEQUENCE FOR THE THREE-YEAR COURSE

LEADING TO THE DEGREE OF BACHELOR OF ARTS, MEDICAL SCIENCE COURSE

The B.A. Medical Science Course can only be completed in three years by electing Group C requirements and 24 credits in one language, unless the student has had language in high school.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
English 1a—Freshman English	3	English 1b—Freshman English	3
Chemistry 1a or 5—General chemistry	3-5	Chemistry 1b—General chemistry and qualitative analysis	5
French 1a or German 1a	4	French 1b or German 1b	4
Mathematics	4	Mathematics	4
Physical Education	0	Physical Education	0
Military Training	0	Military Training	0
	14-16		16

SOPHOMORE YEAR

English 30a, 32a, 33a, or 40a	3	English 30b, 32b, 33b, or 40b	3
Zoology 1—Animal biology	5	Zoology 105—Embryology	5
Chemistry 120—Organic chemistry	2	Chemistry 122—Organic chemistry	2
Chemistry 121—Organic chemistry	2	Chemistry 123—Organic chemistry	2
French 10a or German 10a	3	French 10b or German 10b	3
French or German conversation	2	French or German conversation	2
Physical Education (women only)	0	Physical Education (women only)	0
Military Training	0	Military Training	0
	17		17

JUNIOR YEAR

General Classics 38—Origins of Greek and Latin medical terms	3	Physics 1b—General physics	5
Physics 1a—General physics	5	Chemistry 15—Quantitative chemistry	3-4
Foreign language	3	Foreign language	3
Social studies	3	Social studies	3
Electives	2-3	Electives	2
	16-17		16-17

MEDICAL COURSES

Students are admitted for the complete four-year medical course. Combined with three years of premedical work outlined above, 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.

A Bachelor of Science degree at the end of the second year of medicine for those who enter during the emergency with 60 credits has been approved by the Faculty and Regents.

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	7
Physiology 105—Medical physiology	2	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	yr.	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 premedical 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.			
a. Lectures		yr.	30		
b. Conferences and Clinics		yr.		10	2
SURGICAL DIVISION					
General Surgery ..... Surg.	301				9
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.	311				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		
a. Lectures					1
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 Milwaukee-Chicago, 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 State of Wisconsin General Hospital, 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 State of Wisconsin General Hospital 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: An extramural 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 9–12. 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.

MILWAUKEE-CHICAGO QUARTER: The chief purpose of this quarter is to acquaint the student with the social problems involved in medical practice in large cities. At the South View Isolation Hospital students work for two weeks under the direction of mem-

bers of the staff. 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 one week is spent in the study of tuberculosis at the Wisconsin State Sanatorium at Wales under the supervision of the staff and one week 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 the medical school curriculum as outlined on page 16.

GRADUATE AND POSTGRADUATE INSTRUCTION

Extramural postgraduate courses are designed to provide physcians 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 Coordinator 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 physcians 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 State of Wisconsin General Hospital. This hospital has a capacity of over 750 beds, with facilities for medicine, surgery, and the major specialties. Included are the Student Infirmary, with a capacity of 125 beds; the Bradley Memorial Hospital, with a capacity of 50 beds used at present for early neuropsychiatric patients; 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 State of Wisconsin General Hospital 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 PROFESSORS MILES, ROBBINS; 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, Zoology 1. Drs. Bast, Mossman, Robbins, 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.

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, Robbins, and staff.

200. Research. *cr. The faciliites of the department, including supervision by staff members, are open to students and other qualified persons.

MEDICAL MICROBIOLOGY

Professors Clark, Seastone, *chairman;* Associate Professors Holford, Rasmussen; Assistant Professor Lysenko.

1. Pathogenic Microorganisms. I; 5 cr. Open only to students in course in Medical Technology. Dr. Holford.

2. Elementary Immunology. II; 3cr, Open only to students in course in Medical Technology. 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. Clark and staff.

104. Immunology. II; 4 cr. Prerequisite: Medical Microbiology 102. Dr. Seastone.

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.

207. Virus and Richettsial Diseases of Man. II; 3 cr. Prerequisite: Medical Microbiology 104. Given in alternate years. Dr. Rasmussen.

208. Microbiology Seminar. Yr; 1 cr. Dr. Holford and 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; ASSOCIATE PROFESSORS DICKIE, GORDON, MUSSER, ASSISTANT PROFESSORS ALBRIGHT, CREPEA, SIMS; CLINICAL PROFESSOR PUESTOW; ASSOCIATE CLINICAL PROFESSORS BENTLEY, CARNS, DAVIS, KURTZ, SHAPIRO, WESTON; ASSISTANT CLINICAL PROFESSOR PARKIN; CLINICAL ASSOCIATES AND INSTRUCTORS BONER, KAY, SPRAGUE.

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*, JAECHKE; ASSOCIATE PROFESSOR WORLEY; ASSISTANT PROFESSOR THORNGATE; INSTRUCTOR THEISSEN.

102. CLINICAL LABORATORY. II; 3 cr. Dr. Stovall and staff.

200. RESEARCH. *cr. Dr. Stovall and staff.

DERMATOLOGY

PROFESSORS JOHNSON, *sub-chairman*, O. H. FOERSTER, *Emeritus*; ASSOCIATE PROFESSOR MCINTOSH; ASSISTANT PROFESSORS FOERSTER, COOPER.

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.

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; INSTRUCTOR HALLETT.

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, RASMUSSEN, QUINN; ASSISTANT PROFESSORS ALDERFER, HRUZA, LEOVY, RUECKERT; INSTRUCTOR OTTO; LECTURERS JORRIS, NEUPERT, ZINTEK.

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, LORENZ, MASTEN, OSBORN, REESE; ASSOCIATE PROFESSOR EUGENIA CAMERON; ASSISTANT PROFESSORS GLOVER, ROESSLER; ASSISTANT CLINICAL PROFESSOR ROEMER.

107. MEDICAL PSYCHOLOGY. II; 2 cr. Dr. Cameron.

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

PROFESSORS ANGEVINE, *chairman*, BUNTING, *Emeritus*; ASSOCIATE PROFESSORS HARMAN, LALICH; ASSISTANT PROFESSOR 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. Prerequisites: Anatomy 110, 121, 126, 194. Drs. Angevine, Harman, Lalich, 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 REARCH. 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*, ORTH; ASSOCIATE PROFESSORS GREEN, KOZELKA.

101. TOXICOLOGY. II; 1 cr. Diagnosis and treatment of poisoning; technique of obtaining autopsy material for medico-legal purposes. Lectures only. Prerequisite: Physiology 105, Physiological Chemistry 104. Dr. Kozelka.

104. PHARMACOLOGY. II; 4 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

PROFESSORS BRADLEY, *Emeritus*, COHEN, *chairman*; ASSOCIATE PROFESSOR DEUTSCH; ASSISTANT PROFESSORS GORDON, MCGILVERY, HANSON.

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. Drs. Cohen and Hanson.

120. JOURNAL CLUB. I and II; 1 cr. Staff.

200. RESEARCH. Staff.

222. SEMINAR IN PHYSIOLOGICAL CHEMISTRY. I and II; 1 cr. Staff.

PHYSIOLOGY

EMERITUS PROFESSOR MEEK; PROFESSORS EYSTER, *chairman*, HERRIN; CHARLES SUMNER SLICHTER RESEARCH PROFESSOR WOOLSEY; ASSOCIATE PROFESSORS BARNARD, MORRISON, MURPHY; ASSISTANT PROFESSOR STONE; INSTRUCTOR LARSEN.

1. ELEMENTS OF HUMAN PHYSIOLOGY. I; 4 cr. Lectures, quizzes, demonstrations and laboratory 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. ANIMAL 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. I, 2 cr; II, 7 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. Eyster, 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. Dr. Larsen.

116. PHYSIOLOGY OF ACTIVITY. II; 3 cr. Required of physical medicine juniors, but open to others. Prerequisite: Physiology 115. Dr. Larsen.

117. PROBLEMS IN PHYSIOLOGY. I; 3 cr. Open only to physical medicine seniors. Prerequisites: Physiology 115 and 116. Dr. Larsen.

120. JOURNAL CLUB. Yr; 1 cr. Reports of recent physiological and biochemical literature.

200. ADVANCED PHYSIOLOGY AND RESEARCH. Yr; *cr. Drs. Eyster, 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, ERICKSON (NEUROSURGERY), LEMMER, MOHS (CHEMOSURGERY); INSTRUCTORS KUHN, MENDENHALL, YOUNG; CLINICAL ASSISTANTS L. E. ANTONIUS, L. M. ANTONIUS, E. F. WESTOVER.

103. ELEMENTS OF SURGERY. II; 1 cr. Prerequisites: Anatomy 121, Pathology 101, I; Bacteriology 102, Physiology 105. Dr. Schmidt.

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, Gale, MacKay, and staff.

401. FOURTH-YEAR SURGERY. I, II; 3 cr. Prerequisites: Medicine 301, Surgery 301.

ANESTHESIOLOGY

PROFESSORS ORTH, WATERS, *Emeritus;* ASSOCIATE PROFESSORS GILLESPIE, MCKAY, *sub-chairman;* ASSISTANT PROFESSOR BURKE; INSTRUCTOR BAUMEISTER

200. ADVANCED WORK AND RESEARCH. Yr; *cr.

301. IN CONJUNCTION WITH THIRD-YEAR SURGERY. I, Anesthesia and resuscitation in animals. Drs. MacKay, Gillespie. II, Principles of anesthesiology as applied to man. Dr. MacKay.

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; CLINICAL ASSISTANTS BERGER, DOOLITTLE, JUSKA.

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*; INSTRUCTORS BENNETT, M. NESBIT, TABORSKY.

200. ADVANCED WORK AND RESEARCH. Yr; *cr. Dr. Nesbit and staff.

311. THIRD-YEAR OTOLARYNGOLOGY AND RHINOLOGY. I; 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; 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

PROFESSORS SISK, *sub-chairman*, WEAR; 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. OBSTETRICS AND GYNECOLOGY. I, I cr; II, 2 cr. Prerequisites: Medicine 301, I; Surgery 301, I. Dr. Harris and staff.

406. FOURTH-YEAR OBSTETRICS AND GYNECOLOGY. I; 2 cr. Prerequisite: O. and G. 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*; INSTRUCTOR JUHL.

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, Juhl.

405. APPLIED RADIOLOGY. I, II; 1 cr. Interpretation and roentgenograms, and clinics in X-ray and radium therapy. Prerequisite: Surgery 320. Drs. Pohle, Paul, Juhl.

ONCOLOGY

PROFESSORS BAUMANN, POTTER, RUSCH, *director;* ASSOCIATE PROFESSORS LEPAGE, MILLER; ASSISTANT PROFESSORS BOUTWELL, HEIDELBERGER, MILLER, MUELLER; POSTDOCTORAL FELLOWS BARTON, LAIRD, RECKNAGEL, STOESZ.

JONATHAN BOWMAN MEMORIAL FUND. A program of cancer research was started in the Medical School in 1937 with a fund of about $400,000 which was bequeathed to the University of Wisconsin by the late Miss Jennie Bowman.

MCARDLE MEMORIAL LABORATORY. The completion of the McArdle Memorial Laboratory in 1940, through the generous bequest of Mr. Michael W. McArdle and with the support of Federal funds, has afforded splendid physical facilities for cancer research and has been a considerable factor in establishing the University as one of the leading centers in the field of cancer study.

In addition to the interest on the Bowman Fund, an annual appropriation of $31,000 is granted by legislative action. Annual grants are also obtained from the American Cancer Society, the United States Public Health Service, and the Jane Coffin Childs Fund.

Additional funds have been received recently from Mr. Thomas E. Brittingham, Jr., The Mary E. Stewart Fund, The Pearl and William Quandt Fund, The Mary Anderson Fund, The Hearst Foundation, The Elsie Wyse Fund and The Damon Runyon Fund.

111. Experimental Oncology. II; 2 cr.

200. Cancer Research. *cr.

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.

LOAN FUNDS

CORA RODERMUND EVANS LOAN FUND. Mrs. Evans bequeathed to the University the sum of $5,000, the income of which is available as a loan fund to students in the Medical School. The Board of Regents has adopted the following rules relative to the use of this fund:

(1) that no loans be made for a period of more than one year;

(2) that interest be charged at the rate of 5% from the date of note until paid;

(3) that loans be made upon recommendation of the Dean of the Medical School.

W. K. KELLOGG FOUNDATION LOAN FUND. During the recent emergency a net sum was made available to the Medical School for the subsidy of needy students. A small residue is still available for this purpose.

THE BEN ANDERSON, JR. LOAN FUND. Established in memory of Ben Anderson, Jr. in 1943 by his parents. This loan fund is available to students in the Medical School in need of financial support.

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

THE BESS G. HEATH FUND. By the terms of the will of the late Bess G. Heath, generous provision was made for the special needs of patients in the hospitals under the supervision of the University of Wisconsin. Its terms afford corrective devices and special care not ordinarily provided in these institutions. A liberal device of this will release certain sums for research in these hospitals and has proved an excellent source of support for outstanding projects.

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, Assistant 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 McArdle Memorial Laboratory, 414 No. Charter St., 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 section.

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

FACULTY

CARY, GLADYS KATHRYN, *B.S., R.N.*, Instructor and Supervisor of Nursing
COOPER, MRS. SIGNE SKOTT, *B.S., R.N.*, Instructor 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. ARLENE SELMER, *B.S., R.N.*, Instructor of Nursing
JENNY, MARTHA RACHEL, *M.S., R.N.*, Associate Professor of Public Health Nursing
MACLACHLAN, MARGERY J., *B.S., R.N.*, Director of the School of Nursing, Professor of 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
REITAN, MRS. EDITH PORTER, *B.S., R.N.*, Instructor and Supervisor of Nursing
SCHMIDT, CORNELIA EVELYN, *B.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

ERNA KOWALKE, Director, Visiting Nurse Association, Milwaukee
CLARA RUE, Associate Director, Visiting Nurse Association, Milwaukee
ANN SCHMICH, Director, Visiting Nurse Association, Madison
JANET JENNINGS, Director, Bureau of Public Health Nursing, State Board of Health

PUBLIC HEALTH ADVISORY COMMITTEE

WILLIAM S. MIDDLETON, M.D., *Chairman*

HELEN I. CLARKE
JANET JENNINGS
MARTHA JENNY
MARGERY MACLACHLAN
MABEL MARKEE
CLARA RUE
ANN SCHMICH
WILLIAM D. STOVEL, M.D.

SCHOOL OF NURSING

ORGANIZATION AND AIMS

The School of Nursing of the University of Wisconsin is organized in association with the Medical School of the University and with the State of Wisconsin General Hospital. The co-ordinating committee of the school is composed of the Dean of the Medical School, the Superintendent of the Hospital, and the Director of the School, who has charge of the immediate administration. There is close affiliation between the school and other departments of the University. In the field of public health nursing the school has the co-operation of the Bureau of Public Health Nursing of the State Board of Health and the Visiting Nurse Associations of Madison and Milwaukee.

The aims of the school are to give adequate preparation for the sympathetic care of the sick and the promotion of health, to foster academic education as an aid to professional experience, and to stimulate advanced training and research in special fields of work within the realm of nursing.

ADMISSION

For matriculation in the School of Nursing a student must furnish evidence that she has satisfied the general requirements for admission to the University, as stated in the General Information bulletin.

Students desiring to enter the School of Nursing are requested to communicate with the Registrar of the University and, for more specific details, with the Director of the School of Nursing, University of Wisconsin.

The physical and clinical facilities exact a sharp limitation of acceptances.

EXPENSE

During the period of pre-professional instruction, the student is subject to the same conditions as other students in the University and must provide for her room, board, incidental expenses and pay the regular university fees. During the period of resident professional instruction scholarships are awarded to cover the general registration fees; and room, board, and laundry are furnished the students in the Nurses' Dormitory.

A detailed discussion of student expense, including university charges, loan funds and scholarships, self-support, etc., may be found in General Information.

CURRICULA

Combined Courses. Three curricula are offered leading to the degree of Bachelor of Science and the Certificate of Graduate Nurse.

The degree of Bachelor of Science (Hygiene) is conferred, on recommendation of the College of Letters and Science, upon students who complete the requirements of the combined academic and resident professional instruction. One curriculum permits the choice of a major study from the various major fields in the College of Letters and Science and another offers a major in public health nursing or ward management and ward teaching.

The degree of Bachelor of Science (Home Economics) is conferred, on recommendation of the College of Agriculture, upon students who complete the combined course in home economics and nursing.

Each curriculum requires three years of academic work and 27 months of resident professional instruction for completion.

The CERTIFICATE OF GRADUATE NURSE is granted upon completion of the pre-clinical academic work and 27 months of resident professional instruction.

COMBINED COURSE, DEPARTMENT OF HOME ECONOMICS

This course leads to the degree of Bachelor of Science (Home Economics). The following requirements must be satisfactorily met: (1) Completion of the required work of the first three years of the course in Home Economics, (see Home Economics bulletin). (2) Completion of the following additional courses: Medical Microbiology 4; Physiology 4; Psychology 1; Sociology 1 or 2; Nursing 1, and the equivalent of Dietetics 1. (3) Electives sufficient to bring the total credits of work required by the Department of Home Economics up to 94, including thesis. (4) Twenty-seven months of resident professional instruction in nursing. (5) A total of 129 credits and 129 grade-points, including 94 required by the Department of Home Economics and 35 earned during the period of resident professional instruction.

COMBINED COURSE, COLLEGE OF LETTERS AND SCIENCE

This curriculum leads to the degree of Bachelor of Science (Hygiene) with a major in one of the fields in the College of Letters and Science. The following specific requirements must be satisfactorily met:

ENGLISH. 12 credits as follows: 6 credits in composition, subject to the usual exemptions, 3 credits per semester for two semesters, to be taken in the first year of residence; 6 credits in literature, to be taken normally in the sophomore year.

FOREIGN LANGUAGE. Either French, German or Spanish through 10b, or the passing of the appropriate intermediate examination. Another modern language may be substituted on recommendation of the Director of of the School of Nursing with the written approval of the dean.

HISTORY. 6 credits in a continuous year course, or MATHEMATICS, 8 credits.

SCIENCE. Chemistry 1, 10 credits; Physiology 4, 4 credits; Medical Microbiology 4, 3 credits; Nursing 1, 3 credits; Dietetics 1, 2 credits.

SOCIAL STUDIES OR SCIENCE OPTION. Psychology 1 and Sociology 1 or 2. Either Economics 1a and 6 credits in the social studies; or 16 additional credits of science including 10 credits in biology and 4 credits in organic chemistry.

ELECTIVES. A sufficient number of electives must be taken to bring the total amount of work in the College of Letters and Science up to 94 credits including major study and thesis.

MAJOR STUDY. By the beginning of the junior year every candidate should be well started in her major study which must be chosen from the majors offered in the College of Letters and Science.

CREDITS. A total of 129 credits including 94 required by the College of Letters and Science and 35 earned during the required 27 months of resident professional instruction.

COMBINED COURSE, COLLEGE OF LETTERS AND SCIENCE WITH A MAJOR IN PUBLIC HEALTH NURSING OR WARD MANAGEMENT AND WARD TEACHING

This curriculum, leading to the degree of Bachelor of Science (Hygiene), requires for completion two years of academic work, 27 months of instruction in nursing and a fifth year of study in public health nursing or ward management and ward teaching.

The following specific requirements must be satisfactorily met:

A. The completion of 60 credits in the College of Letters and Science which must include the following, exclusive of Nursing 1 and Dietetics 1, which are not Letters and Science courses, but should be taken in the second year:

ENGLISH. 12 credits as follows: 6 credits in English 1, and at least 6 credits in English 30, 32, 33 or 40. Students in English 1 are eligible for the usual exemptions.

LANGUAGE. Either French, German, or Spanish through 10b, or the passing of the appropriate intermediate examination. Another modern language may be substituted on recommendation of the Director of the School of Nursing with the written approval of the dean.

HISTORY. 6 credits in a continuous year course, or MATHEMATICS, 8 credits.

SCIENCE. Chemistry 1, 10 credits; Physiology 4, 4 credits; Medical Microbiology 4, 3 credits; (Nursing 1, 3 credits; Dietetics 1, 2 credits).

ECONOMICS, SOCIOLOGY AND PSYCHOLOGY. Economics 1a, 4 credits; Sociology 1 or 2, 3 credits; Psychology 1, 4 credits.

LETTERS AND SCIENCE ELECTIVES, to bring the Letters and Science total to at least 60 credits and 60 grade-points.

B. THIRD AND FOURTH YEARS

RESIDENT PROFESSIONAL INSTRUCTION (see outline of work below)

C. The completion of a fifth year of closely related subjects which constitute a major in either Public Health Nursing or Ward Management and Ward Teaching, 30–32 credits.

(a) *Public Health Nursing Major*

Public Health Nursing 1, 2, 3, 4 and 5	14—15 credits
Social Work 145	3 credits
Electives from the social studies, education and home economics (Education and home economics limited to 6 credits)	14—15 credits
The completition of four months field work	8 credits

(b) *Ward Management and Ward Teaching Major*

Nursing 10a, 10b, 11	9 credits
Public Health Nursing 2 and 3	6 credits
Electives from the social studies and education (Education limited to 6 credits)	15—17 credits

A total of at least 133 credits is required.

Graduate nurses wishing to enter these courses must meet the university requirements for entrance, must have their hospital records evaluated and approved, and must have at least sophomore standing on the regular college basis in order to be able to elect the necessary courses in psychology and sociology.

GRADUATE NURSE COURSE

COURSE OF STUDY LEADING TO THE CERTIFICATE OF GRADUATE NURSE

Students may register in the resident professional instruction after the completion of one to two years of academic work. This work must be chosen from the following subjects: English, 6 to 12 credits; History, 3 to 6 credits, or Mathematics, 4 to 8 credits; Chemistry, 10 credits; Sociology, 3 credits; Psychology, 4 credits; Physiology 4, 4 credits; Medical Microbiology 4, 3 credits; Nursing 1, 3 credits; and Dietetics 1, 2 credits.

We advise that all students plan to take two years for the pre-clinical period. It is only the exceptional student with a good background in science who can carry the program successfully in less time.

Students who are wholly or partly self-supporting should carry reduced programs during the pre-clinical period.

PRE-CLINICAL INSTRUCTIONAL PLAN

FIRST YEAR

First Semester	Credits
Freshman English	3-3
Chemistry 5 or 1a	3-5
History or Mathematics	3-4
Foreign Language	4-4
Elective	3-0
	16-16

Second Semester	Credits
Freshman English	3-3
Chemistry 1b	5-5
History or Mathematics	3-4
Foreign Language	3-4
Elective	2-0
	16-16

SECOND YEAR

First Semester	Credits
English Literature	3
Foreign Language	3
Psychology 1	4
Anatomy and Physiology	4
Elective	2
	16

Second Semester	Credits
English Literature	3
Foreign Language	3
Sociology	3
Microbiology	3
Nursing 1	3
Dietetics	2
	17

RESIDENT PROFESSIONAL INSTRUCTION

The resident professional instruction includes 27 months of ward practice and four semesters of nursing courses amounting to 35 credits as follows:

Therapeutics	3 credits
Medicine & Surgery 1, 2, 3, 4, 5, 6 and 7	19 credits
Principles of Nursing 2, 3, 4, and 5	10 credits
Psychology 105	3 credits

STATE REGISTRATION

Upon the successful completion of the combined academic and professional work of either the degree or certificate courses, graduates will be eligible for admission to the examination for registration in Wisconsin. Graduates may register by reciprocity in the majority of states.

DEPARTMENTS OF INSTRUCTION

DIETETICS

Assistant Professor Dickie

1. Normal Nutrition—Selection and Preparation of Diets.

MEDICINE AND SURGERY

Professors Bouman, Brown, Campbell, Gale, Gonce, Harris, Johnson, Middleton, Washburne, Waters; Associate Professors Curreri, Erickson, McIntosh, Masten, Slaughter, Thornton, Wear, Wirka; Assistant Professors Duehr, Sims; Instructor Nesbit.

1. Recognition and Treatment of General Medical and Surgical Diseases. 4 cr. Includes anaesthesia, gynecology, and urology.

2. Health, Disease, and Therapy in Infancy and Childhood. 4 cr. Includes pediatrics, orthopedics, physical medicine, and dermatology.

3. Nervous and Mental Health, Disease, and Therapy. 3 cr. Includes the principles of mental hygiene.

4. Health, Disease, and Therapy of the Eye, Ear, Nose, Mouth, Throat, Skin. 2 cr.

5. Communicable Diseases, Prevention and Therapy. 2 cr.

6. Obstetrics and Gynecology. 2 cr.

7. Medicine. 2 cr. Senior medical and surgical nursing.

NURSING

Professor MacLachlan; Associate Professors Emanuel, Fletcher; Assistant Professors Crump, Watson; Instructors Carey, Cooper, Dunn, Gunderson, Ormson, Paquin, Reitan, Schmidt, Schoen, Stewart, Ziegel.

1. Introduction to the Study of Nursing. 3 cr.

2. Nursing Arts in Relation to Medicine and Surgery. 3 cr. Continuance of Nursing 1 which is prerequisite.

3. Nursing Arts in Relation to Medicine and Surgery. 3 cr. Prerequisites: Nursing 1 and 2.

4. Survey of Nursing Fields. 2 cr. Prerequisites: Nursing 2, 3.

5. Advanced Nursing. 2 cr. Prerequisites: Nursing 2, 3. Includes the Introduction to Community Nursing.

10a. Principles of Ward Management and Ward Teaching. 3 cr. Aims and objectives of ward management and techniques of ward supervision. Open only to graduate nurses.

10b. Principles of Ward Management and Ward Teaching. 3 cr. Methods of teaching and planning the clinical experience in the ward unit. Prerequisite: Nursing 10a.

11. Practical Experience in Ward Management and Ward Teaching. 3 cr. Supervised practice as an assistant head nurse on a ward in the Wisconsin General Hospital. Prerequisites: Nursing 10a, 10b.

PUBLIC HEALTH NURSING

Ptofessor Stovall; Associate Professor Jenny; Lecturer Cameron.

1a. Principles of Public Health Nursing. 3 cr. Scope, objectives and fundamental principles underlying the practice of public health nursing in family health service. Trends and methods including the interview, community facilities and relationships involved in total health service to the family. Open only to graduate nurses.

1b. Special Service in Public Health Nursing. 3 cr. Study of needs and programs provided for family health in the fields of tuberculosis, orthopedics, communicable disease, venereal disease, chronic illness, industrial hygiene, rheumatic fever and care of the aged. Open only to graduate nurses.

2. Preventive Medicine and Community Health. 3 cr. Development of public health movement and concept of positive health; communicable disease control, sanitation; use of vital statistics; maternal and child health; the organization and function of health departments, local, state and national.

3. Mental Hygiene. 3 cr. The function of the public health nurse in the field of mental health. Factors in the family and community which influence emotional adjustment. The etiology, symptomatology, treatment and prevention of mental disease. Prerequisite: Psychology 1.

4. Maternal and Child Hygiene. 2 cr. Needs, aims and functions of public health nurse in safeguarding maternal health. Growth and development of the infant and programs for protecting infant health. Aspects of school health with special emphasis on the nurse's role in assisting the teacher and guiding the family.

5. Teaching in Public Health Nursing. 3 cr. Principles and practices of health teaching relating to the family, the group, and the community. Demonstration of the teaching of home nursing and practice in teaching one class. Use of the press, radio, films and exhibits in community health education. Prerequisites: Psychology 1 and Public Health Nursing 1a.

20. Field Work. 8 cr. Supervised experience in selected urban and/or rural public health fields. Prerequisite: Public Health Nursing 1a or consent of instructor. Agency Laboratory fee—$48.

THERAPEUTICS

Professor Tatum

1. Materia Medica. 3 cr. The recognition, use, and danger of drugs used in medicine.

EXTENSION DIVISION

LORENTZ HENNNING ADOLFSON, PH.D., DIRECTOR

FACULTY

AHRNSBRAK, HENRY C., *Ph.D.*, Assistant Professor of Education; Director of Wausau Extension Center
ALLEN, CHESTER, Assistant Professor, Director of Field Organization
ALLHISER, NORMAN CARL, *M.A.*, Instructor, Industrial Management Institutes
ARANIBAR, LILLIAN HAZEL, *M.A.*, Instructor in Spanish
ATWELL, MARJORIE BOYINGTON, *Ph.M.*, Instructor in English
ATWOOD, HARRY MASON, *B.S.*, Instructor in Chemistry
AZPELL, NORMAN JAMES, *M.A.*, Assistant Professor; Veterans' Counselor
BAILEY, GEORGE MURRAY, *M.A.*, Instructor in History
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
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
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.*, Assistant Professor of Speech and Dramatics
BROWN, FREEMAN HARDING, *B.S.*, Assistant Professor; Director of Photographic Laboratory
BRUMBLAY, RAY ULYSSES, *Ph.D.*, Assistant Professor of Chemistry
COLBERT, ROY JEFFERSON, *Ph.D.*, Professor of Economics and Sociology; Director of Bureau of Community Development
CORCORAN, ADRIAN, *M.A.*, Instructor in Sociology
CRANE, FRANK DOUGALL, *Ph.D.*, Professor of English
DEAN, CHARLES LYMAN, *B.S.*, Emeritus Associate Professor of Mechanical Engineering
DEBAUN, HAROLD, *Ph.B.*, Assistant Professor of Accounting and Business Administration
DIERKSMEIER, MRS. BETTY TORGERSON, *Ph.B.*, Instructor in Photographic Laboratory
DONOGHUE, JAMES ROBERT, *Ph.D.*, Assistant Professor of Political Science
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
EBISCH, KONRAD ERNST, *M.S.*, Instructor in Geography
EDSALL, BESSIE EVA, *Ph.M.*, Emeritus Professor of History
ELPERIN, RONALD HERMAN, *M.A.*, Instructor in Economics
ENGEL, HERMAN JAY, *B.A.*, Instructor, Bureau of Visual Instruction
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
FINLEY, ROBERT WILLIAM, *M.Ph.*, Lecturer in Geography
FOWLER, RUSSELL WINSLOW, *M.S.*, Associate Professor of Mechanical Engineering
FULKERSON, DELBERT RAY, *M.S.*, Instructor in Mathematics
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" Theater
GEREND, JOSEPH JOHN, *M.A.*, Instructor in English
GILLETT, ALVIN CHARLES, *B.A.*, Instructor in Sociology
GRAFF, MARSHALL CONANT, *M.A.*, Assistant Professor and Field Representative
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 and Correspondence Study
HEPPE, RUTH CATHERINE, *B.A.*, Instructor, Industrial Management Institutes
HILL, HENRY BERTRAM, *Ph.D.*, Professor of History
HILLIS, LEONARD FOLSOM, *M.S.*, Associate Professor of Civil and Structural Engineering
HOGUE, DONALD WOODROW, *M.A.*, Instructor in Geography
HOLT, HARRIETTE GRACE, *M.A.*, Emeritus Assistant Professor of Mathematics
HOWERY, VICTOR IRVING, *Ph.D.*, Assistant Professor of Social Work
HOYT, MRS. EDITH EVANS, *M.A.*, Emeritus Assistant Professor of Education
HURD, MRS. MARY E., *M.A.*, Instructor in Spanish
IMHOFF, LAVERNE JOSEPH, *M.A.*, Instructor and Field Representative
JANSKY, CYRIL METHODIUS, *B.S.*, Emeritus Professor of Electrical Engineering
JEROME, MRS. GLADYS SOLOMON, *M.A.*, Instructor in English
JONES, VINCENT CLEMENT, *M.A.*, Instructor in History
KAMARCK, EDWARD LAWRENCE, *M.A.*, Instructor—Regional Playwright, "Wisconsin Idea" Theater
KASTLER, NORMAN MANTONYA, *M.A.* Associate Professor of Economics and Sociology
KAUFMAN, SAMUEL JAMES, *Ph.B.*, Instructor and Director of Recreation, Waupun State Prison
KERR, HAROLD HOUSTON, Instructor in Mechanical Drawing
KIRCHBERGER, MRS. EDITH L., *Ph.D.*, Instructor in German
KIRCHBERGER, HANS FRITZ, *J.U.D.*, Lecturer in Political Science
KIRKPATRICK, DONALD LEE, *M.B.A.*, Instructor, Industrial Management Institutes
KLEINER, JOSEPH LESTER, *B.S.*, Assistant Professor of Business Administration
KNOKE, MRS. MARTHA VAN KLEECK, *B.A., M.F.A.*, Instructor in Dramatics and Speech, "Wisconsin Idea" Theater
KNOWLES, MARGARET ISABEL, *Ph.D.*, Assistant Professor of History
KÖNIG, SELMA SOPHIE, *Ph.D.*, Assistant Professor of German
KRASSELT, OTTO LOUIS, *B.A.*, Instructor and Field Representative
KUBIAK, HENRY JOSEPH, *B.S.*, Assistant Professor of Electrical Engineering and Physics
KUNEY, MRS. BERNICE DONNELLY, *M.A.*, Associate Professor of English
LARSON, VIVIAN ELSA, *M.A.*, Instructor in Mathematics
LEVI, HERBERT WALTER, *Ph.D.*, Assistant Professor of Botany and Zoology
LEWIS, MARY JEAN, *B.A.*, Instructor in Chemistry
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
LOBDELL, MARTIN HUDSON, *M.S.*, Instructor, Bureau of Visual Instruction
LOCKSMITH, LILA DELLA, *B.A.*, Instructor in Spanish
LOWE, MYRON JAMES, Instructor and Field Representative
MANN, HENRY LOUIS, *M.A.*, Instructor in English

MATHYS, JACK MEYER, *L.L.B.*, Instructor in Economics
MAY, ALBERT EMIL, *Ph.D.*, Assistant 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
MCCUTCHEON, LEONA ESSIE FREDERICA, *M.A.*, Assistant Professor, Bureau of Information and Program Services
MCMULLEN, KATHERINE WAY, *M.A.*, Assistant Professor of English
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, Anthropology, and Social Work
MOBERLY, RUSSELL LOUIS, *Ph.D.*, Professor and Director of Industrial Management Institutes
MOTE, FREDERICK ALBERT, *Ph.D.*, Associate Professor of Psychology
MULVIHILL, EDWARD ROBERT, *Ph.D.*, Associate Professor of Spanish
MUZUMDAR, HARIDAS THAKORDAS, *Ph.D.*, Lecturer in Sociology
OLSON, MELVIN MARTIN, *Ph.D.*, Assistant Professor of Chemistry
ONHEIBER, JEROME, *B.A.*, Instructor in Spanish
ORPURT, PHILIP ARVID, *M.S.*, Instructor in Botany and Zoology
OSTAR, ALLAN W., *B.A.*, Instructor, Publicity Director
OZANNE, ROBERT WILLARD, *M.S.*, Instructor, School for Workers
PALMERI, JOSEPH, *Ph.D.*, Associate Professor of French and Italian
PELZL, JAMES CHARLES, *M.S.*, Instructor in Mathematics
PFLEGER, RAYMOND, *Ph.M.*, Instructor in Geography
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
PROOST, WILLIAM CORNELIUS, JR., *B.S.*, Instructor in Chemistry
PULVER, HARRY E., *B.S., C.E.*, Professor of Civil and Structural Engineering
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
ROSENTRETER, MRS. BARBARA MILBOURNE, *M.A.*, Instructor in English
ROSS, ARLENE JOSEPHINE, *M.A.*, Instructor in English
ROTHWELL, WILLIAM STANLEY, *M.S.*, Instructor in Physics
SANGER, CARL EDGAR, *M.S.*, Associate Professor of Physical Education and Intramural Athletics
SARIG, EMMETT RAY, *M.M.*, Associate Professor of Music
SATTERFIELD, SAMUEL O., *B.Ed.*, Instructor in Correctional Sociology and Director of Education, Waupun State Prison
SCHACHT, ROBERT HUGO, *M.S.*, Instructor; Director, Bureau of Information and Program Services
SCHLATTER, EDWARD BUNKER, *Ph.D.*, Emeritus Professor of Romance Languages
SCHROEDER, JOHN JUERGEN, *M.S.*, Instructor in History
SCHULLER, CHARLES FRANCIS, *Ph.D.*, Assistant Professor of Education and Assistant Director, Bureau of Visual Instruction
SCHULTZ, GWENDOLYN MANETTE, *B.A.*, Acting Instructor in Geography
SCHULZ, GERHARD ROBERT, *B.A.*, Instructor in Photographic Laboratory
SCHWEBKE, HOWARD JOHN, *M.S.*, Instructor in Engineering Drawing
SCHWENN, ROGER EDWARD, *B.A.*, Instructor and Librarian
SEARLES, JOHN REXFORD, *Ph.D.*, Assistant Professor of English
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.*, Instructor and Associate 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
THOMAS, MARTHA ELIZABETH, *M.A.*, Instructor in English
THOMSON, JOHN WALTER, JR., *Ph.D.*, Associate Professor of Botany and Zoology
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.*, Assistant Director, School for Workers, and Assistant Professor of Economics
VOSKUIL, DONALD JOHN, *B.S.*, Instructor in Chemistry
VOZZA, JOHN FERNANDO, *Ph.D.*, Assistant Professor of Chemistry
WAGNER, RAPHAEL DARREL, *Ph.D.*, Assistant Professor of Mathematics and Director of Marinette Extension Center
WARD, JAMES EUGENE, *B.Ed.*, Instructor in Mathematics
WEDEMEYER, CHARLES ADRIAN, *M.A.*, Director, Racine Extension Center
WEGNER, ARTNOLL LUDWIG, *M.S.*, Instructor in Physical Education
WENDT, FLORENCE, *B.A.*, Instructor in Business Administration
WHIPPLE, PATRICIA ETHEL, *M.A.*, Instructor in Spanish
WHITE, MAX LEE, *M.A.*, Instructor in Geography
WHITNEY, BERYL ESTHER, *M.A.*, Instructor in English
WILDA, EUGENE FRANKLIN, *M.S.*, Instructor in Chemistry
WITTICH, WALTER ARNO, *Ph.D.*, Associate Professor of Education; Director, Bureau of Visual Instruction
WORKMAN, JOHN DAVID, *Ph.D.*, Professor of German
YOUNG, HUGH EDWIN, *Ph.D.*, Director, School for Workers
ZADROZNY, JOHN THOMAS, *M.A.*, Instructor in Sociology
ZARLING, LILLIAN BERTHA, *M.A.*, Instructor in Mathematics
ZYWICKI, DONNA SHIRLEY, *B.S.*, Instructor in Chemistry

CORRESPONDENCE STUDY

W. M. HANLEY, 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 Department of Extension Teaching 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 provides, through the Department of Extension Teaching, nonresidence or home-study instruction by correspondence, as follows:

1. Certain regular university studies which may, under approved conditions, be taken for credit toward a degree.

2. Advanced courses designed to help persons — graduates and others — in professional or practical life to keep in touch with the advancement in science and in other fields of knowledge.

3. High-school and preparatory studies for those to whom the conventional institutions are not available or practicable.

4. Elementary and grammar school studies for those who require such instruction for practical or personal purposes.

5. Vocational courses prepared with reference to the needs and requirements of given occupations.

6. Guided study outlines for program material to aid various organizations in their associated or club or group study and discussion work.

GENERAL BENEFITS

Persons who are benefited by correspondence study may be grouped into two main divisions: (a) those who have the taste, ability, and inclination to continue their education, whether general or vocational, and (b) wage-earners who cannot leave their employment in order to acquire training directed toward greater proficiency and skill.

The first division may be roughly subdivided into: (1) those who wish to keep abreast of the advances in knowledge related to their profession or business, or who wish to continue study purely for purposes of general culture benefits and the enjoyment of the intellectual pleasures that accompany the sense of mastery of knowledge and the attainment of understanding; (2) those who wish to earn units of credit toward a university degree; and (3) those who require preparation for entrance to the University.

The second division includes: (1) those whom the necessity of earning a livelihood has taken from school before acquiring a satisfactory elementary education; (2) those who have had the benefit of more or less liberal educational opportunities but have received no training especially adapted to fit them for their chosen vocations; and (3) those who desire to change vocations and prepare themselves for employment more nearly adapted to their tastes and abilities.

All courses offered through correspondence study, whether taken for university credit or not, are on a standardized basis in reference to the amount of work covered. Courses which are satisfactorily completed have, therefore, definite value, and all students who successfully complete such courses will be awarded statements or certificates indicative of the character of the work done.

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 office of the Extension Division. The necessary textbooks, outfits, etc., 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 recitation sheets and reports. Each recitation report 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 study of three recitation 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 LESSON 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. In all cases the assignment represents an average week's work, and not an evening's work, as at school.

PERMANENCE. The department endeavors to make its work thorough and permanent, and the various courses have been arranged, wherever that is desirable, in coordination with the regular residence work, the short courses, and the summer session.

EXAMINATIONS. Examinations are optional with the student, but are required where credits or certificates are sought. These examinations must be taken at the University, or 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. For the benefit of the department 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 varies with the length of the course. One year is allowed for a course of twenty-four assignments or less, fifteen months for a course of from twenty-five to thirty-two assignments, and eighteen months for a course of from thirty-three to forty assignments. The fee for reinstatement in a course not completed within the established time limit is two dollars except in cases where suspension of instruction has been granted for cause, and the time limit extended.

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. No fee is refunded because a student cannot begin or carry on a course for which he has once registered. If an application for instruction is rejected, the fee is returned.

7. The instruction fee for university credit courses is $6.50 per credit for students who are legal residents of the state of Wisconsin. For students not legal 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. These fees are deliberately put upon the lowest operating basis.

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 institution 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 advance assignments upon which recitation reports have not been made.

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; home economics; psychology; library methods; journalism; mathematics; music; chemistry; geography; general science; radio; physics; bookkeeping; business law; business training; shorthand; typing; drawing; blueprint reading; civil and structural engineering; electrical engineering; mechanical engineering; the gasoline automobile; diesel engines — a total of 116 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 statutes "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 Public Law 16 (The Veterans Administration Bill) or Public Law 346 (The G. I. Bill of Rights).

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.
139 Intermediate accounting, Part II. $13; $20.
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.
125 Industrial accounting, Part I. $13; $20.
126 Industrial accounting, Part II. $13; $20.
162 Business finance. $19.50; $30.
165 Financial statement analysis. $13; $20.
104 Business correspondence, Part I. $13; $20.
105 Business correspondence, Part II. $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.
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.
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.

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.
51 Classical mythology in literature. 2 cr. $13; $20.
113 Greek drama in English. 2 cr. $13; $20.

Economics

1a (1a) General economics. 4 cr. $26; $40.
122 (122) Labor problems. 3 cr. $19.50; $30.
124a (124a) Public finance—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.
198 (198) The teaching of speech. 2 cr. $13; $20.
118 (118) Human abilities and learning. 3 cr. $19.50; $30.
119 (119) Development of the young child in the home and the nursery school. 2 cr. $13; $20.
184 (184) Principles and practices of guidance. 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. $13.00; $20
75 The operation and application of the slide rule $5.00; $6.25

Engineering—Blueprint Reading and Drawing

401C Blueprint reading (Civil and structural) $ 6.50; $10
401M Blueprint reading (Mechanical) $6.50; $10
403 How to read building plans $13.00; $20.
204A Shop drawing $16.25; $25
204B Advanced shop drawing $16.25; $25.
203-S Freehand industrial sketching $13.00; $20.
205 Sheet metal drafting $8.25; $12.50
404 Civil engineering drawing $13.00; $20.
243A Principles of architectural drawing $13.00; $20.
243B Advanced architectural drafting $8.25; $12.50.
4A Engineering lettering $5.00; $7.50
5 Show card writing $8.25; $12.50
1 (Dr. 1) Elements of drawing. 3 cr. $19.50; $30
2 (Dr. 2) Elements of drawing. 3 cr. $19.50; $30
3 (Dr. 3) Descriptive geometry. 3 cr. $19.50; $30
4 (Dr. 7) Freehand lettering. 2 cr. $13.00; $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. $13.00; $20

408 Essentials of structural theory $13.00; $20.
409 Essentials of structural theory $13.00; $20.
472 Materials of construction. $13.00; $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. $26.00; $40.

Engineering—Civil

441A Elementary surveying $13.00; $20
441B Advanced surveying $13.00; $20
445 Railway curves $13.00; $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. $13.00; $20 $19.50; $30.
1 (C.E.21) Railway engineering. 2 cr. $13.00; $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 $13.00; $20.
412B Bridge stresses-concentrated loads $13.00; $20.
413 Design of railway bridge trusses $13.00; $20.
418A Reinforced concrete fundamentals $19.50; $30.
418C Reinforced concrete bridges $19.50; $30.
421 Steel building design. 2 cr. $13.00; $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. $13.00; $20
496 Construction estimates and costs. 3 cr. $19.50; $30.
2 (C.E. 52) Stresses in simple structures. 4 cr. $26.00; $40.
3 (C.E.53) Design of roof trusses and plate girders. 3 cr. $19.50; $30.
4 (C.E.54) Design of a railway bridge truss. 2 cr. $13.00; $20.
105 (C.E. 155) Principles of reinforced concrete. 3 cr. $19.50; $30.
106 (C.E.156) Concrete arches. 2 cr. $13.00; $20.
481 Principles of hydraulics. $19.50; $30
483 Advanced hydraulics. $19.50; $10
511 Construction of sewers. $6.50; $10
521 Construction of water supply systems. $6.50; $10.
2 (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 Electric wiring. $16.25; $25
328A Elements of radio. $13.00; $20
311 (E.E.6) Theory and operation of direct-current machines. 3 cr. $19.50; $30.
313 (E.E.7) Alternating current machinery. 3 cr. $19.50; $30.
341 (E.E.2) Principles of direct-current machines. 4 cr. $26.00; $40.
343 (E.E.3) Principles of alternating currents. 4 cr. $26.00; $40.
344 (E.E.4) Principles of alternating current machinery. 4 cr. $26.00; $40.
317 Electric power transmission. 3 cr. $19.50; $30.

Engineering—Mechanical

208 Mechanism $ 9.75; $15
209 Elementary machine design $13.00; $20.
214 Elementary steam engineering $13.00; $20.
215 Heat. $13.00; $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. $19.50; $30.
539 Motion and time study. $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. $26.00; $40
230A (M.E.61) Elements of heat power engineering. 4 cr. $26.00; $40
230B (M.E. 62) Elements of heat power engineering. 4 cr. $26.00; $40

Physics

1HS Elementary physics
Part A $12.00; $20
Part B $12.00; $20
51E (Physics 51) Engineering physics. 3 cr. $19.50; $30.
52E (Physics 52) Engineering physics. 3 cr. $19.50; $30.
1aE (Physics 1a) University physics. 3 cr. $19.50; $30.
1bE (Physics 1b) University physics. 3 cr. $19.50; $30.
60 Modern physics. 4 cr. $26.00; $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.
2A (2A) Intermediate composition. 2-3 cr. $13 or $19.50; $20 or $30.

2B (2B) Intermediate composition. 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.
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.
40B (40B) General survey of American literature. 3 cr. $19.50; $30.
135 (135) The Victorian Age—poetry and essays. 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 (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.
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.)
113 Greek drama in English. (See comparative literative.)
51 Classical mythology in literature. (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 Advanced composition. 2 cr. $13; $20.
21 (Special) (21a in pt.) Advanced reading. 2-3 cr. $13 or $19.50; $20 or $30.
21A (21A) Elementary survey. 3 cr. $19.50; $30.
21B (21B) 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.

General Science

1HSA General science. $12; $20.
1HSB General science. $12; $20.

Geology and Geography

2S (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.
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 (20) Classical and modern writers. 3 cr. $19.50; $30.
21 (21) Classical and modern writers. 3 cr. $19.50; $30.
22 (22) Literature 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.
25 (25) Intermediate composition and conversation. 2-3-4 cr. $13, $19.50 or $26; $20, $30 or $40.
27 Reading German. $13; $20.
28 (28) Scientific German (for students of chemistry). 2-3-4 cr. $13, $19.50 or $26; $20, $30 or $40.
29 (29) Scientific German (for students of medicine). 2-3 cr. $13 or $19.50; $20 or $30.
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.
1A Elementary Greek—Pharr's *Homeric Greek*. 4 cr. $26; $40.
1S Elementary Greek. 2 cr. $13; $20.
2 Xenophon's *Anabasis*. 3 cr. $19.50; $30.
3 Homer: *The Iliad*. 3 cr. $19.50; $30.
5 Elementary composition. 2 cr. $13; $20.
6 Reading course in *The Iliad*. 2-3 cr. $13 or $19.50; $20 or $30.
7 Reading course in Herodotus. 3 cr. $19.50; $30.
8 Reading-course in Greek tragedy. 2 cr. $13; $20.
101 Advanced prose composition. 2 or 4 cr. $13 or $26; $20 or $40.
113 Greek drama in English. 2 cr. $13; $20.
51 Classical mythology in literature. 2 cr. $13; $20.

Health

6 Prevention of disease and home care of the sick. $13; $20.

History

1a (1a) Medieval history. 2-3 cr. $13 or $19.50; $20 or $30.
1b (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, 1865-1946. 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. $30 or $19.50; $20 or $30.
10a (10a) Ancient history. 2-3 cr. $13 or $19.50; $20 or $30.
10b (10b) Ancient history. 2-3 cr. $13 or $19.50; $20 or $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 (124a) Recent history of the United States, 1890-1917. 3 cr. $19.50; $30.
124b (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, 1918-1941. 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

6 Prevention of disease and home care of the sick. $12; $20.
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.
2A Caesar. 2 cr. $13; $20.
2D Caesar for students of medicine and pharmacy. 4 cr. $26. $40.
3 Cicero: orations. 4 cr. $26; $40.
4 Virgil: *Aeneid*. 4 cr. $26; $40.
4A Virgil: Metre of the *Aeneid*. $5; $6.25.
5 Sallust, the conspiracy of Catiline. 2 cr. $13; $20.
9 Elementary composition. 5 cr. $32.50; $50.
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. 4 cr. $26; $40.
1 College algebra. 4 cr. $26; $40.
1b (1b) Trigonometry and analytic geometry. 4 cr. $26; $40.
1a (1a) Introductory college algebra. 4 cr. $26; $40.
3a (3a) College algebra and trigonometry. 4 cr. $26; $40.
3b (3b in pt.) Plane analytic geometry. 3 cr. $19.50; $30.
3S Solid analytic geometry. 1 cr. $6.50; $10.
4 Spherical trigonometry. 1 cr. $6.50; $10.
5A (101a in pt.) Differential calculus. 4 cr. $26; $40.
5B (101a in pt.) Integral calculus. 4 cr. $26; $40.
7 (7) Mathematical theory of investment. 4 cr. $26; $40.
24 (24) Theory of life insurance. 3 cr. $19.50; $30.
125 Theory of equations. 3 cr. $19.50; $30.
111 (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) The theory of probabilities and methods of least squares. 3 cr. $19.50; $30.
134 (134) Mathematics of elementary statistics. $19.50; $30.
51 (51) Elementary analysis. 5 cr. $32.50; $50.
52 (52) Elementary analysis. 5 cr. $32.50; $50.
102a (102a) Differential and integral calculus. 4 cr. $26; $40.
102b (102b) Calculus. 4 cr. $26; $40.
110A (110 in pt.) Higher mathematics for engineers. 3 cr. $19.50; $30.
110B (111 in pt.) 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 cr. $13; $20.
25 (25) Survey of world politics. 3 cr. $19.50; $30.
122 (122) Political parties and public opinion. 3 cr. $19.50; $30.
134 (134 in pt.) Rural local government. 2 cr. $13; $20.
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.

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.
50 (50) Applied psychology. 2 cr. $13; $20.

Scandinavian

A (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.
185 (185) Introduction to public administration. 3 cr. $19.50; $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 and penology. 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.
21 Special (21 in pt.) Advanced Spanish reading. 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.
25 (25 in pt.) Intermediate composition. 2 cr. $13; $20.
27 (27) Spanish commercial letter writing. 2 cr. $13; $20.
104a (104a) Don Quijote. 3 cr. $19.50; $30.
104b (104b) Don Quijote. 3 cr. $19.50; $30.
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.

EXTENSION CLASSES

Because of the responsibility assigned to it by legislative, regent, and internal university authority for conducting off-campus work, the Extension Division has developed class programs in towns and cities throughout the state of Wisconsin. The programs are of three general types: (1) Extension Centers, designed to provide full day-school freshman or freshman and sophomore college opportunities for students residing in their home communities; (2) those designed to provide college credit opportunities from the freshman to the graduate level for part-time students enrolled in late afternoon and evening classes; and (3) those of a non-credit nature designed for adults who want a liberal education or who wish to become better trained in some profession.

EXTENSION CENTERS

W. M. HANLEY, PH.D., DIRECTOR

Over a period of years, a number of college centers have been established in Wisconsin towns and cities. The courses offered to freshmen or to freshman and sophomore students at these centers parallel the courses offered in the residence departments of the University; the instructional staff is approved by the appropriate residence departments; and the credits earned can be applied in full toward a university degree.

The requirements for admission and regulations governing the conduct of these courses are the same as for courses offered in residence. The tuition of $60.00 per semester for Wisconsin residents is the same as it is for Wisconsin students who enroll in the University at Madison.

EVENING CREDIT-CLASS PROGRAMS. In centers where freshman or freshman and sophomore class programs are offered, credit classes, including some of graduate level, are also made available to adults who can carry only part-time programs in the late afternoon or evening. The demand by educationally qualified students for this type of service is so widespread that at some time or other courses have been made available in nearly every city and town in the State. Requirements for admission, instructional standards, course content, and credits earned are on the same basis as the courses conducted at the University in Madison.

The tuition fee for Wisconsin citizens is $7.50 per credit up to a total of eight credits.

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 the question of academic credit.

Liberal education lecture-courses, designed for men and women who wish to expand their fund of general knowledge or who wish to develop new aims and interests, are organized and presented in communities throughout the State. While these courses are of college grade, they do not always parallel the usual college offerings. They are intended to afford a source of pleasure and inspiration, and to provide information which can lead to a better understanding of current problems.

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.*, Acting 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.*, Associate Professor of Mathematics
BARTH, PATRICIA, *B.A.*, Acting Instructor in Chemistry
BAUER, THEODORE WILLIAM, *Ph.D.*, Assistant Professor of History (on leave 1950–51)
BECKER, ARTHUR PETER, *Ph.D.*, Associate Professor of Economics
BELL, MARY LOUISE, *M.A.*, Instructor in English
BERNARD, MRS. MARY MILDRED, *B.A.*, Acting Instructor in Chemistry
BEST, MARTHA, *M.A.*, Instructor in French
BLUM, LAURENCE PHILIP, *Ph.D.*, Assistant Professor and Assistant Adviser to Men
BOEGER, PALMER HENRY, *M.Ph.*, Instructor in History
BONOW, EUNICE RUTH, *M.S.*, Instructor in 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
BURTON, LAWRENCE ALLAN, *B.S.*, Instructor in Electrical Engineering
CALHOUN, BARBARA MARY, *M.A.*, Instructor in Botany
CHRISTMAN, WEBSTER MARCH, *M.Ed.*, Assistant Professor of Drawing
COLLINS, FRANK MCDONALD, *M.A.*, Lecturer in English
CREAMER, JOHN JOSEPH, *B.A.*, *LL.B.*, Associate Professor of English
CRUMP, VIRGINIA LEE, *B.A.*, Assistant Professor of Journalism
CULVER, MRS. MARION PRENTISS, *B.A.*, Instructor in English
DAWE, ALBERT ROLKE, *B.A.*, Instructor in Zoology
DAWE, WILLIAM HOWARD, *M.A.*, Instructor in English
DEPTULA, SZYMON STANISLAW, *M.A.*, Instructor in Polish and Russian
DOERING, HELMUTH REINHOLD, *M.B.A.*, Assistant Professor of Commerce
DOWNING, WILLARD EDWARD, *M.S.S.*, Associate Professor of Social Work
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
ERNST, DOROTHY JANET, *Ph.D.*, Assistant Professor of History
ESCHE, MRS. GERTRUDE STOESSEL, *M.A.*, Assistant Professor and Faculty Secretary and Adviser to Women (Scholastic Activities); Instructor in French
FREEMAN, MRS. MILDRED BROWNLEE, *M.A.*, Instructor in English
FRIEDMAN, SIDNEY JACK, *B.S.*, *B.F.A.*, Instructor in Drawing
GANSWINDT, ALBERT HENRY, *M.Ed.*, *C.P.A.*, Assistant Professor of Commerce
GEHRZ, DONALD KENNETH, *M.S.*, Instructor in Botany
GERSBACHER, LOUISE, *M.S.*, Instructor in Student Personnel Services
GOFF, CHARLES DAVIS, *M.A.*, Assistant Professor of Political Science
HARRIS, CARL RICHARD, *B.S.*, Acting Instructor in Physics
HAYES, MERLIN LEWIS, *Ph.D.*, Associate Professor of Zoology and Assistant to the Director (Student Affairs)
HODGE, EDWIN R., *M.B.A.*, Assistant Professor of Commerce

HOERRES, MARY ANN, *Ph.B.*, 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, *B.S.*, Instructor in Physics
JOHNSON, ROBERT EARL, *M.Ph.*, Instructor in Physics
KAN, MARIE THERESA, *M.A.*, Instructor in English
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
KIRK, MARY EVELYN, *M.A.*, Instructor in Geography
KITTSLEY, MRS. HELEN RUTH, *M.S.*, Instructor in Zoology (part-time)
KLECZKA, FLORENCE MARY, *B.A., B.L.S.*, Instructor in Student Personnel Services and Assistant Adviser to Women (Social Activities)
KNUTSEN, HAROLD WALDEMAR, *B.C.E.*, Assistant Professor of Drawing
KOCH, GILBERT HENRY, *M.S.*, Acting Instructor in Chemistry
KOCH, MRS. MARY BABCOCK, *M.A.*, Assistant Professor of English
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.*, Assistant Professor of Chemistry
LEER, JERRY ARTHUR, *M.B.A., C.P.A.*, Assistant Professor of Commerce
LEESEBERG, DONALD GEORGE, *B.B.A.*, Instructor in Commerce
LINDENBERG, GEORGE DUDLEIGH, *M.B.A.*, Instructor in Commerce
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
MARTZ, EVELYN LUCILLE, *B.A.*, Acting Instructor in Chemistry
MCLAUGHLIN, TEDDY JOHN, *M.A.*, Instructor in Speech
MEYER, MRS. GENEVIEVE TESKE, *M.A.*, Instructor in Mathematics
MILLINGTON, PAUI EMMANUEL, *Ph.D., M.D.*, Professor of Chemistry
MISSELHORN, DORIS IRENE, *B.A., B.S.*, Instructor and Assistant Librarian
MONNIER, CHARLES MARTIN, *M.A.*, Instructor in Speech
MOOREN, MRS. DOROTHY BRYANT, *M.A.*, Acting Instructor in Zoology
MYERS, RAYMOND HARLAND, *M.A.*, Professor of Speech
NEWCOMER, CHARLES ANDREW, *Ph.D.*, Assistant Professor of Spanish
NOTESTEIN, ROBERT BRUCE, *M.S.*, Instructor in Sociology
OELHOF, HOWARD JOHN, *M.S.*, Instructor in Student Personnel Services
OESTREICH, CARL RALPH, *B.S.*, Associate Professor and Superintendent of Buildings and Grounds
PAULY, LUDWIG KOENEN, *M.S.*, Instructor in Zoology
PEARCE, WILLARD JOHN, *Ph.M.*, Instructor in Physics
PERSON, PHILIP HILMORE, *Ph.D.*, Professor of Sociology
PURIN, CHARLES MALTADOR, *Ph.D.*, Emeritus Director and Emeritus Professor of German
REINDERS, VICTOR AMBROSE, *Ph.D.*, Associate Professor of Chemistry
RIDDLE, GLENN KEITH, *M.A.*, Instructor in Philosophy
RIESCH, ANNA LOU, *Ph.M.*, Instructor in History
RITTER, WILLIAM A., *B.S.*, Instructor in Athletics and Physical Education
ROEMING, ROBERT FREDERIC, *Ph.D.*, Associate Professor of French
ROUSE, THEODORE ALTON, *Ph.D.*, Professor of Physics
SCHAEFER, JAMES ROBERT, *M.B.A.*, Instructor in Commerce
SCHELAR, VIRGINIA, *B.S.*, Instructor in Chemistry
SCHULD, ELMER GEORGE, *M.A.*, Instructor in Mathematics

SCHWARTZ, DONALD ALBERT, *M.Ph.*, Lecturer in Economics
SELLERS, MARY HOPKINS, *M.A.*, Instructor in Anthropology
SHEA, DONALD RICHARD, *M.A.*, Instructor in Political Science
SHELDON, DAVID CLARK, *Ph.D.*, Assistant Professor of English
SHULER, MRS. JEAN BRANN, *B.S.*, Acting Instructor in Chemistry
SMITH, REX MARTIN, *B.S.*, Acting Instructor in Chemistry
SOLVESON, JEAN ALICE, *B.S.*, Acting Instructor in Chemistry
SPITZBART, ABRAHAM, *Ph.D.*, Assistant Professor of Mathematics
STEFANIAK, NORBERT JOHN, *M.B.A.*, Instructor in Commerce
STEINFORT, META MARY, *M.A.*, Professor of Spanish
STEWART, MARION F., *M.A.*, Instructor in English
SULLIVAN, BENJAMIN ANDREW, *M.A.*, Assistant Professor and Adviser to Men
SUMM, HELMUT, *M.Ed.*, Associate Professor of Art Education
SWEETLAND, HARRIET MARGARET, *M.A.*, Instructor in English
SYLVESTER, ROBERT CHARLES, *B.S.*, Instructor in Chemistry
TETER, JOHN WINFRED, *Ph.D.*, Assistant Professor of Sociology
THOMPSON, JOHN ROBERT, *M.A.*, Instructor in Mathematics
TOWN, GEORGE GALLOWAY, *Ph.D.*, Professor of Chemistry
TRASKELL, CHARLES PETER, *B.S.*, Assistant Professor of Athletics and Physical Education
UHL, ARTHUR H., *Ph.G.*, *Ph.D.*, Professor of Pharmaceutical Chemistry (Madison) (part-time)
VAN VLEET, JAMES G., *M.S.*, Professor of Mechanical Engineering
VERKKOLA, TORSTEN RAPHAEL, *M.S.*, Assistant Professor of 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
WEIGERT, LEE FREDERIC, *B.S.*, Instructor in Commerce
WESLE, HERBERT WILLIAM, *B.S.*, Professor of Civil Engineering
WHITFORD, PHILIP BURTON, *Ph.D.*, Assistant Professor of Botany
WILLIAMS, ELIZABETH JANE, *M.S.*, Instructor in Botany
WISSBAUM, DONALD JAMES, *B.Ed.*, *C.P.A.*, Assistant Professor of Commerce
WOLF, LOUISE ADELAIDE, *Ph.D.*, Assistant Professor of Mathematics
YOUNG, CHARLES EDMUND, *Ph.D.*, Emeritus Professor of French
YOUNG, MRS. RACHEL BABCOCK, *M.S.*, Instructor in Commerce

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, pre-journalism, pre-law, pre-library, pre-medicine, pre-nursing, pre-education, pre-forestry, pre-pharmacy, art education, and social work. Students may also arrange a program to include at least one year's work in agriculture, home economics, medical technology, music, occupational therapy, and physical education.

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 six fields: general business; private accounting; production management; marketing and advertising; retailing; real estate; and secretarial training. This is primarily a day-school program; some of the courses, however, may be offered only in the late afternoon or evening.

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 courses taken.

In the College of Engineering and the Department of Social Work it is possible to earn the Master of Science degree in Milwaukee without residence in Madison. In the School of Education half of the work required for the master's degree may be earned in Milwaukee. For information regarding registration in any one of these programs, the prospective student should refer to the special bulletins.

(2) *Noncredit Courses in Business, Engineering, and Liberal Education*

A certificate in business is granted to the student who satisfactorily completes 24 semester hours (ordinarily 12 courses) in one of the special fields, including all the required courses and certain elective courses. Certificates are offered in the following fields: general business; accounting; marketing and advertising; industrial management; secretarial work; business administration; real estate; industrial accounting; retailing; finance and credit.

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. The special services of the Extension Division deal with the informal or non-consecutive type of instruction as distinguished from the more formal and systematic type of instruction. They are concerned with questions and problems of general interest and public welfare as well as with technical problems and questions of interest to specific groups.

ORGANIZATION. The special services include the following: Bureau of Information and Program Services, the Wisconsin Idea Theater, Bureau of Lectures and Short Courses, Bureau of Visual Instruction, Photographic Laboratory, Bureau of Community Development, Bureau of Business Information, Bureau of Industrial Psychology, School for Workers, Industrial Management Institutes, and Bureau of Government.

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 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 in the local library.

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. Ten special instructors are regularly engaged in collecting materials and assembling them into loan packages. Package libraries are prepared on almost any topic or subject. 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 only cost to the borrower is that of transportation both ways.

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 to choose programs on significant present-day social, political, and economic questions. These lists are available free. Special lists are prepared for individual clubs upon request. Manuals on discussion methods and program planning are available without cost.

Aid is given in planning a series of programs on a single subject. 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.

Guided Reading Courses. The bureau has recently prepared a number of reading courses designed to help the individual direct his reading around a central theme. As each book is read, a brief written report is sent to the bureau, and at the completion of the required reading, a Certificate of Achievement is awarded. A fee of one dollar is required for each course.

United Nations Correspondence Center. The Bureau of Information and Program Services has been designated as the state correspondence center for the United Nations Information Service. Individuals and groups in Wisconsin can now address their inquiries about any phase of the United Nations directly to this Bureau rather than writing to Lake Success, New York.

Wisconsin High-School Forensic Association. The director of the Bureau is the secretary-treasurer of the Wisconsin High-School Forensic Association. This is the statewide association which promotes and directs drama, debate, and speech work in the secondary schools of the State.

THE WISCONSIN IDEA THEATER

Robert E. Gard, M.A., Director

The Wisconsin Idea Theater 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 Theater 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 SHORT COURSES

PURPOSE. For instruction and platform inspiration in communities where the lyceum need exists, the Bureau of Lectures and Short Courses organizes and supplies local programs.

SCOPE OF SERVICE. The University offers through this department: (1) single lectures or series of lectures; (2) lecture, concert, recital, or reading programs, or a miscellaneous combination of these. Such programs are offered with the definite purpose of developing better taste and higher standards with reference to public entertainments, and an appreciation of art, music, and literature by presenting examples.

LECTURES. The field covered by the lecture course is a wide one, including topics in education, history, geography and travel, economics, political science, sociology, business administration, the history and literature of ancient and modern peoples including Greek and Roman, Scandinavian, German, Semitic, French and English life and letters, the physical sciences, engineering branches, forestry, and physical training. Lists of speakers and detailed information will be sent upon request.

TEACHERS' CONVENTIONS AND INSTITUTES. The Extension Division will provide university speakers for these meetings as far as the regular work of the University will permit.

COMMENCEMENT ADDRESSES. This department arranges for commencement addresses to be delivered by members of the university staff and others available in this service. The charges for the speakers desired will be arranged in each case through the Extension Division.

SPECIAL OCCASION LECTURES. This department furnishes speakers for special occasions, such as memorial and dedication exercises, and convocations in schools; also for commercial organizations and civic and women's clubs.

EXPENSES. The local expenses include hall rent and advertising in the local papers. Full information concerning lecturers' fees will be supplied on application.

BUREAU OF VISUAL INSTRUCTION

WALTER ARNO WITTICH, PH.D., DIRECTOR

The Bureau of Visual Instruction of the University of Wisconsin Extension Division is organized as a service agency whose purpose is obtaining and lending 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 1951–52 film catalog. The new listings include about 2,500 titles and 7,000 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) Assistance in organizing school programs in visual education in Wisconsin schools. (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) A film catalogue, which includes a use chart, film description section, a cross reference, subject index, all facilitating the selection of films within special fields of interest.

PHOTOGRAPHIC LABORATORY

FREEMAN HARDING BROWN, B.S., DIRECTOR

The University of Wisconsin 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 object of the bureau is to further a better understanding of the social and economic resources of Wisconsin; to make readily available to the people of the State the University's knowledge, experience, and researches in the handling of social and economic problems; to stimulate interest in citizenship and good government; to collect and organize material relating to community development; and to assist local communities in meeting social and economic adjustments.

The functions of the bureau are: 1. To provide individuals, groups, and communities of the State with counsel, information, and services in its field, in cooperation with other organized agencies, public and private; to assist local school authorities and county citizenship committees in the arrangement and conduct of their programs for citizenship training and induction of new voters. Such information and services are extended only when there is a definite request. 2. To organize and conduct community, regional, and state-wide institutes, seminars, and short courses for business, industrial, or civic leaders — such as seminars on industrial management problems; merchants' seminars on trade area, merchandising, and management problems; leadership institutes on community development. Such educational programs are arranged only on request and based on what the applicants themselves, or their selected committees, suggest. 3. To collect, organize, and publish data relative to the social and economic resources of the State, in cooperation with the School of Commerce, the Departments of Economics, Sociology, and Political Science, and other departments and divisions of the University, and with governmental departments. Such information is made available to the schools and local business and civic leaders of the State when they request it. (Requests for technical information on business and industrial matters should be sent to the Bureau of Business Information.)

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 or subjects related to their work.

The bureau has a reference library on business subjects, including books and extensive files of pamphlets, monographs, reports, bulletins, periodicals, and clippings. When an inquiry cannot be satisfactorily answered by letter, the bureau prepares a package of books and materials from its files and lends it to the inquirer.

Selected lists of recommended books are supplied in response to specific requests.

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

This field service bureau was established in 1945 as a result of a recognized need for expanding university services to industrial groups concerned with problems of human adjustment and of human relations in work. The bureau provides direct services to such groups in terms of an organization pattern consisting of a central Madison unit and branch bureaus located in industrial areas of the State. Cooperative research with industrial groups in development of aptitude-test programs, job evaluation, training procedures, proficiency measurement, and psychological factors in equipment design represent the general areas of service. The bureau is also organized to cooperate with other university groups in industrial training programs and psychological attitude surveys.

SCHOOL FOR WORKERS

EDWIN YOUNG, PH.D., 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.

INDUSTRIAL MANAGEMENT INSTITUTES

RUSSEL L. MOBERLY, PH.D., DIRECTOR

The Industrial Management Institutes conducts approximately 40 short, intensive institutes running weekly throughout the school year. These are divided into three series, as follows:

A. Executive Management seminars for business and industrial executives at the policy-making level.

B. Special institutes on special and technical subjects for administrative and executive management.

C. Supervisory institutes for industrial foremen and supervisors.

In addition, an up-to-date library of all recent books and current periodicals on business and industrial management is maintained at the institute headquarters. Industrial personnel and management researches of general interest are conducted in cooperation with the School of Commerce and its Bureau of Business Research and Service.

Objectives of the Institutes are as follows:

(1) To promote cooperation and exchange of information between companies resulting in mutual benefit through more efficient management.

(2) To develop better understanding of our free enterprise system and its needs.

(3) To train executive, staff, and supervisory management personnel to recognize more clearly and carry out more effectively their duties and responsibilities as an integral part of management.

(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 acting as discussion leaders for the various Institutes.

An extensive bulletin describing the Institutes is mailed free upon request.

BUREAU OF GOVERNMENT

The Bureau of Government was established in 1948 as the service arm of the Extension Department of Political Science to make available to Wisconsin public officials technical information and skills that will enable them to serve their communities more effectively. The Bureau offers institutes and short courses for county and municipal officials, and is engaged in a program of research in Wisconsin governmental problems, including the preparation of a comprehensive manual on state and local government. From time to time the Bureau has provided assistance on special problems on request. A small library of current materials on public administration is maintained by the Bureau.

FIELD ORGANIZATION

CHESTER ALLEN, DIRECTOR

The University Extension Division maintains a staff of field representatives in various cities of the State who, through constant contact with the central office at Madison, are able to interpret, for interested persons, the services available from the University. Personal conferences are possible, and without cost. The services available to individual citizens, to war veterans, and to clubs and groups of various kinds interested in educational activities, about which these representatives are particularly well informed, are college, high-school, vocational, and technical correspondence-study courses, local classes on the college level, including college centers for local communities which have a need for offering an additional year or two of schooling for students living at home, individual classes for credit or noncredit, package libraries and debate material, lectures and short courses, motion picture films, and information on problems of business, economics, and sociology. The field representatives are ready at all times to give assistance in promoting these services in the interest of the local community.

Through the demand for education and training in the state penal institutions there has been developed, in cooperation with the State Board of Public Welfare, Department of Corrections, a special service for those institutions.

THE GRADUATE SCHOOL

C. A. Elvehjem, Dean
J. Homer Herriott, Associate Dean
W. J. Brogden, Assistant 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 Carnegie Foundation for the Advancement of Teaching 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 $10.00. 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.

SPECIAL REQUIREMENT FOR STUDENTS FROM NON-ENGLISH SPEAKING COUNTRIES. In addition to the requirements for admission given above, students from non-English speaking countries who seek admission to the Graduate School must demonstrate proficiency in English. The usual method is by means of the English Examination for Foreign Students prepared and administered by the College Entrance Examination Board. The applicant should inquire at the United States Foreign Service Post — embassy, legation, consulate, cultural center, or any other — nearest his home to find out the name and address of the examination supervisor to whom he should apply. The supervisor will inform the candidate when and where the next examination will be given and will also send the applicant a pamphlet explaining the nature of the examination and containing practice exercises illustrating the types of questions to be asked. After the examination has been given, the papers will be returned to the College Entrance Examination Board for scoring. The Board will report the applicant's scores to the applicant and to the Graduate School. As soon as possible after an evaluation has been made of the English Examination and other credentials, the Graduate School will notify the applicant of his eligibility for admission.

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 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 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. Continuing or re-entering graduate students register without a permit if their standing in the last period of registration was satisfactory.

The normal program for a semester is from nine to twelve credits; for the summer session, from five to eight 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 and eight in the summer session. 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 with 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 compre-

hensive 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 Summer Session 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 professors whose aid and supervision they desire. Every assistance will be extended to them.

Five to six (5–6) credits is a full graduate program for the Summer Session. In exceptional cases, the major professor may permit the student to carry a maximum of eight (8) credits.

All programs must have the approval of the major professor. A student who does not have a major professor should report to the departmental office before planning his program.

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 at Milwaukee toward a master's degree in chemistry, education, and mathematics. Graduate courses in education have been authorized for a number of other Extension Centers throughout the State. Students interested in registering for off-campus courses should consult the Extension Division or the graduate department concerned. A maximum of one semester of residence credit may be granted for off-campus courses in Milwaukee and one-half a semester of residence credit for off-campus courses in other centers. *No residence or course credit will be given toward the master's degree for off-campus work until the student has been admitted to the Graduate School and has earned a minimum residence credit of one-half a semester (one summer session) for graduate work on the Madison campus.* If the student has taken off-campus courses at the graduate level before meeting these requirements, a transcript from the Extension Division for such work must be submitted with his other credentials when he applies for admission to the Graduate School. When the requirements for admission have been met and the student has established the minimum residence credit for work on the Madison campus, graduate credits previously earned in off-campus work will be credited and recorded on the student's transcript. Students who are fully employed are permitted to register for only one off-campus course in any given semester. Minimum residence credit of one-ninth of a semester is allowed for a single course (2–3 credits) in the off-campus program. One-sixth of a semester of residence credit will be granted for each course (2 or 3 credits) when two or more courses have been completed.

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 and the bachelor's degree held by the candidate.

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 as least one semester must have been earned at the University of Wisconsin. 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. 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.

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. 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.

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 may be obtained from the appropriate language departments of the University 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 knowledge from other institutions will not be accepted.

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 (subject to change in wording) 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 knowledge requirement and are otherwise eligible to take the preliminary examination. 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 the Friday before Commencement.

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 other requirements for the degree have been satisfied and there has been a lapse of one academic year from the time of the preliminary examination. 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 candidate's completed thesis will be presented to this committee. 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 wholesome recreation during the summer.

Courses, both academic and professional, are offered for graduates and for undergraduates in letters and science, commerce, education, engineering, medicine, 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 Advanced Standing Committee, 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 work in the Graduate School may be found on page 525 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, $30-$40; board, $80-$120; books and classroom materials, $10-$20; incidental expenses, including laundry, $20-$40; total, not including fees or traveling expenses, $120–$185.

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 deferments 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 activities of her own choice. 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
		Relaxation
		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 exemptions, except those for health reasons, and for all 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 $3.00. These costumes are to be purchased in Madison.

OPPORTUNITIES FOR RECREATIONAL PARTICIPATION. The Women's Athletic Association in co-operation 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 sport equipment free of charge.

MILITARY SCIENCE

FACULTY

WINFRED G. SKELTON, *B.S.*, Colonel of Infantry, Commandant and Professor of Military Science and Tactics

HAROLDE T. LOFTIN, *LL.B.*, Lieutenant Colonel, Corps of Military Police, 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

EARL F. GILES, *B.S.*, 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

ARTHUR O. SWISHER, *B.S.*, Lieutenant Colonel of Transportation Corps, Associate Professor of Military Science and Tactics

RALPH D. ARNOLD, *B.S.*, Major of Medical Service Corps, Assistant Professor of Military Science and Tactics

HAROLD HASFJORD, *B.S.*, Major, Corps of Engineers, Assistant Professor of Military Science and Tactics

LOREN F. PARMLEY, JR., *B.S., M.D.*, Major of Medical Corps, Assistant Professor of Military Science and Tactics

JAMES H. FLINT, *B.S.*, Captain, Corps of Military Police, Assistant Professor of Military Science and Tactics

ROBERT V. CALVERT, *B.S.*, Captain of Signal Corps, Assistant Professor of Military Science and Tactics

WALTER B. BAUMEISTER, *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

LLOYD L. GLESSNER, *B.A.*, Captain of Infantry, Assistant Professor of Military Science and Tactics

ROBERT A. GRACE, *M.S.*, Captain of Transportation Corps, Assistant Professor of Military Science and Tactics

BERNARD J. MCKEARNEY, *B.S.*, Captain of Infantry, Assistant Professor of Military Science and Tactics

JOHN H. BISHOP, *B.S.*, First Lieutenant of Infantry, Instructor in Military Science and Tactics

UNITS AND OBJECT OF INSTRUCTION

The Department of Military Science comprises Infantry, Corps of Engineers, Signal Corps, Corps of Military Police, 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 emergency, 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.

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.

EXTRACURRICULAR 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. Yr; 0 cr. Military organization; military policy of the United States; evolution of warfare; maps and aerial photographs; military psychology and personnel management; first aid and hygiene; geographical foundations of national power; military problems of the U. S.; leadership, drill and exercise of command.

b. MILITARY SCIENCE I. Yr; 0 cr. MEDICAL SERVICE (PHARMACY). World situation and national defense; organization of the army; first aid; customs of the service; military law; military training methods; medical military history; military administration. 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 the Infantry; weapons; marksmanship; technique of fire; combat formations; scouting and patrolling; tactics of the rifle squad; leadership, drill and exercise of command.

b. CORPS OF ENGINEERS. History and traditions of the Corps of Engineers; characteristics of weapons; camouflage; defense against chemicals; explosives and demolitions; hand tools and rigging; mines and booby traps; organization of small units; organization of ground and field fortifications; leadership, drill and exercise of command.

c. CORPS OF MILITARY POLICE. History of Corps of Military Police; military courtesy and customs of the service; military police conduct and authority; individual weapons; military police organization and functions; communications; motor transportation; control of individuals in the field; mapping and sketching; military law; leadership, drill and exercise of command.

d. SIGNAL CORPS. Introduction to signal communications; organization and mission of the signal corps; organization and signal communication practices of the infantry, armored and airborne divisions; leadership, drill and exercise of command.

e. TRANSPORTATION CORPS. Introduction to the Transportation Corps; economics of transportation; military highway transport; highway organization and operation; leadership, drill and exercise of command.

f. MEDICAL SERVICE CORPS (PHARMACY). Organization and employment of medical services in the field army; duties of the surgeon; medical service; communications zone and zone of interior; medical supply; map reading; organization of medical department. Credit is given for technical subjects in the regular curricula.

3. MILITARY SCIENCE III. Yr; 4 cr.

a. INFANTRY. Organization; weapons; gunnery; communications; combat intelligence; estimate of situation and combat orders; field fortifications; tactics of the rifle and heavy weapons companies; leadership, drill and exercise of command.

b. CORPS OF ENGINEERS. Bridge design and classification; engineer signal communications; engineer combat intelligence; engineer supply; military roads and roadways; organization of combat divisions; tactics of engineer units; vehicle operation and maintenance; water supply; individual weapons; leadership, drill and exercise of command.

c. CORPS OF MILITARY POLICE. Town patrolling; prisoners of war; domestic disturbance; criminal investigation, protection of vital installations; traffic control; guardhouses and confinement facilities; individual weapons marksmanship; leadership, drill and exercise of command.

d. SIGNAL CORPS. Communications security; signal orders; field wire communicator fundamentals; field radio communicator fundamentals; message center and communications center procedure; applied signal communication (division); signal supply and repair; weapons and marksmanship; leadership, drill and exercise of command.

e. TRANSPORTATION CORPS. Organization of the transportation staff sections; organization and operation of railroads (zone of interior); military railway service; movements; port operations; stevedore operations; harbor craft and marine maintenance; highway transport service organization (theater of operations); individual weapons marksmanship; leadership, drill and exercise of command.

f. MEDICAL SERVICE CORPS (PHARMACY). World situation; national defense; military preventive medicine; pharmaceutical service in the army; duties of pharmacy officer; medical department reports and records. Credit is given for technical pharmaceutical instruction in regular pharmacy curricula subjects.

g. MEDICAL CORPS. Military preventive medicine; field medicine and surgery. Credit is given for technical medical instruction in regular curricula.

4. MILITARY SCIENCE IV. Yr; 4 cr.

a. INFANTRY. Organization; command and staff; communications; motors and transportation; supply and evacuation; troop movements; new developments; the military team; tactics of infantry battalion in attack and defense; military administration, military law and boards; military teaching methods; psychological warfare; leadership, drill and exercise of command.

b. CORPS OF ENGINEERS. Engineer support for Air Force; communication zone, and field army; command and staff; construction utilities and job management; motor movements; river crossings operations; military administration; military law and boards; military teaching methods; psychological warfare; leadership, drill and exercise of command.

c. CORPS OF MILITARY POLICE. Town and train patrolling; military government, criminal investigation; combat intelligence; supply and evacuation; principles of police administration; military evacuations; traffic control; command and staff; the military team; military police problems in theater of operations; military administration; military law

and boards; military teaching methods; psychological warfare; leadership, drill and exercise of command.

d. SIGNAL CORPS. Wire and radio communications materiel; higher echelon signal communications and equipment; post signal operations and administrative procedure; command and staff; combat intelligence; military administration; military laws and boards; military teaching methods; psychological warfare; leadership, drill and exercise of command.

e. TRANSPORTATION CORPS. Military railway service; highway transport operations; highway traffic control in theater of operations; movements control; logistics; oversea supply; command and staff; combat intelligence; military administration; military laws and boards; military teaching methods; psychological warfare; leadership, drill and exercise of command.

f. MEDICAL SERVICE CORPS (PHARMACY). World situation, national defense; military personnel management; aspects of atomic and chemical warfare; food service in the army; administration of military hospitals. Credit is given for technical pharmaceutical instruction in regular curricula.

g. MEDICAL CORPS. Military preventive medicine; medical aspects of atomic and chemical warfare; military psychiatry; military medical research development. Credit is given for technical medical instruction in regular curricula.

AIR SCIENCE

FACULTY

GLENN A. STELL, Lieutenant 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

EUGENE E. WELCH, *B.S.*, Captain, United States Air Force, Assistant Professor of Air Science and Tactics

FRANK L. WRIGGLESWORTH, *B.S.*, Captain, United States Air Force, Assistant Professor of Air Science and Tactics.

ERNEST E. ORR, Warrant Officer, United States Air Force, Instructor, Air Science and Tactics

OBJECT OF INSTRUCTION

The object of instruction is to develop in students an understanding of the place and function of air power in the defense of the United States and to qualify Air Force ROTC graduates to perform the duties normally expected of junior Air Force officers.

REQUIREMENTS

Air Science 1 and 2 may be taken to satisfy the university requirements for military training. No credits are given. For Air Science 3 and 4, two (2) credits per semester are given.

Upon completion of the sophomore year of the Elementary Course or one year's service in any of the armed forces of the United States, a student may make application for Air Science 3 to the Professor of Air Science and Tactics. Applicants must not be more than twenty-six (26) years of age, pass a final type officers' physical examination, and have an AGCT intelligence rating of at least 110. With the exception of members of the Air Reserve and Air National Guard, members of the reserve forces are ineligible. Students selected are required to sign a written contract wherein they agree to continue the course, five hours a week, over a period of two years, and attend one summer camp of not more than six weeks' duration.

Upon the execution of this agreement, the Department of the Air Force furnishes to members of Air Science 3 and 4, 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 Air Science 3 must begin work in the course at least two years prior to normal completion of the student's academic course.

Students are paid at the rate of $75.00 per month while attending the 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 Air Science 3 and 4, 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 course, graduates who are twenty-one years of age are eligible for appointment by the President of the United States as members of the United States Air Force Reserve in the grade of Second Lieutenant.

UNIFORMS AND EQUIPMENT

Air Force ROTC students are furnished complete uniforms. Students in Air Science 1 and 2 wear the officers' dark green coat, trousers and garrison cap. Cadets in Air Science 3 and 4 are furnished the Air Force blue uniform with service cap.

Up-to-date equipment is furnished for all types of instruction and progressive principles of visual education are incorporated into the textbooks, wall charts, mock-ups and other training aids used in the various courses.

DEPARTMENTS OF INSTRUCTION

1. AIR SCIENCE 1. Yr; 0 cr. Military procedures and doctrines; military organization, military policy of the United States, military psychology and personnel management, elements of national power, and military problems of the United States. Leadership, Drill and Exercise of Command.

2. AIR SCIENCE 2. Yr; 0 cr. Aerodynamics and propulsion, meteorology and navigation and applied air power. Introduction into a single field of Air Force specialization such as aircraft maintenance engineering.

3. AIR SCIENCE 3. Yr; 4 cr. Continuation of specialization; instruction in logistics and in air operations. Leadership, Drill and Exercise of Command in the advanced training will include voice and command and psychology of leadership.

4. AIR SCIENCE 4. Yr; 4 cr. Completion of specialization; includes a number of short subjects such as military administration, military teaching methods, military law and boards, military management and career development.

EXTRACURRICULAR ACTIVITIES

Students enrolled in Air Science 3 and 4 are eligible for membership in the Arnold Society of Air Cadets, a National Society of Air Force ROTC Cadets named in honor of General of the Air Force H. H. Arnold. 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 co-operation among students enrolled in the Air Science program.

All Air Science students are eligible to compete for membership on the Air Force ROTC Rifle Team. Both postal and shoulder-to-shoulder matches are arranged throughout the year.

NAVAL SCIENCE

FACULTY

ROBERT E. BLUE, *B.S.*, Captain, USN, Professor of Naval Science
LEROY P. HUNT, JR., *B.A.*, Lieutenant Colonel, USMC, Associate Professor of Naval Science
ROBERT G. RANDAL, *Ph.B.*, Lieutenant Commander, USN, Assistant Professor of Naval Science
ROBERT S. HUDSON, *B.S.*, Major, USMC, Assistant Professor of Naval Science
CLARK O. BLOOM, *M.S.*, Lieutenant, USNR, Assistant Professor of Naval Science
JOSEPH E. HADLEY, *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. Currently, this is sixty-five in the incoming freshman class.

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 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 obligated to serve on active duty as officers for two 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. If they desire, they may apply for commissions in the Regular Navy or Marine Corps and then become obligated for two years' active duty.

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 admission. 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 Orientation and Seamanship. Sem; 3 cr. Naval history, customs and organization; elementary seamanship, weather, rules of the road at sea; interior communications; leadership.

12. Naval Communications, Ship Handling, and Naval Justice. Sem; 3 cr. Visual, radio, and radio telephone communications and procedure; security of information and official correspondence; ship handling; maneuvering board (principles of relative motion); naval law and justice.

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; shore 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.

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 antisubmarine warfare; naval logistics.

*32M. History of the Art of War, Introduction to American Military History. Sem; 3 cr. Introduction to art of war; causes and effects of war; development of tactics and material by discussion of specific battles in European history.

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. 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 the U. S. Military Policy.

42. Ship Stability, Naval 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. 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.

PAY AND ALLOWANCES

Regular Students receive retainer pay at the rate of $50.00 per month, and on sum-

* Substituted for equivalent navy course by candidates for USMC or USMCR commissions. 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.

mer 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, $75.00 per month.

NAVAL SCIENCE STUDENTS receive no pay or allowances.

UNIFORMS

All types of 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.

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, 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 2,700 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 and all problems.

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.

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 EDUCATION

H. B. McCarty, Director

INSTRUCTIONAL STAFF

Harold Anton Engel, *M.A.*, Associate 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.*, Instructor in Agricultural 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

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."

In the field of radio education, therefore, the University of Wisconsin occupies a fortunate position. On its faculty are specialized teachers of radio, and on its campus is a long-established broadcasting station. Together they afford an ideal arrangement for *instruction in radio* and *education by radio.*

All radio activities at the University, including course instruction and the broadcasting services, are coordinated through the Division of Radio Education. Authority for the control and administration of the Division is vested in a faculty Radio Committee representing various schools and colleges of the University. The Committee studies the educational uses of radio, forms the policies and supervises the operation of Station WHA, and coordinates instruction in radio broadcasting and radio engineering.

I. INSTRUCTION IN RADIO

Instruction in radio 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 and its place in American life, and (2) vocational instruction, for those preparing for positions in various branches of the radio industry and those planning to use their radio training in such professions as teaching, journalism, advertising, public relations, acting, and electrical engineering.

Because radio embraces so many fields of study, instruction in radio 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 and Society
117 — Writing for Radio
210 — Seminar in Radio

EDUCATION:
163 — Classroom Use of Radio

JOURNALISM:
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
154 — Communication Engineering
156 — Communication Circuits and Networks
157 — Advanced Communication Engineering
158 — Ultra-High Frequency Technique
160 — Advanced Communication Engineering Design

Students choose one of the various schools and departmental majors with their particular interests and abilities in mind. Accordingly, prospective speakers, actors, script writers, and announcers normally major in speech; those planning for combined radio and newspaper work, in journalism; those interested in the business side of radio, in commerce; and so on. So far as practicable, students are advised to include as many of the radio courses in different departments as their programs will permit. All radio courses must be preceded by required introductory courses in the respective departments.

In general, students may not elect radio courses until their junior year. The freshman and sophomore years are devoted to subjects required of all graduates from the school or college and to elementary courses in the major departments. Such courses provide knowledge and training basic to an understanding of the problems of radio communication and the development of radio skills.

Extra-curricular activity in radio at Station WHA 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.

II. EDUCATION BY RADIO

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 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. The Wisconsin College of the Air 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, religious features, 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 5000 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 FM network under the auspices of the State Radio Council. Six FM stations located throughout the state are currently (1950) in operation, and two more are planned to complete the coverage. The stations are linked by a pick-up and rebroadcast system which permits simultaneous transmission of the same programs by all stations.

Programs totalling 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 night-time 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.

ASSOCIATED SCIENTIFIC INSTITUTIONS

FOREST PRODUCTS LABORATORY

GEORGE H. HUNT, 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
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
MATTHEW ELBRIDGE DUNLAP, *B.S.*, 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
GEORGE MCMONIES HUNT, *B.S.*, Director and 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
JOSEPH ARTHUR LISKA, *M.S.*, 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
C. AUDREY RICHARDS, *Ph.D.*, Lecturer in Forest Products
RAYMOND C. RIETZ, *B.A.*, Lecturer in Forest Products
GEORGE JOSEPH RITTER, *Ph.D.*, 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
ARTHUR VAN KLEECK, *B.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. Davis, Mr. Dunlap, Mr. Erickson, Mr. Fleischer, Mr. Freas, Mr. Heebink, Mr. Heyer, Mr. Kukachka, Mr. Landt, Mr. Paul, Mr. Rasmussen, Mr. Scheffer, Mr. Scholten, Mr. Taras, Mr. Teesdale, Mr. Van Kleeck, 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. Ritter, 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 Path. 101 and 104. Offered 1950–51 and in alternate years. Miss Richards.

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. Ritter. The chemical action of micro-organisms on wood and pulp, Miss Richards. 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, Miss Richards. 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 meteorological 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 observa-

*Changed from 2 to 5 credits.

tions until October 1878 when the Army established an official station manned by non-commissioned 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 nation-wide 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, the photoelectric photometry of stars, and the determination of absorption in inter-stellar space from the colors of stars.

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.

For the past 28 years the main work of the observatory has been in the field of photoelectric photometry, and there are facilities for experiments with photo-tubes, electrometers, and amplifiers. There is a small but well-equipped shop in which various pieces of research apparatus have been constructed.

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 conducted at the Washburn Observatory are published by the State, and fifteen volumes, representing the more important work done, have been

issued. Other articles by members of the staff have been published in various astronomical journals, particularly in the *Astrophysical Journal.*

Students of sufficient technical attainment are admitted to the observatory and take part in the investigations in progress. Meritorious original work of such students may be included in the publications of the observatory. For the courses of instruction in astronomy see page 97.

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 composi-

tion 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.

STATE OF WISCONSIN GENERAL HOSPITAL

H. M. Coon, *M.D.*, Superintendent

The State of Wisconsin General Hospital is established in connection with the Medical School of the University of Wisconsin. The University Infirmary and the Mary Cornelia Bradley Memorial Hospital, previously established, are integral parts of the Hospital; as is the Wisconsin Orthopedic Hospital for Children.

The main hospital building is designed as a memorial to those who served in World War I. It was built and equipped from the balance in the Service Recognition Fund.

The chief purposes of the hospital are defined as follows: (1) Primarily for the care of persons afflicted with a malady, deformity, or ailment of a nature which probably can be remedied by hospital service and treatment, who would be unable otherwise to secure such care; (2) for instruction of medical students, physicians, and nurses and (3) for such scientific research as will promote the welfare of the patients committed to its care and assist in the application of science to the alleviation of human suffering.

WISCONSIN PSYCHIATRIC INSTITUTE

W. F. Lorenz, Director, Professor of Neuropsychiatry

The Wisconsin Psychiatric Institute was developed originally under the Board of Control of the state of Wisconsin. It was started in 1915 at Mendota where research in mental and nervous disorders was carried on. On July 1, 1925, the Wisconsin Psychiatric Institute was transferred to the University by the legislature. Its primary purpose was preserved. The transfer to the University afforded increased opportunities in research through co-operation with the departments of the Medical School and other departments of the University. Basically, the program is designed to initiate and promote measures of relief and prevention in the field of neuropsychiatry, more especially as mental and nervous disorders become problems for the state and communities.

The earliest research activities of the Institute centered about syphilis and in co-operation with the State Board of Health much has been accomplished in the course of thirty years. At Wisconsin 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 co-operation with the department of pharmacology the staff of the Institute undertook extensive research in the field of treatment, especially syphilis. New drugs were developed and the experimental phases of such research were carried on by the staff of the Institute in co-operation with the department of pharmacology.

The staff of the Institute comprises also the staff of the Department of Neuropsychiatry, the university Medical School, and the State of Wisconsin General Hospital. Research has been stressed and carried on in such fields as 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 poison-

ing was developed. Space does not permit a detailed account of the constant research and investigation that is being carried on.

The Institute operates in three divisions: diagnostic laboratory service; medical education; clinical or hospital service in connection with the State of Wisconsin General Hospital. All divisions are used in the program of medical education for students, interns, residents, and visiting physicians. The purpose of the Institute is more fully realized by its administration as a department of the University in close affiliation with the Medical School and the State of Wisconsin General Hospital.

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 104 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, and is jointly occupied by 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-third 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 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 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 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 15,000. 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

AARON J. IHDE, SECRETARY-TREASURER; ASSOCIATE PROFESSOR OF CHEMISTRY

The Wisconsin Academy of Sciences, Arts and Letters was established by legislative action on March 16, 1870, and membership in it is open to all interested persons.

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* and *Bulletins*, (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, and (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.

The publications of the *Transactions* and *Bulletins* of the Academy have been aided quite consistently by modest appropriations from the Wisconsin legislature. During the 80 years of its existence, the Academy has published 40 volumes of its *Transactions* together with numerous *Bulletins*. Copies of these publications are supplied gratis to every college in the State. The library of the Academy contains more than 25,000 bound volumes and more than 8,000 which are not bound. Together, these volumes have an estimated value slightly over a quarter million dollars.

The annual meetings have been held at almost every college in the State. In 1943, the meetings were held at Marquette University, Milwaukee; in 1944 and 1946 they were held at the University of Wisconsin; in 1948 they were held at the Central State Teachers' College, Stevens Point; in 1950 the meetings were held at Beloit 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 1,137 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 labora-

tory 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 145,000 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 archaeology 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. The art collections contain modern pictures of merit, a collection of Piranesi etchings of classical ruins, and a collection of good prints and reproductions valuable for study.

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 168,460 specimens for the diagnosis of diphtheria, typhoid fever, rabies, tuberculosis, whooping cough, and other diseases were received from physicians, health officers, public health 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

1948–49

Rank	Men	Women	Total
President, Vice-Presidents, Asst. Vice-President, Deans, Assoc. Deans and Asst. Deans	22	2	24
Professors	343	24	367
Associate Professors	193	36	229
Assistant Professors	293	67	360
Lecturers	51	4	55
Associates	43	7	50
Instructors	522	268	790
Residents	58	14	72
Assistants, Grad. Asst., Resch. Asst. and Proj. Asst.	1143	391	1534
Total	2668	813	3481

THE ABOVE TABLE INCLUDES:

A. Members of the instructional and research staffs.

B. Extension workers throughout the State, including Milwaukee and other extension centers.

C. Administrative officers and librarians having the rank of any member of the instructional staff.

D. The following who were on leave for the entire year:

Rank	Men	Women	Total
Professors	5	0	5
Associate Professors	0	1	5
Assistant Professors	3	1	4
Total	8	2	10

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
Assistant Vice-President	1	0	1
Professors	8	1	9
Associate Professor	1	0	1
Assistant Professors	9	1	10
Lecturers	6	2	8
Associates	11	1	12
Instructors	62	24	86
Residents	4	2	6
Assistants, Grad Asst., Resch. Asst. and Proj. Asst.	249	71	320
Total	351	102	453

THE ABOVE TABLE DOES NOT INCLUDE EMERITUS MEMBERS OF THE FACULTY:

Rank	Men	Women	Total
President	1	0	1
Registrar	1	0	1
Deans	6	0	6
Professors	53	4	57
Associate Professors	3	2	5
Assistant Professors	3	4	7
Lecturers	4	1	5
Instructor	1	0	1
Total	72	11	83

NOTE: In previous years residents have been included with instructors.

FACULTY SUMMARY 1949–50

Rank	Men	Women	Total
President, Registrar, Deans	21	2	23
Professors	359	29	388
Associate Professors	209	36	245
Assistant Professors	316	77	393
Lecturers (excluding Forest Products)	35	4	39
Associates	37	9	46
Instructors	505	225	730
Assistants (Proj., Resch., Tchng.)	1298	353	1651
Total	2780	735	3515

THE ABOVE TABLE INCLUDES:

A. Members of the instructional and research staffs, including military, air, and naval sciences.

B. Extension workers throughout the State, including Milwaukee and other extension centers.

C. Administrative officers and librarians having the rank of any member of the instructional staff.

D. The following who were on leave for the entire year:

Rank	Men	Women	Total
Dean	1	0	1
Professors	9	0	9
Associate Professors	5	0	5
Assistant Professors	4	0	4
Total	19	0	19

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	11	3	14
Associate Professors	3	1	4
Assistant Professors	8	3	11
Lecturers	7	2	9
Associates	7	1	8
Instructors	52	13	65
Assistants	272	72	344
Total	360	95	455

THE ABOVE TABLE DOES NOT INCLUDE EMERITUS MEMBERS OF THE FACULTY:

Rank	Men	Women	Total
President	1	0	1
Deans	6	0	6
Professors	58	5	63
Associate Professors	5	2	7
Assistant Professors	3	4	7
Lecturers	1	0	1
Instructors	4	1	5
Total	78	12	90

DEGREES ACCORDING TO COURSES

	1854–1949	1949
Number of First Degrees granted 1854–1949	63,338	4,784
PRESENT COURSES		
General Course, B.A., 1904–1949	18,529	494
Course in Commerce, B.A., 1904–1948	3,064	–
Course in Journalism, B.A., 1914–1949	1,662	71
Course in Humanities, B.A., 1922–1949	99	1
Course in Classical Humanities, B.A., 1934–1948	20	0
Medical Science Course, B.A., 1939–1949	162	2
General Course, Ph.B., 1917–1949	2,578	23
Course in Commerce, Ph.B., 1932–1949	564	–
General Course, B.S., 1946	1,537	956
Applied Math. and Mechanics Course, B.S., 1944–1949	20	5
Medical Science Course, B.S., 1909–1949	1,504	92
Hygiene Course, B.S., 1927–1949	212	28
Medical Technology Course, B.S., 1939–1949	156	17
Chemistry Course, B.S., 1909–1949	981	52
Pharmacy Course, B.S., 1895–1949	620	114
Physical Medicine, B.S., 1947–1949	27	9
Business Administration Course, B.B.A., 1945–1949	1,394	725
Light Building Industry Course, B.S., 1947–1949	95	76
Music Course, B.M., 1917–1949	623	36
Course in Journalism, B.S., 1949	65	65
Course in Library Science, B.L.S., 1939–1949	334	39
Art Education Course, B.S., 1922–1949	757	59
Applied Art Course, B.S., 1941–1949	152	32
Physical Education Course, B.S., 1920–1949	1,088	85
Occupational Therapy Course, B.S., 1945–1949	81	21
Education Course, B.S., 1932–1949	2,607	322
Course in Agriculture, B.S., 1878–1949	3,273	317
Course in Agriculture and Education, B.S., 1932–1949	283	26
Home Economics Course, B.S., 1909–1949	2,304	101
Home Economics and Education Course, B.S., 1932–1949	666	31
Law Course, LL.B., 1869–1949	4,531	193
Civil Engineering Course, B.S., 1876–1949	1,852	93
Mechanical Engineering Course, B.S., 1876–1949	2,616	291
Electrical Engineering Course, B.S., 1892–1949	2,481	272
Chemical Engineering Course, B.S., 1903–1949	1,260	100
Mining Engineering Course, B.S., 1910–1949	243	13
Metallurgical Engineering Course, B.S., 1930–1949	164	23
Naval Science Course, B.S., 1947–1949	39	0
COURSES DISCONTINUED		
Ancient Classical Course, B.A., 1854–1903	470	
Modern Classical Course, B.L., 1886–1903	548	
English Course, B.L., 1887–1903	459	
Civil Historical Course, B.L., 1893–1903	383	
General Science Course, B.S., 1886–1903	722	
Geology Course, B.S., 1914	1	
Chemistry Commerce Course, B.S., 1929–1937	47	
Three-year Course in Pharmacy, Ph.G., 1884–1940	558	
School of Music, M.G., 1898–1916	134	
School of Commerce (B.L., 8; B.S., 1), 1902–1903	9	

Normal Course, 1865–1868	25	
Normal Course, Ph.B., 1898–1932	1,151	
Metallurgical Engineering Course, B.M.E., 1876–1896	16	
General Engineering Course, B.S., 1901–1910	96	
Manual Arts Course, B.S., 1921	2	
Industrial Education Course, B.S., 1922–1933	74	
Two-Year Course in Home Economics, Ag.G., 1920–1922	8*	
Two-Year Course for Supervisors of Music, 1910–1925	173*	
Three-Year Course for Supervisors of Music, 1925	4*	
Two-Year Course in Agriculture, 1910–1941	254*	
Number of Higher Degrees Granted in Course, 1875–1949	19,168	1,459
Master of Arts, M.A., 1879–1949	6,204	262
Master of Letters, M.L., 1882–1903	97	—
Master of Science, M.S., 1882–1949	4,729	686
Master of Science, Engineering, M.S., 1922–1949	672	101
Engineer, 1875–1949	514	2
Master of Agriculture, M.Agr., 1893	1	—
Master of Pharmacy, M.Phar., 1894 and 1902	2	—
Master of Philosophy, M.Ph., 1902–1948	1,622	—
Master of Public Health, M.P.H., 1915–1916	4	—
Master of Music, M.M., 1938–1949	36	8
Master of Business Administration, M.B.A., 1946–1949	55	25
Master of Laws, LL.M., 1946–1949	7	3
Doctor of Public Health, D.P.H., 1912–1915	2	—
Doctor of Philosophy, Ph.D., 1892–1949	3,962	298
Doctor of Medicine, M.D., 1927–1949	1,245	73
Doctor of Juridical Science, S.J.D., 1934–1949	16	1

KINDS OF DEGREES

Number of First Degrees Granted, 1854–1949	63,338
Bachelor of Arts, 1954–1949	24,006
Bachelor of Philosophy, 1898–1949	4,293
Bachelor of Letters, 1876–1903	1,398
Bachelor of Science, 1873–1949	26,026
Bachelor of Metallurgical Engineering, 1876–1896	16
Bachelor of Laws, 1869–1949	4,531
Bachelor of Business Administration, 1945–1949	1,394
Bachelor of Library Science, 1939–1949	334
Bachelor of Music, 1917–1949	623
Graduate in Music, 1896–1916	134
Normal Course, 1865–1868	25
Graduate in Pharmacy, 1884–1940	558
Graduate in Agriculture (Two-Year Course) 1910–1941	262*
Music Supervisor, 1910–1925	177*
Number of Higher Degrees Granted in Course, 1875–1949	19,168
Masters, 1879–1949	13,429
Engineer, 1875–1949	514
Doctor of Public Health, 1912–1915	2
Doctor of Philosophy, 1892–1949	3,962
Doctor of Juridical Science, 1934–1949	16
Doctor of Medicine, 1927–1949	1,245
Grand Total of First and Higher Degrees, 1854–1949	82,506

*Not included in totals because not considered degrees.

HONORARY DEGREES

	1854–1949	1949
Doctor of Letters, 1910–1949	35	1
Doctor of Laws, 1866–1949	178	3
Doctor of Science, 1910–1949	42	1
Doctor of Philosophy, 1883–1887	4	
Doctor of Medicine, 1856	1	
Doctor of Music, 1934	1	
Doctor of Engineering, 1939	1	
Master of Arts, 1867–1938	35	
Master of Science, 1877	1	
Civil Engineer, 1877–1915	4	
Mechanical Engineer, 1898–1928	2	
Bachelor of Arts, 1885	1	
Bachelor of Mechanical Engineering, 1887	1	
Total Honorary Degrees	306	5

DEGREES ACCORDING TO COURSES

	1854–1948	1948
Number of First Degrees granted 1854–1948	58,554	3,509
PRESENT COURSES		
General Course, B.A., 1904–1948	18,035	693
Course in Commerce, B.A., 1904–1948	3,064	6
Course in Journalism, B.A., 1914–1948	1,591	102
Course in Modern Humanities, B.A., 1922–1948	98	2
Course in Classical Humanities, B.A., 1934–1946	20	–
Medical Science Course, B.A., 1939–1948	160	9
General Course, Ph.B., 1917–1948	2,555	114
Course in Commerce, Ph.B., 1932–1948	564	2
General Course, B.S., 1946–1948	581	410
Applied Mathematics and Mechanics Course, B.S., 1944–1948	15	9
Chemistry Course, B.S., 1909–1948	929	52
Medical Science Course, B.S., 1909–1948	1,412	53
Hygiene Course, B.S., 1927–1948	184	17
Medical Technology Course, B.S., 1939–1948	139	19
Pharmacy Course, B.S., 1895–1948	506	68
Physical Medicine, B.S., 1947–1948	18	16
Business Administration Course, B.B.A., 1945–1948	669	401
Light Building Industry Course, B.S., 1947–1948	19	16
Music Course, B.M., 1917–1948	587	14
Course in Library Science, B.L.S., 1939–1948	295	31
Art Education Course, B.S., 1922–1948	698	35
Applied Art Course, B.S., 1941–1948	120	36
Physical Education Course, B.S., 1920–1948	1,003	64
Occupational Therapy Course. B.S., 1945–1948	60	22
Education Course, B.S., 1932–1948	2,285	210
Course in Agriculture, B.S., 1878–1948	2,956	184
Course in Agriculture and Education, B.S., 1932–1948	257	28
Home Economics Course, B.S., 1909–1948	2,203	108
Home Economics and Education Course, B.S., 1932–1948	635	40
Law Course, LL.B., 1869–1948	4,338	165
Civil Engineering Course, B.S., 1876–1948	1,759	55
Mechanical Engineering Course, B.S., 1876–1948	2,325	230

Electrical Engineering Course, B.S., 1892–1948	2,209	152
Chemical Engineering Course, 1903–1948	1,160	89
Mining Engineering Course, B.S., 1910–1948	230	11
Metallurgical Engineering Course, B.S., 1930–1948	141	15
Naval Science Course, B.S., 1947–1948	39	31
COURSES DISCONTINUED		
Ancient Classical Course, B.A., 1854–1903	470	
Modern Classical Course, B.L., 1886–1903	548	
English Course, B.L., 1887–1903	459	
Civil Historical Course, B.L., 1893–1903	383	
General Science Course, B.S., 1886–1903	722	
Geology Course, B.S., 1914	1	
Chemistry Commerce Course, B.S., 1929–1937	47	
Three-Year Course in Pharmacy, Ph.G., 1884–1940	558	
School of Music, M.G., 1898–1916	134	
School of Commerce, (B.L., 8; B.S., 1) 1902–1903	9	
Normal Course, 1865–1868	25	
Normal Course, Ph.B., 1898–1932	1,151	
Metallurgical Engineering Course, B.M.E., 1876–1896	16	
General Engineering Course, B.S., 1901–1910	96	
Manual Arts Course, B.S., 1921	2	
Industrial Education Course, B.S., 1922–1923	74	
Two-Year Course in Home Economics, Ag.G., 1920–1922	8*	
Two-Year Course for Supervisors of Music, 1910–1925	173*	
Three-Year Course for Supervisors of Music, 1925	4*	
Two-Year Course in Agriculture, 1910–1941	254*	
Number of Higher Degrees Granted in Course, 1875–1948	17,709	1,080
Master of Arts, M.A., 1879–1948	5,942	213
Master of Letters, M.L., 1882–1903	97	–
Master of Science, M.S., 1882–1948	4,043	516
Master of Science, Engineering, M.S., 1922–1948	571	70
Engineer, 1875–1948	512	3
Master of Agriculture, M.Ag., 1893	1	–
Master of Pharmacy, M.Phar., 1894 and 1902	2	–
Master of Philosophy, M.Ph., 1902–1948	1,622	2
Master of Public Health, M.P.H., 1915–1916	4	–
Master of Music, M.M., 1938–1948	28	3
Master of Business Administration, M.B.A., 1946–1948	30	18
Master of Laws, LL.M., 1946–1948	4	–
Doctor of Public Health, D.P.H., 1912–1915	2	–
Doctor of Philosophy, Ph.D., 1892–1948	3,664	194
Doctor of Medicine, M.D., 1927–1948	1,172	61
Doctor of Juridical Science, S.J.D., 1934–1945	15	–

KINDS OF DEGREES

Number of First Degrees Granted, 1854–1948	58,554
Bachelor of Arts, 1854–1948	23,438
Bachelor of Philosophy, 1898–1948	4,270
Bachelor of Letters, 1876–1903	1,398
Bachelor of Science, 1873–1948	22,826
Bachelor of Metallurgical Engineering, 1876–1896	16

*Not included in totals because not considered degrees.

	1854–1948	1948
Bachelor of Laws, 1869–1948	4,338	
Bachelor of Business Administration, 1945–1948	669	
Bachelor of Library Science, 1939–1948	295	
Bachelor of Music, 1917–1948	587	
Graduate in Music, 1896–1916	134	
Normal Course, 1865–1868	25	
Graduate in Pharmacy, 1884–1940	558	
Graduate in Agriculture (Two-Year Course), 1910–1941	262*	
Music Supervisor, 1910–1925	177*	
Number of Higher Degrees Granted in Course, 1875–1948	17,709	
Masters, 1879–1948	12,344	
Engineer, 1875–1948	512	
Doctor of Public Health, 1912–1915	2	
Doctor of Philosophy, 1892–1948	3,664	
Doctor of Juridical Science, 1934–1945	15	
Doctor of Medicine, 1927–1948	1,172	
Grand Total of First and Higher Degrees, 1854–1948	76,263	

HONORARY DEGREES

	1854–1948	1948
Doctor of Letters, 1910–1947	34	–
Doctor of Laws, 1866–1948	175	3
Doctor of Science, 1910–1948	41	1
Doctor of Philosophy, 1883–1887	4	–
Doctor of Medicine, 1856	1	–
Doctor of Music, 1934	1	–
Doctor of Engineering, 1939	1	–
Master of Arts, 1867–1938	35	–
Master of Science, 1877	1	–
Civil Engineer, 1877–1915	4	–
Mechanical Engineer, 1898–1928	2	–
Bachelor of Arts, 1885	1	–
Bachelor of Mechanical Engineering, 1887	1	–
Total Honorary Degrees	301	4

*Not included in totals because not considered degrees.

THE UNIVERSITY OF

For the First and

	MEN			WOMEN			TOTAL
	Old	New	Total	Old	New	Total	
COURSE							
Letters and Science	4509	2630	7139	1739	1195	2934	10073
Agriculture	1207	452	1659	43	16	59	1718
Home Economics	1	..	1	454	183	637	638
Commerce	1149	173	1322	57	6	63	1385
Education	617	267	884	546	238	784	1668
Engineering	2136	1003	3139	5	2	7	3146
Law	602	63	665	19	1	20	685
Library School	1	2	3	14	31	45	48
Medicine	227	19	246	39	1	40	286
Nursing	..	..	..	169	86	255	255
Specials and Unclassified	3	4	7	1	8	9	16
Total	10452	4613	15065	3086	1767	4853	19918
CLASS							
Graduates	1380	899	2279	287	303	590	2869
Law	602	63	665	19	1	20	685
Medicine	227	19	246	39	1	40	286
Seniors	2796	63	2859	1031	32	1063	3922
Juniors	3078	745	3823	750	201	951	4774
Sophomores	1784	872	2656	773	246	1019	3675
Freshmen	581	1946	2527	172	944	1116	3643
Specials and Unclassified	4	6	10	15	39	54	64
Total	10452	4613	15065	3086	1767	4853	19918
GRADUATES							
Letters and Science	810	490	1300	208	205	413	1713
Agriculture	328	151	479	30	15	45	524
Home Economics	..	..	..	16	17	33	33
Commerce	17	14	31	2	3	5	36
Education	96	84	180	30	62	92	272
Engineering	129	160	289	1	1	2	291
Total	1380	899	2279	287	303	590	2869
LAW	602	63	665	19	1	20	685
MEDICINE	227	19	246	39	1	40	286

WISCONSIN ENROLLMENT

Second Semesters, 1948-49

	MEN			WOMEN			TOTAL
	Old	New	Total	Old	New	Total	
SENIORS							
Letters and Science	989	26	1015	535	22	557	1572
Agriculture	261	5	266	7	..	7	273
Home Economics	..	..	..	158	3	161	161
Commerce	641	25	666	35	..	35	701
Education	181	4	185	244	7	251	436
Engineering	724	3	727	3	..	3	730
Nursing	..	..	..	49	..	49	49
Total	2796	63	2859	1031	32	1063	3922
JUNIORS							
Letters and Science	1255	347	1602	369	111	480	2082
Agriculture	294	19	313	3	..	3	316
Home Economics	..	..	..	120	21	141	141
Commerce	491	134	625	20	3	23	648
Education	214	55	269	174	61	235	504
Engineering	824	190	1014	..	..	..	1014
Nursing	..	..	..	64	5	69	69
Total	3078	745	3823	750	201	951	4774
SOPHOMORES							
Letters and Science	1107	556	1663	511	178	689	2352
Agriculture	226	64	290	2	..	2	292
Home Economics	..	..	..	133	27	160	160
Education	84	21	105	80	28	108	213
Engineering	367	231	598	1	..	1	599
Nursing	..	..	..	46	13	59	59
Total	1784	872	2656	773	246	1019	3675
FRESHMEN							
Letters and Science	348	1211	1559	116	679	795	2354
Agriculture	98	213	311	1	1	2	313
Home Economics	1	..	1	27	115	142	143
Education	42	103	145	18	80	98	243
Engineering	92	419	511	..	1	1	512
Nursing	..	..	..	10	68	78	78
Total	581	1946	2527	172	944	1116	3643
Specials and Unclassified	4	6	10	15	39	54	64
GRAND TOTAL	10452	4613	15065	3086	1767	4853	19918
Resident Students	8558	3581	12139	2481	1237	3718	15857
Non-Resident Students	1894	1032	2926	605	530	1135	4061

THE UNIVERSITY OF

For the First and

	MEN			WOMEN			TOTAL
	Old	New	Total	Old	New	Total	
COURSE							
Letters and Science	4451	2531	6982	1560	1162	2722	9704
Agriculture	1192	462	1654	38	26	64	1718
Home Economics	1	..	1	427	239	666	667
Commerce	1004	144	1148	49	3	52	1200
Education	711	250	961	626	241	867	1828
Engineering	1985	705	2690	2	4	6	2696
Law	692	59	751	17	2	19	770
Library School	6	6	12	22	12	34	46
Medicine	264	12	276	30	2	32	308
Nursing	..	..	..	168	62	230	230
Specials and Unclassified	1	3	4	1	12	13	17
Total	10307	4172	14479	2940	1765	4705	19184
CLASS							
Graduates	1586	1089	2675	316	261	577	3252
Law	692	59	751	17	2	19	770
Medicine	264	12	276	30	2	32	308
Seniors	3528	115	3643	924	33	957	4600
Juniors	2099	607	2706	717	192	909	3615
Sophomores	1688	631	2319	736	258	994	3313
Freshmen	443	1650	2093	177	993	1170	3263
Specials and Unclassified	7	9	16	23	24	47	63
Total	10307	4172	14479	2940	1765	4705	19184
GRADUATES							
Letters and Science	892	602	1494	217	182	399	1893
Agriculture	331	193	524	28	17	45	569
Home Economics	..	..	..	12	17	29	29
Commerce	24	38	62	4	1	5	67
Education	129	115	244	54	43	97	341
Engineering	210	141	351	1	1	2	353
Total	1586	1089	2675	316	261	577	3252
LAW	692	59	751	17	2	19	770
MEDICINE	264	12	276	30	2	32	308

WISCONSIN ENROLLMENT

Second Semesters, 1949-50

	MEN			WOMEN			TOTAL
	Old	New	Total	Old	New	Total	
SENIORS							
Letters and Science	1246	60	1306	405	19	424	1730
Agriculture	350	10	360	5	1	6	366
Home Economics	..	..	..	155	4	159	159
Commerce	721	31	752	29	1	30	782
Education	336	8	344	269	8	277	621
Engineering	875	6	881	..	..	..	881
Nursing	..	..	..	61	..	61	61
Total	3528	115	3643	924	33	957	4600
JUNIORS							
Letters and Science	964	328	1292	332	109	441	1733
Agriculture	226	17	243	2	..	2	245
Home Economics	..	..	..	127	25	152	152
Commerce	259	75	334	16	1	17	351
Education	128	38	166	184	51	235	401
Engineering	522	149	671	1	1	2	673
Nursing	..	..	..	55	5	60	60
Total	2099	607	2706	717	192	909	3615
SOPHOMORES							
Letters and Science	1079	430	1509	482	163	645	2154
Agriculture	212	50	262	2	..	2	264
Home Economics	1	..	1	113	47	160	161
Education	81	12	93	97	35	132	225
Engineering	315	139	454	..	..	..	454
Nursing	..	..	..	42	13	55	55
Total	1688	631	2319	736	258	994	3313
FRESHMEN							
Letters and Science	270	1111	1381	124	689	813	2194
Agriculture	73	192	265	1	8	9	274
Home Economics	..	..	..	20	146	166	166
Education	37	77	114	22	104	126	240
Engineering	63	270	333	..	2	2	335
Nursing	..	..	..	10	44	54	54
Total	443	1650	2093	177	993	1170	3263
Specials and Unclassified	7	9	16	23	24	47	63
GRAND TOTAL	10307	4172	14479	2940	1765	4705	19184
Resident Students	8473	3022	11495	2371	1206	3577	15072
Non-Resident Students	1834	1150	2984	569	559	1128	4112

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