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# BULLETIN of THE UNIVERSITY of WISCONSIN

Serial No. 2299

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*A. R. Whitson*

*Courses in*

## AGRICULTURE

1938-39



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# CALENDAR

## ACADEMIC YEAR 1938-39

### FIRST SEMESTER

Sept. 9, 10	Friday, Saturday	Examinations for admission
Sept. 14-20	Wednesday-Tuesday (noon)	Freshman Period (attendance required)
Sept. 16-20	Friday-Tuesday (noon)	Registration days for other new students
Sept. 17-20	Saturday-Tuesday	Registration days for old students
Sept. 20	Tuesday	Special examinations for removal of conditions
Sept. 21	Wednesday	Instruction begins
Sept. 24	Saturday	Placement examinations for late freshmen and transfers
Oct. 1	Saturday	Foreign language attainment examinations
Nov. 24	Thursday	Thanksgiving Day: legal holiday (one day only)
Dec. 17	Saturday (noon)	Christmas recess commences
Jan. 3	Tuesday (8 a.m.)	Instruction resumed
Jan. 14	Saturday	Examinations for removal of conditions
Jan. 14	Saturday	Foreign language attainment examinations
Jan. 23-Feb. 1	Monday-Wednesday	Final examinations

### SECOND SEMESTER

Jan. 30, 31	Monday, Tuesday	Examinations for admission
Feb. 2	Thursday	Registration day for new students
Feb. 4	Saturday	Placement examinations for new students
Feb. 6	Monday	Instruction begins
Feb. 18	Saturday	Special examinations for removal of conditions
Feb. 22	Wednesday	Washington's birthday: legal holiday
April 15	Saturday (noon)	Spring recess commences
April 24	Monday (8 a.m.)	Instruction resumed
April 29	Saturday	Examinations for removal of conditions
May 13	Saturday	Foreign language attainment examinations
May 30	Tuesday	Memorial Day: legal holiday
June 5-13	Monday-Tuesday	Final examinations
June 12, 13	Monday, Tuesday	Examinations for admission
June 17	Saturday	Alumni Day
June 18	Sunday	Baccalaureate Day
June 19	Monday	Commencement Day

### SUMMER SESSION 1939

June 19	Monday	Law School opens
June 26	Monday	Registration day, other schools and colleges
June 27	Tuesday	Instruction begins
July 4	Tuesday	Independence Day: legal holiday
August 4	Friday	Six-week session closes
August 25	Friday	Nine-week session and Law School close

# Courses in Agriculture

**A**GRICULTURE presents a constantly broadening field; and men trained in agriculture are finding new opportunities and new responsibilities. The conditions and problems facing agriculture today demand trained men; and the leaders in the agriculture of tomorrow will be the young men of today who complete their training.

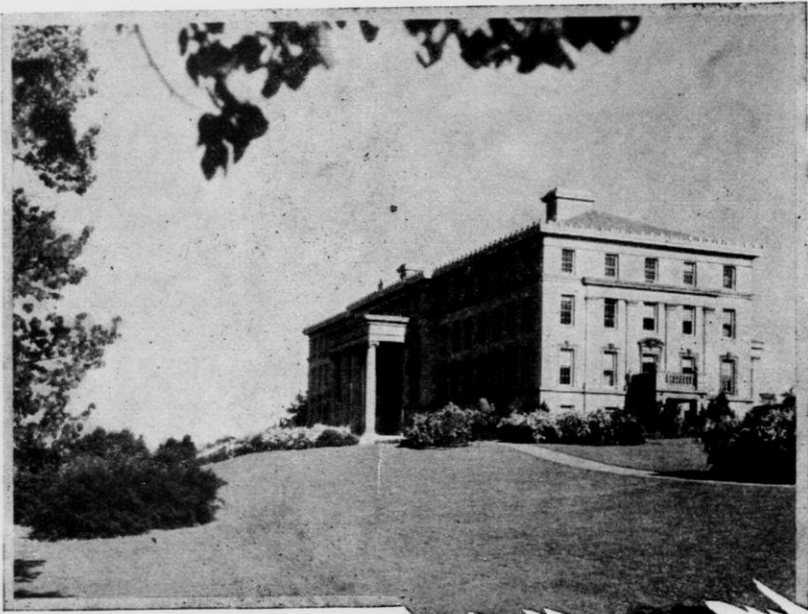
Agriculture today needs not only men trained for actual farm operations, but also specialists in the various branches of agriculture for service in the schools, in the state and federal bureaus, and in the industries related to agriculture. The curriculum in the Wisconsin College of Agriculture is designed to serve these needs and is sufficiently flexible to give a broad general education in the cultural and scientific subjects, as well as practical training in agriculture. Here is a field worthy of the best young men of the nation. It will try their mettle and reward their industry and intelligence.

The great scope of the agricultural field provides a correspondingly wide range of opportunities for the trained man. Graduates of the College of Agriculture are finding useful and satisfactory careers as farm operators, either owners or managers, as teachers, club leaders, or county agents, as workers in the commercial enterprises related to agriculture and as scientists in the state, federal, or industrial laboratories.

A recent survey of the graduates of this College, covering a range of 51 years, found them occupying over 100 different types of positions. Seventeen per cent of the graduates were farm operators, 22 per cent were in commercial or industrial work related to agriculture, 38 per cent were in educational or scientific agricultural positions and 23 per cent were in non-agricultural fields.

## OPPORTUNITIES IN AGRICULTURE

*Farm operators.* Successful farming of the present is founded on economical production of a high quality product, but in addition



AGRICULTURAL HALL

to this there must be an orderly distribution and satisfactory marketing of this product. The problems of distribution and marketing are no longer individual and can be met only by the cooperative activities of farmers. The success or failure of these cooperatives will in the end depend upon the intelligence and training of the farmers. The permanent solution of the agricultural problem will only be attained by the education of the farmer, not alone in the arts and sciences of agriculture but also in the economic and social fields.

The young man who wish to operate his own farm or to manage a farm for another will find that the training received in the College of Agriculture will be worth many times its cost, both in the increased income and the enriched life which will result.

*Teachers and extension workers.* Many agricultural graduates have found the field of rural education very attractive. Teachers in the rural high schools, 4-H Club leaders and county agricultural agents are all aiding in training the farmers in the science of economical production and in the new problems of cooperative endeavor. Work in these fields offers a splendid opportunity for service to agriculture and the state, and at the same time offers an oppor-

tunity for a return on the time and money invested in a college education.

*Agricultural scientists.* The development of agricultural colleges and state and federal experiment stations has furnished positions for a large percentage of the Wisconsin agricultural graduates. The men in these fields have prepared themselves as experts in some field of agricultural science. Frequently they have continued their study beyond the four years of college work and have secured the M.S. or Ph.D. degree. Almost every phase of natural and social science is represented in the agricultural field and students are offered a wide latitude of choice in selecting their major line of study.

The future development of agricultural science depends upon the constant recruiting of capable young men for these fields, and splendid opportunities are waiting for the intelligent and industrious young man.

*Agricultural commerce and industry.* With the rapid development of the industries related to agriculture and with the constantly increasing importance of agricultural commerce, there has arisen a demand for agriculturally trained men in many parts of the business world. Such industries as feed and fertilizer manufacturing, the seed trade, the dairy products plants, the canning companies, the agricultural machinery concerns, and the meat packing establishments are furnishing splendid opportunities for agricultural college graduates. Others are finding positions with the large banks, trust companies, railroads, or insurance companies in their agricultural divisions. Agricultural economics, landscape gardening and agricultural journalism are offering commercial opportunities to others.

#### FACILITIES AND RESOURCES

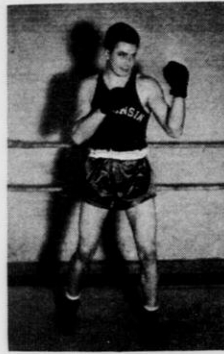
As one unit of the University of Wisconsin, the College of Agriculture combines the advantages of the large university and the smaller college. All of the courses and resources of the University in general are available to the Agricultural College student. All of the basic science and cultural studies are carried outside of the College of Agriculture and wide latitude is offered the student in his selection of courses in any department of the University.

The presence of the Wisconsin Agricultural Experiment Station and the Wisconsin Agricultural Extension Service as integral parts

COURSES IN AGRICULTURE



*Mannie Frey*



*E. H. Truman Torgerson*



*Vincent Gavre*



*James Walsh*



*Camp Randall Stadium*



*Arthur Walsh*



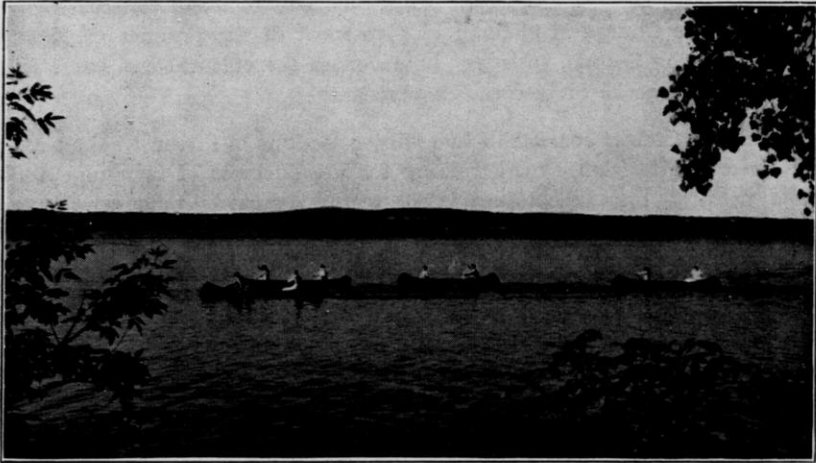
*Warren Schmidt*



*Donald Wiggins*

of the College of Agriculture offers many additional opportunities to the agricultural student. He has an opportunity to follow the progress of the agricultural research work and in many instances to help with it. The extension workers bring back to the College the constantly shifting picture of agricultural conditions throughout the state and the student is thus kept informed of changing conditions.

The College possesses an excellent physical plant and equipment. The Experiment Station laboratories, equipment, and livestock, much of which is available for student use, give the College a wonderful advantage. Ten large buildings as well as numerous smaller ones, such as barns and greenhouses, are devoted exclusively to the College of Agriculture. The library, located in Agricultural Hall, is one of the finest in the Middle West. The staff of the College is large enough to offer well-informed men in each of the fields.



CANOEING IS ALWAYS POPULAR AT WISCONSIN



## COURSES OFFERED

The College of Agriculture offers several different courses or types of work; the Long Course, the Middle Course, the Short Course, the Winter Dairy Course, and Graduate Work; as well as Pre-Forestry and Pre-Veterinary work.

THE LONG COURSE gives the most thorough type of training and offers the most opportunities to graduates. Four scholastic years are required for the completion of this work and it leads to the degree of Bachelor of Science in Agriculture. The course is planned to insure a thorough education in cultural subjects, basic sciences and practical agriculture. The central core of the work consists of courses which are required of all, but ample opportunity is offered for the student to elect studies which will fit him for particular lines of work. The curriculum and plan of the course are described in more detail on page 17.

GRADUATE WORK is offered for those desiring further specialization in various lines of agriculture. The staff and the equipment of the entire University are available for this work and offer excellent opportunities. The chairman of the department concerned should be addressed for additional information.

THE MIDDLE COURSE is planned to give most of the practical agricultural work of the Long Course, with less, however, of the cultural and basic science features. See page 32 for a complete description.

THE SHORT COURSE consists of two winter sessions of fifteen weeks each and is designed to give young men training for the business of farming. A Short Course certificate may be obtained in one winter session by those who have had a required amount of satisfactory work in high school vocational agriculture. Special courses are offered covering the practical application of science to the problems of production, marketing and rural life. A special circular describing this course may be obtained by writing V. E. Kivlin, Director.

THE WINTER DAIRY COURSE offers an opportunity for young men who have had some practical experience in a dairy manufacturing plant to secure training in the basic sciences and in the newer methods of handling dairy products. The work is offered in the winter months and covers a term of twelve weeks. For further information write H. C. Jackson, Dairy Department.

STUDIES BY CORRESPONDENCE. No purely agricultural courses are given by correspondence. Courses which are required of or may be elected by students in the College of Agriculture, such as English, mathematics, botany, economics, and others, may be taken by correspondence and where such work is satisfactorily completed may be applied toward graduation. For further information address the University Extension Division.

PRE-FORESTRY AND PRE-VETERINARY sequences are described on pages 33 and 34. These courses have been organized to enable Wisconsin residents to

attend the University of Wisconsin for one or two years before transferring to a professional school in another state for the completion of their courses.

**GAME MANAGEMENT.** The work in Game Management is offered in the Department of Agricultural Economics. See page 37.)

#### ADMISSION

There are four methods for admission to the College of Agriculture for the Long or Middle Course: (1) Certification of the satisfactory completion of certain high school work; (2) Examination covering the work of high school grade; (3) Adult special students; and (4) Advanced standing students, from universities, colleges, normals, etc.

#### ADMISSION UPON CERTIFICATE

I. By presenting a certificate of graduation from an accredited four-year or an accredited senior-high school showing satisfaction of the underwritten requirements and bearing the principal's recommendation of the candidate's fitness for college.

1. **DEFINITIONS.** 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 in a science or other subject are considered equivalent to one class period. In subjects not usually taught throughout an entire school year, a unit may be constructed by adding the respective time values of two related subjects.

Except in foreign language (see below), a *major* consists of three or more units in one field of study and a *minor* consists of two units in one field of study.

"Unrestricted" admission to the University is admission which opens to the student all colleges, courses, and fields of study to which freshmen are eligible and insures full freedom of choice among all the college majors and fields of specialization. "Restricted" admission opens to the student such colleges, courses, and fields of specialization as do not require high-school mathematics as background. It does not give admission to the College of Engineering. It may give admission to the College of Agriculture and the Course in Chemistry, but the deficiency must be removed at an early date in accordance with the conditions imposed by the office of Admissions. It does not permit the student to major or specialize in chemistry, commerce, economics, mathematics, pharmacy, pre-medicine, philosophy, political science, psychology, or sociology, or in any of the other natural sciences including physical geography and geology, or to graduate from the School of Education with a major or minor in any of these fields until the deficiency has been removed. (See paragraph 7 below.)

2. Sixteen units are required of a graduate of a regular four-year high school for admission as a regular student to any College or Course open to freshmen.
3. Admission of such graduate shall be based upon: (a) the completion of two majors and two minors selected from four of the fields in Group A

(below); one of these majors shall be English and Speech (unless the candidate offers a minor in foreign language, in which case a minor in English and Speech will suffice); and for "unrestricted" admission one major or minor shall be mathematics, i.e., one unit of algebra and one unit of plane geometry, with an additional half-unit of algebra in the case of those who seek unqualified admission to the College of Engineering; and (b) the completion of the additional units necessary to make a total of sixteen units selected from Group A and/or Group B (below), with the provisions that not more than six of the sixteen units may be presented from group B. Pupils planning early in their high-school career to enter the College of Letters and Science or the College of Engineering are advised to present all sixteen units from Group A. Not more than two units in advanced applied music or, alternatively, in Art will be accepted under Group A.

4. Graduates of high schools which maintain a senior-high school division shall present twelve units from this division to include: (a) one major and two minors selected from three of the fields in Group A or four minors selected from four of the fields in Group A; one major or minor shall be in English and Speech, and for "unrestricted" admission one major or minor shall be mathematics (as described above) unless, before entering the senior-high school, the entrant has completed one of the two units in mathematics specified in the preceding sub-section, in which case the completion of the second unit will suffice; (b) the remaining units shall be selected from Group A and/or Group B. (See advice in preceding sub-section.)

5.

#### FIELDS OF STUDY

##### GROUP A

- |                                     |                                   |
|-------------------------------------|-----------------------------------|
| (1) English and Speech              | (4) Mathematics                   |
| (2) Foreign Language                | (5) Natural Sciences              |
| (3) History and the Social Sciences | (6) Advanced Applied Music or Art |

##### GROUP B

- |                         |                        |
|-------------------------|------------------------|
| (1) Agriculture         | (4) Industrial Arts    |
| (2) Commercial Subjects | (5) Mechanical Drawing |
| (3) Home Economics      | (6) Optional (2 units) |

6. The foreign languages accepted for admission are French, German, Greek, Hebrew, Italian, Latin, Norse, Polish, and Spanish. If foreign language is offered under Group A it must consist of at least a minor in one language. Three or more units in one foreign language or two units in each of two foreign languages shall constitute a major. A single unit of foreign language (i.e., one unaccompanied by a foreign-language minor) may be offered as an optional subject under Group B. (Four units in one foreign language are preferable to two units in each of two foreign languages.)
7. "Restricted" standing may at any time at the option of the student be changed to "unrestricted" standing by the mastery, subsequent to high school graduation, of the content of high-school algebra and plane geometry by private study, tutoring, or correspondence study. The University will not provide resident instruction in this preparatory work.

II. High-school graduates need not meet the above requirements if, on the combined basis of rank in graduating class and aptitude and achievement tests satisfactory to the University, they stand in the upper twenty-five percent of the average freshman class entering the University and are recommended for college by the high-school principal; but their admission will necessarily be "restricted" unless their preparation includes the two units in mathematics.

III. **ADVANCED CREDIT** for high school work may be granted to students with satisfactory average standings presenting more than 15 units accepted for admission, provided: (1) the subjects in which advanced credit is sought are the general subjects accepted for admission to the University; (2) the work is as advanced as work given in the freshman year; (3) the student's course of study in which credit is desired be approved by the chairman of the department and (4) the students pass 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 six units of language offered for admission, nor will advance credit be given for less than three semester hours.

Any student who believes he had in the secondary school the equivalent of any required course in the Agricultural College, may apply for examination in the course. If the examination be satisfactory to the department, exemption from the course is granted without reducing the number of credits for graduation.

#### ADMISSION UPON EXAMINATION

Applicants who have not been graduated from a secondary school may be admitted to the University upon passing entrance examinations in the required number and kinds of units as specified above. The dates of the regular entrance examinations are listed in the calendar on the front cover.

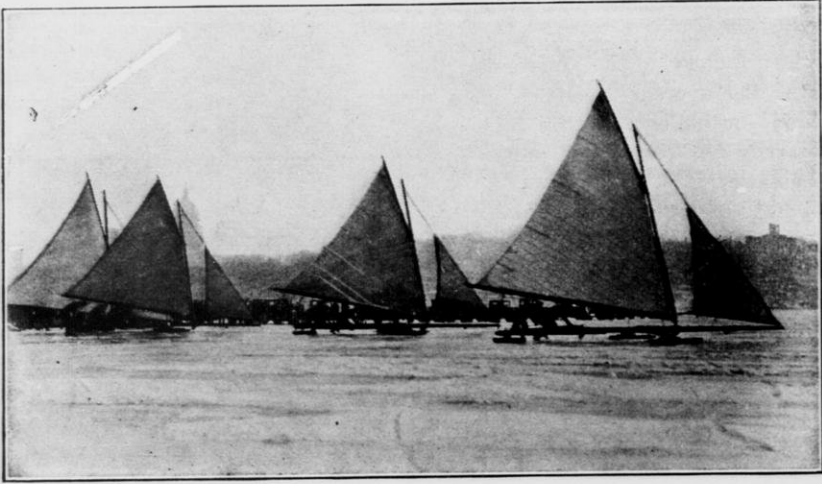
All candidates must be present at 9 o'clock on the first day of the examination. No special examinations are given.

Candidates for admission to the University may divide the subjects and take the examinations in two trials, but a failure to pass all of the subjects in the two trials will necessitate a complete re-examination. For the character of the entrance examination, see University catalog.

#### ADMISSION ON THE ADULT SPECIAL BASIS

Citizens of Wisconsin, 21 years old who do not possess all the requirements for admission and are not candidates for a degree, may be permitted to enter the College of Agriculture upon giving satisfactory evidence to the registrar of the University that they are prepared to take advantageously the studies which they desire. Students are generally allowed to select their studies only from courses open to freshmen. Exceptions are permitted by the Executive Committee of the College of Agriculture upon satisfactory grounds, but the student must show special necessity for the exception.

Candidates applying for admission on this basis are required to present a detailed statement of their preparatory studies at the time of their admission.



ICE BOATING IS POPULAR

Adult special students who desire subsequently to become candidates for a degree must satisfy the regular entrance requirements before beginning the work of the junior year. *The term "Adult Special" applies to entrance and does not grant special privileges in selection of subjects.*

#### ADMISSION FROM UNIVERSITIES, COLLEGES, NORMALS, ETC.

The College of Agriculture will give credit for work taken at other institutions where such work corresponds with the requirements of the agricultural courses. Evidence must be presented showing sufficient entrance units before advanced credits will be considered.

Transcripts should be sent to Asst. Dean I. L. Baldwin before September first if possible. A satisfactory scholastic record and honorable dismissal are required.

#### FRESHMAN PERIOD

All freshmen are required to be present at the University on the Wednesday preceding the beginning of instruction in September, 1938 and to remain throughout the week. This period (September 14 to 20) will be devoted to registration, conferences with advisers, physical examinations, aptitude tests, special educational examinations, assignments to classes, lectures and discussions on subjects of importance to new students, and a general introduction to university life.

Because attendance throughout the entire period is required, it is essential that all details connected with admission be attended to as early as possible. Students who graduate from high schools or academies in June should inform their principals sometime in May or early June of their intention to attend the University in the fall, so that the necessary certificates may be prepared and other important data furnished to university authorities.

Rooms for the semester should be secured in advance of Freshman Period so that there will be no confusion, uncertainty, or waste of time during the days when attention should be centered on "getting started."

### FEES AND EXPENSES

The largest expense of the student is for board and room. Rooms can be obtained in student rooming houses and private residences in the city at about \$2.50 to \$3.50 per week for each student. Board in clubs, private families, and cafeterias averages about \$6 a week. Many students partly support themselves by assisting at boarding houses or by doing other work that does not conflict with their studies.

The Regents of the University have recently ruled that "trailers" may not be parked on the campus. Students are advised not to bring such vehicles to Madison with the expectation of using them as permanent university headquarters.

The cost of textbooks, stationery, locker fees, athletic suits, and so forth is from \$25 to \$40 a year.

An incidental fee of \$27.50 a semester is charged each student. This includes a fee for medical attention, as explained on page 15. Non-residents of Wisconsin pay a tuition fee of \$100 a semester in addition to this incidental fee. An additional fee of \$3 is charged students who pay their fees after the regular registration days (see calendar). The Bursar shall refuse to accept fees from any student who does not pay promptly after his registration card is issued. A library deposit of \$2 is required of each student when he matriculates. The University reserves the right to alter these charges and deposits without further notice.

Laboratory fees for required courses taken in the College of Letters and Science are as follows. In all courses there is a possible refund at the end of the semester, depending on the amount of breakage in the laboratory.

Chemistry 1 (each semester) .....	\$12.50
Botany 1 .....	5.00
Zoology 1 .....	8.00
Botany 146 .....	5.00
Physiology 3 .....	3.00

When elective courses are taken laboratory fees vary according to courses taken.

Graduate students pay the same fees as undergraduate students. Fellows, scholars and student assistants are required to pay the regular laboratory fees, but instructors and assistants are exempt in their own department.

Freshman and sophomore students who take Military Drill are furnished a uniform by the Federal Government. A deposit of \$2.00 must be made at the beginning of each semester.

A study of the above shows that a freshman has laboratory fees of approximately \$25, an incidental fee of \$27.50 each semester and also may have a Military Drill deposit of \$2.00 for each semester.

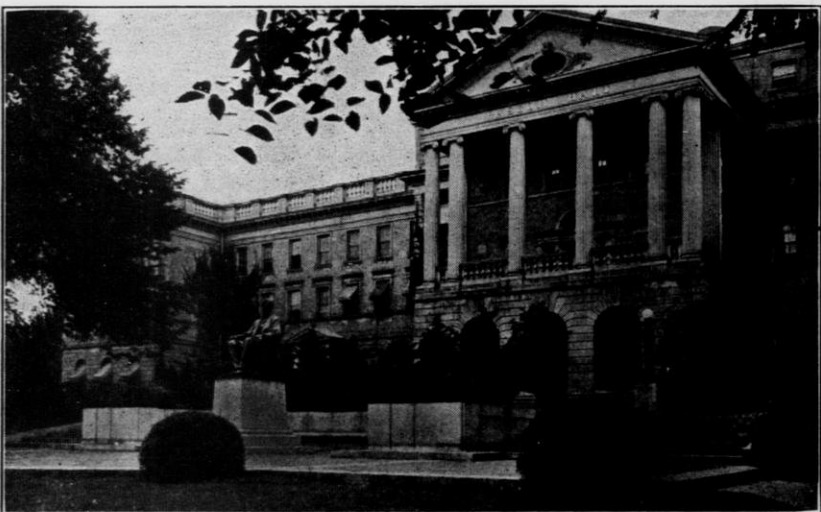
## FINANCIAL HELP FOR STUDENTS

The University has made provisions for a limited amount of financial help for needy students. While every possible assistance is rendered self-supporting students of the College of Agriculture they are advised not to enter the University without some available funds. Students of the College of Agriculture are urged to make use of the following suggestions and apply to proper persons.

**OPPORTUNITY FOR WORK WHILE TAKING THE COLLEGE COURSE.** Many students help to pay the expense of their college course by waiting on tables, tending furnaces, doing restaurant work, dish washing, work in private homes, canvassing, etc. The University operates an employment bureau which endeavors to secure satisfactory employment for worthy students. Students desiring work should write the Student Employment Office, Memorial Union University of Wisconsin, Madison, Wisconsin, and receive application blanks and detailed information about student employment in Madison. They should arrive in Madison several days ahead of registration to get work that may be available. As places of employment are eagerly sought and cannot always be obtained at once, those dependent upon themselves for support should not come to the University unless they have reserve funds for use until employment is obtained.

**AGRICULTURAL STUDENT LOAN FUND.** There is a fund of nearly \$2,000 which is available to all students in the College of Agriculture. This fund is to be loaned to needy students, in small amounts without interest, for short time loans. The money is to be returned from the first available earnings of the student. If the note is not paid at maturity, 6 per cent interest will be charged from the date of maturity until payment is made. Apply to Assistant Dean I. L. Baldwin.

**FRESHMAN SCHOLARSHIPS.** The Regents have authorized the remission of general fees amounting to \$55 to the scholastically highest-ranking senior in



THE LINCOLN MEMORIAL

the graduating class of each Wisconsin public high school and accredited private secondary school in the state. The remission of the general fee is contingent upon said person enrolling in the University in September immediately following the time of such graduation from high or secondary school. If the school has enrolled more than 250 students and less than 750, the two students ranking first and second shall receive scholarships. If the school has enrolled more than 750 students, the first three students shall receive scholarships. In case the highest ranking student does not attend the University of Wisconsin, the second high may receive the scholarship. These scholarships are available to freshmen registering in any school or college in the University.

For freshmen entering the College of Agriculture, five cash scholarships of \$100 each will be awarded, for which only residents of the State of Wisconsin are eligible. An essay on an assigned topic must be presented together with certain references, before August 15, 1938. For further information write Assistant Dean I. L. Baldwin, College of Agriculture, Madison, Wisconsin.

**THE HENRY STEENBOCK FELLOWSHIP.** This fellowship is granted to a senior student who, towards the close of the junior year, shows the most promise of being an outstanding leader in the field of agriculture. The recipient of this fellowship, which is approximately \$250 per year, is selected on the basis of scholarship, participation in extra-curricular activities, and need.

**WISCONSIN LEGISLATIVE SCHOLARSHIPS.** The Regents of the University remit the non-resident tuition to a number of needy and worthy non-resident students upon the basis of scholastic attainment. Apply to I. L. Baldwin during the second semester and before March 1.

**GRADUATE FELLOWSHIPS AND SCHOLARSHIPS.** Twelve fellowships and two scholarships are offered graduate students in this college. The fellowships carry a payment of \$600 cash for the year in addition to a remission of the non-resident fees of \$200 for students who live in other states, and the scholarships carry \$250 a year with the remission of non-resident fees to students from other states.

There are also three all-university fellowships and two special scholarships for which our graduate students may compete with other graduate students of the University.

These are granted to those applicants who are best fitted for the work selected. Application for these honors is made to the Dean of the Graduate School on proper forms before February 15.

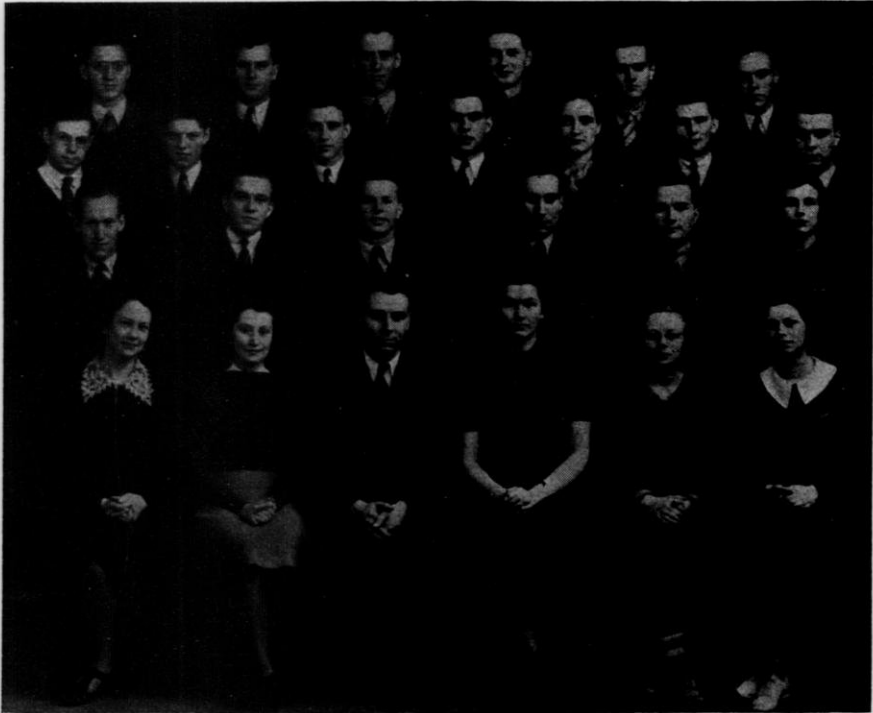
#### AGRICULTURAL STUDENT ORGANIZATIONS

Several societies, maintained by the agricultural students, meet at intervals to discuss questions related to their special interests. The following list will give an idea of the nature of the various clubs and societies.

**Alpha Zeta.** A chapter of the national honorary agricultural fraternity is maintained by faculty and student members.

The Country Magazine is a student magazine published monthly by students in the college.





AGRICULTURAL STUDENT COUNCIL

The Saddle and Sirloin Club is an organization of students interested in animal husbandry. The "Wisconsin International" is a phase of this work and their support is given to the Stock Judging Teams which represent the Agricultural College at the International Livestock Show and the National Dairy Show.

Blue Shield consists of a group of students interested in rural organization work. Its programs prepare the men in spirit, mind, and body to become rural workers and leaders particularly in community work.

The 4-H Club is an organization composed of students who have carried the 4-H Club work before coming to college.

The Agricultural Engineers is a group of students whose major interest is agricultural engineering.

The collegiate Future Farmers of America consists mainly of former F.F.A. members and those who are majoring in agricultural education.

The U. W. Foresters is an organization of students whose interests are in the problems of forestry and who are taking the pre-forestry course.

The Agricultural Student Council with representation from each of the Agricultural and Home Economics student organizations serves to coordinate all of the student activities.

#### ACTIVITY FEE

The various College of Agriculture student organizations, under the leadership of the Agricultural Student Council, have established a \$2 activity fee.

Each student is expected to pay \$2 at the opening of the fall semester, which entitles him to paid-up membership in several of the strictly Agricultural College student organizations that he may choose. In addition, the activity fee card will entitle the student to attend the Freshman Walk-Around, Harvest Ball, Mid-Winter Ball, and Annual Student-Faculty Banquet held each spring. It also gives him a subscription to the *Wisconsin Country Magazine*, the monthly publication of students in the College of Agriculture. Though payment of this fee is not compulsory, students are strongly urged to pay it.

### STUDENT HEALTH

The Department of Clinical Medicine has general supervision of the health of the students. It aims to determine the medical fitness of each student, to study the intricate problems of the relation of health to higher education, and to prevent disease among the students.

**MEDICAL EXAMINATIONS.** Students entering the University for the first time undergo a careful medical examination to determine their fitness for university work. An appointment for medical examination is made at the time of registration. Records of the results of these examinations are kept in the office of the Department of Clinical Medicine for future reference in the supervision of the mental and physical development of the student. The Medical Adviser's Office is established for the general supervision of students needing medical attention. All cases of student illness should be promptly reported to the office whether or not professional service is desired.

Conditions affecting the general welfare of the University community are treated by the members of the staff, but students requiring special care—major surgery, treatment of the eyes, ears, x-rays, and so forth, are referred to specialists.

A modern and completely equipped infirmary is maintained by the University for the care of students requiring medical and surgical treatment and for the isolation of those suffering from communicable diseases. Cases requiring special methods of study and treatment are cared for by the University medical staff in the Wisconsin General Hospital erected by the people of the state as a means of showing their gratitude to those who gave up their lives in the World War.

### HONORS IN THE COLLEGE OF AGRICULTURE

Honors and high honors are awarded at the end of the sophomore year and at graduation upon the basis of the number of grade points earned.

**SOPHOMORE HONORS AND SOPHOMORE HIGH HONORS** are awarded on the basis of a minimum of two full years of work acquired in residence. The student averages two and one-quarter grade points per credit to secure honors, and two and three-quarters grade points per credit to secure high honors. Adjustments are made when students carry more than the regular schedule.

In 1937 the following Long Course students were awarded Sophomore Honors:

*High Honors*—Raymond John Hesprich, Charles J. Krumm, Robert Paul Niedermeier, John Carl Sylvester.

*Honors*—Manford Cecil Bear, George Reek Merwin, Owen David Owens, Richard Lucian Witz.

Senior Honors and Senior High Honors are awarded at the completion of at least two full years of work, acquired in residence, after the completion of sophomore work. They are awarded on the same basis as sophomore honors and sophomore high honors.

The following were granted at Commencement in June, 1937:

*High Honors*—James Peter Jolivette, Lawrence William Witt, Orville Wyss.

*Honors*—John Murdoch Bond, Thomas Lyman Carpenter, Herbert Christian Kriesel, Alvin John Ohlogge, Jack Frank Schinagl, Robert Malcolm Stern.

## THE LONG COURSE IN AGRICULTURE

THE LONG COURSE IN AGRICULTURE is the one which most students take and is the course leading to the degree of Bachelor of Science (Agriculture). Four years of University work are required although the course may be taken in less than four years if summer sessions are attended. The more desirable commercial, managerial, and professional positions require this course as the minimum preparation.

The Long Course serves a two-fold purpose; it gives a broad general training and furnishes specific technical knowledge of agriculture. It is hoped through this course to fit students to be useful to the highest degree in any line of agricultural effort and at the same time to be active in the uplift of their communities.

**STUDENT GUIDANCE.** Upon entrance in the College of Agriculture each student is assigned to one of the faculty members who serves as an adviser. Every effort is made to aid the student to adjust himself to the college work and to guide him in the selection of his courses so that he may prepare himself in the field in which he is most interested and in which he will be most successful.

**CURRICULUM.** There is a single curriculum of minimum requirements and the student selects with the advice of the major professor, the subjects which point to a major objective. Such objectives may be preparation as a high school teacher of agriculture, marketing adviser, county agricultural agent, agricultural chemist along plant or animal lines, agricultural journalist, agricultural engineer, landscape designer, plant operator for dairy manufacturing, farming, or any one of over a hundred different types of positions in agriculture. The earlier the objective is determined the better the chances are for a well balanced training for the future.

### PLAN OF COURSE—REQUIRED WORK

#### FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Eng. 1a—Freshman composition .....	3	Eng. 1b—Freshman composition* .....	3
Chem. 1a—General chemistry .....	5	Chem. 1b—Qualitative analysis .....	5
Math. 71, 1 or 51 .....	4	Botany 1—General botany .....	5
†An. Husb. 1—Livestock production .....	3	or Zoology 1—Animal Biology .....	(5)
or Agron. 1—General farm crops .....	(3)	†Agron. 1—General farm crops .....	3
Convocation .....	0	or An. Husb. 1—Livestock production .....	(3)
Physical activity requirement .....	0	Physical activity requirement .....	0
	15		16

†Students will elect their animal husbandry or agronomy in the first semester and the alternative subject in the second semester.

\*Students earning a grade of A in English 1a are excused from further work in freshman English.

All students pursuing the Long Course in the College of Agriculture are required to take a course in mathematics during the first semester of their freshman year. Students presenting one year of high school algebra for entrance should elect Mathematics 71 or Mathematics 1; those who have had three or more semesters of high school algebra will not receive credit for the

above courses and should elect Mathematics 72 or Mathematics 31; students who are to major in Agricultural Engineering should choose Mathematics 51. Mathematics 71 and 72 are intended for students who do not expect to continue mathematics beyond the required course; those who carry Mathematics 71 or 72 with marked success will be permitted to take Mathematics 2 if they decide to continue training in mathematics. Students who look forward to more advanced work in mathematics and science together with those whose major requires a further training in mathematics should choose Mathematics 1 or 31.

A student who presents three or more units of high school mathematics for entrance to the College of Agriculture may upon approval of the Executive Committee be allowed to substitute four credits of electives in lieu of the required mathematics. Majors in the technical agricultural engineering course may substitute Mechanics 3 for Botany 1. Majors in Landscape Gardening may substitute Art Education 50 for Animal Husbandry 1 and Topographical Engineering 107 for Mathematics 71, 1 or 51; and Agricultural Economics 117 for Agricultural Economics 1.

## SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Agr. Bact. 1—General survey .....	4	Agr. Econ. 1—Prin. of Agr. Economics ..	3
*Soils 1—Soils and soil fertility .....	4	*Biochem. 1—Elem. Biochemistry .....	5
Econ. 1a—General economics .....	4	Agricultural option .....	3
Agricultural option .....	3	Botany 146, Physiology 3 .....	4
Electives .....	1-7	Electives .....	1-8
	16-18		16-18

\* Either Soils 1, 4 cr., or Biochemistry 1, 5 cr. must be taken.

Students in the following majors may take the indicated subjects instead of Botany 146 or Physiology 3:

Agricultural Economics, Dairy Industry—Economics 1b.

Agricultural Journalism—Rural Sociology 25.

Agricultural Engineering—Advanced Mathematics.

Agricultural Education—Three credits in the Department of Education.

Horticulture, Landscape majors—Plant Pathology 101 or Rural Sociology 25.

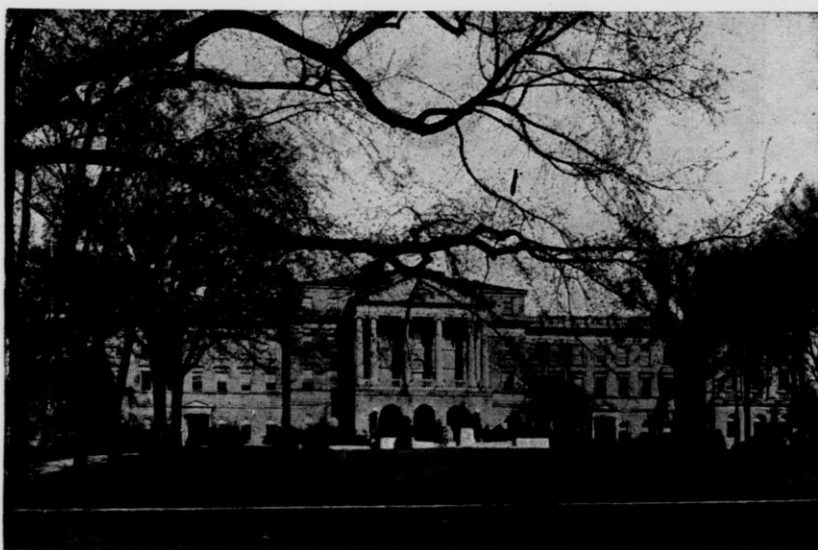
Rural Sociology—Sociology 1 or 2.

## AGRICULTURAL OPTIONS

Sophomores in the Long Course must choose two courses from the following group. Only one subject in a given department can be counted as an option in meeting this requirement, but subjects not chosen as options may later be taken as electives.

**JUNIOR AND SENIOR YEARS.** The work of the last two years is selected with the advice of the major professor and is directed toward the preparation of a specific objective. The student carries 16 to 18 credits each semester in order to secure 133 credits for graduation.

**SENIOR-GRADUATE.** Seniors in the College of Agriculture who are within six credits of graduation and who have the required grade-point average of 1.5 may be admitted to the Graduate School by obtaining a certified statement to that effect from the office of the Assistant Dean.



BASCOM HALL

**PROMOTIONS.** A student becomes a sophomore upon the completion of 26 credits and 26 grade-points; a junior upon the completion of 60 credits and 60 grade-points; a senior upon the completion of 95 credits and 95 grade-points.

#### ADDITIONAL REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

In addition to the satisfactory completion of the courses listed above, the student must comply with the following requirements in order to graduate with the degree of Bachelor of Science (Agriculture).

**CREDITS AND GRADE-POINTS.** Graduation requires 133 credits and 133 grade-points. Grade-points are awarded on the following basis:

Grade A—3 grade-points per credit.

Grade B—2 grade-points per credit.

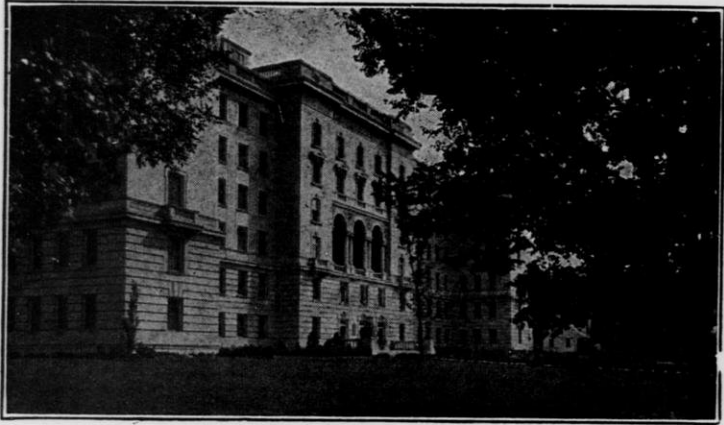
Grade C—1 grade-point per credit.

Grade D—0 grade-points per credit.

By use of the grade-point system a student may readily determine the quality of progress he is making in the course.

A student who does not earn at least one grade-point per credit during the last two semesters of his attendance at the University will not be recommended for a degree with his class.

**MAJOR.** Each student must complete a major either in a department or in a related line of work. The major consists of a minimum of 15 elective credits in a department. The major should be selected by the middle of the sophomore year to insure sufficient time to complete all requirements. The major *must* be selected not later than the end of the junior year. The staff of each de-



#### GUARDIAN OF STUDENT HEALTH

To provide the best medical and hospital care the university has this institution—the Wisconsin Memorial Hospital where the students go for medical attention.

partment will be glad to discuss the opportunities in its field and to suggest courses to be taken in meeting the requirements of a major. Several departments have listed suggested curricula in connection with the department announcements. Not more than 5 credits in certain courses outside the given department may be substituted for an equivalent number of credits within the major department if reported in advance to the faculty.

**SPLIT MAJOR.** In case a student is interested in a line of endeavor involving more than one department, he may select as a major study a minimum of 25 elective credits of suitably related work in two or more departments. *In the latter case the program must have the approval of the Executive Committee not later than the middle of the junior year.* Certain split majors which have been approved by the Executive Committee have been listed on pages 24 to 32. In either of the above cases, not more than 25 elective credits in any one department may count toward graduation.

A thesis if required as a portion of the major must consist of four credits.

Each student shall have farm experience satisfactory to the department in which he majors.

**MINIMUM AND MAXIMUM LOADS.** Students except during the first semester of the freshman year when a minimum of 15 credits may be taken, must take at least 16 and not more than 18 credits each semester, including convocation, military science, band and physical education, unless they secure special permission from the Executive Committee of Class Advisers to vary from the rule. This applies to seniors regardless of the number of credits remaining to complete the requirements for graduation.

A student who has received a standing of at least B in each subject of a regular schedule for the preceding semester may carry a maximum of 20 credits.

**COLLEGE REQUIREMENTS.** A minimum of 20 *elective* credits must be taken outside the College of Agriculture, preferably during the junior and senior years.

Each student shall complete a minimum of 50 credits in the College of Agriculture, including required agricultural courses, options, majors and electives. Courses taken outside the College as a part of the major do not count as a portion of the 50 credit requirement. Courses taught in departments outside the College of Agriculture even though listed in departments of the College of Agriculture do not count as part of the 50 required credits in the College of Agriculture. Courses given by staff members of the Forest Products Laboratory, approved by the Faculty of the College of Agriculture, shall be counted as agriculture.

Credit in Education 75 may be counted toward graduation only by those students who complete the requirements for the university teacher's certificate.

#### DEFICIENCIES

**FAILURES.** A student who has failed in any subject must remove the failure by repeating that subject in class and securing a passing grade as soon as the subject is again offered, unless excused by the Executive Committee. A failure cannot be removed by correspondence study or by repeating the subject in another institution.

**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 condition 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, which must be removed as specified above.*

**INCOMPLETES.** A study marked incomplete must be completed not later than the close of the semester in which the subject is next repeated in the schedule. If not so completed, it will lapse into a failure unless the time for finishing it has been extended by the Executive Committee.

#### FRESHMAN REQUIREMENTS

**PHYSICAL ACTIVITY REQUIREMENT.** Every freshman is required to take three hours a week in either physical education, military science or band instruction for a total of two semesters. The student shall express his choice between these alternatives when filling out his semester election card. Students who elect Military Drill must carry the work for two years. Freshmen and sophomores who take Military Drill are furnished a uniform by the Federal Government. A deposit of \$2.00 must be made at the beginning of each semester.

For the completion of the basic course in Military Science a total of four scholastic credits will be awarded. For the completion of the advanced course in Military Science a total of eight credits will be awarded. Each two-year period shall be regarded as a unit and credits shall be granted only upon the completion of each of these units. The appropriate number of credits are to be



entered each semester as provisional until the course, basic or advanced as the case may be, has been completed. Grade-points are to be awarded for the credits earned in Military Science as for other scholastic work.

FRESHMAN CONVOCATIONS are held regularly to give students an opportunity to hear talks of special interest to freshmen. Attendance upon these convocations is required of all freshmen except those who enter with one semester of work completed in some other collegiate institution or enter this college the second semester and complete that semester of work. Three or more unexcused absences will result in a failure. Students who have failed or who have been permitted to defer Convocation by the Executive Committee must present one additional credit for graduation.

#### SUMMATION OF REQUIREMENTS FOR GRADUATION

The following summation of the requirements for graduation is presented to enable students to check their standing. *The more detailed statements of requirements given above should be consulted.*

1. Completion of the required courses as indicated on pages 17 to 20.
2. A total of 133 credits and 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 credits of suitable related work in two or more departments. A thesis, if required, as a portion of the major, must consist of 4 credits. Not more than 25 elective credits in one department may count toward graduation.
6. A minimum of 20 *elective* credits outside the College of Agriculture.
7. A minimum of 50 credits, elective and required, within the College of Agriculture.

#### PREPARATION FOR SPECIFIC OBJECTIVES

The basic curriculum is flexible enough to provide training necessary for any line of agricultural work in which the student may be interested. Of the 133 credits required for graduation, 33 credits are required in certain courses taught in the College of Letters and Science, 23 credits are required in certain College of Agriculture courses, 27 additional credits are required from a specified list of College of Agriculture courses, and the remaining 50 credits are open for free election.

The work of each department offers splendid opportunities for many students. Several of the departments have included in their announcement of courses a suggested grouping of courses for students wishing to major in their fields. These suggested groupings carry all the College requirements for a degree including the major requirements of a minimum of fifteen elective credits in the department. *Courses included beyond the College requirements are merely suggestions and not requirements.* The staff of any department will be glad to discuss with prospective majors the opportunities and courses to be taken.

Many lines of endeavor involve more than one department of the College. Students wishing to prepare themselves for such a field are allowed to select a minimum of twenty-five elective credits of suitably related work in two or more departments. *Such a selection of courses must have the approval of the Executive Committee before the middle of the junior year.* The fields of Agricultural Science and the Agricultural Industry and Commerce are examples in which it may be desirable for the student to follow a split major. On the following pages are listed a series of split majors which have received the approval of the Executive Committee.

#### ADVANCED INDEPENDENT WORK

A student who has taken his freshman and sophomore work at the University of Wisconsin, whose grade-point average for these first two years' work is 2.6 or higher, and who is recommended by three of his sophomore instructors, may be permitted by the major division or department of his choice to pursue Advanced Independent Work during the remainder of his course. At the inception of this Advanced Independent Work, the major division or department shall outline for the student a five-semester plan of study, a whole or part of which is to be pursued independently of course and classroom requirements, and which shall include a thesis. Upon recommendation of the division or department and upon approval by the Graduate Office of work done on the thesis, such a student may be admitted to the Graduate School at the end of the seventh semester, thereby becoming subject to its regulations and eligible to its scholarships. The student who, at the close of the eighth semester, has met the general requirements outside the major, has passed a comprehensive examination set by the division or department and covering his last four semesters' work within the major, and is recommended by his division or department and by the College of Agriculture, shall be granted the bachelor's degree. If the program is followed during the next semester, the student who has passed a comprehensive examination set by the division or department covering his work within the major, has had his completed thesis approved by a committee of three appointed by the Graduate Office, and is recommended by his division or department and by the Graduate School, shall be granted the master's degree at the end of the ninth semester.

## MAJORS IN AGRICULTURAL SCIENCE

Many of the Wisconsin College of Agriculture students in the past 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 1.5 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 M.S. or Ph.D. degree. For such students it is usually desirable to carry a broad general course as an undergraduate. The three general fields of particular importance are Animal Science, Plant Science, and Social Science.

All of the general college requirements, including the required courses of the freshman and sophomore years, must be met by students majoring in any of these fields. The majors outlined below follow the regulations with respect to a split major.

*These majors have been approved by the Executive Committee and no special action is necessary by the student or adviser other than a statement by the student of his intention to follow one of these majors.*

### PLANT SCIENCE MAJOR

Students carrying this undergraduate major may later wish to carry graduate work in some one 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 twenty-five credits selected from the following list:

	Credits
Agricultural Bacteriology 123—Soil Bacteriology .....	3
Agricultural Bacteriology 126—Physiology of Bacteria .....	3
Biochemistry 120—Plant Biochemistry .....	2-5
Biochemistry 110—Principles of Biochemistry .....	5
Agronomy 102—Pastures and Pasture Problems .....	2
Agronomy 130—Crop Improvement .....	3
Economic Entomology 102—Insect Morphology & Taxonomy .....	3
Economic Entomology 120—Ecology .....	3
Genetics 1—Principles of Breeding .....	4
Genetics 104—Plant Genetics .....	3
Horticulture 7—Plant Propagation .....	2
Horticulture 122—Advanced Pomology .....	2
Plant Pathology 101—Diseases of plants .....	3
Soils 125—Soil & Land Classification .....	3
Soils 126—Fertilizers and Soil Management .....	2
Soils 127—Soil Science and Plant Nutrition .....	2
Thesis .....	4

50-52

Students in this major must also carry at least 20 elective credits outside of the College of Agriculture. Basic science is recommended. It will also be

desirable for students in this major to carry two years of at least one foreign language.

### 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 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
Agricultural Bacteriology 121—Dairy Bacteriology .....	3
Agricultural Bacteriology 125—Food Bacteriology .....	3
Agricultural Bacteriology 126—Physiology of Bacteria .....	3
Agricultural Bacteriology 130—Determinative Bacteriology .....	2-5
Animal Husbandry 126—Livestock Feeding .....	4
Biochemistry 110—Principles of Biochemistry .....	4
Biochemistry 125—Animal Metabolism & Vitamins .....	4
Biochemistry 121—Dairy Chemistry .....	3
Dairy Industry 124—Physical Chemistry of Dairy Products .....	3
Economic Entomology 102—Morphology and Taxonomy .....	3
Economic Entomology 120—Ecology .....	3
Genetics 1—Principles of Breeding .....	4
Genetics 105—Animal Genetics .....	3
Poultry Husbandry 107—Advanced Management .....	3
Veterinary Science 120—Parasites .....	3
Veterinary Science 126—Infection & Immunity .....	5
Thesis .....	4

54-58

Students in this major must also carry at least 20 elective credits outside of the College of Agriculture. Basic science is recommended. It will also be desirable for students in this major to carry two years of at least one foreign language.

### 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 twenty-five credits selected from the following list:

	Credits
Agricultural Economics 10—Farm Organization & Mgt. ....	3
Agricultural Economics 14—Farm Bus. & Legal Practice .....	3
Agricultural Economics 117—Outlines of Land Economics .....	3
Agricultural Economics 126—International Trade in Agr. Prod. ....	3
Agricultural Economics 127—Cooperative Movements .....	3
Agricultural Economics 128—Marketing Agr. Products .....	3
Agricultural Economics 152—Farmer Movements .....	2
Agricultural Economics 155—Prices of Agricultural Products .....	3
Agricultural Education 5—Junior Extension .....	2
Agricultural Education 103—Seminar .....	2
Agricultural Journalism 1—Writing Farm News .....	3
Agricultural Journalism 3—Agricultural Advertising .....	3
Agricultural Journalism 103—Agricultural Publicity Methods .....	2
Rural Sociology 25—Rural Life .....	3
Rural Sociology 125—Rural Social Trends .....	2
Rural Sociology 126—Rural Standards of Living .....	2
Rural Sociology 192—Rural Regional Planning .....	2-3
Thesis .....	4

47-50

Students in this major must also choose at least 20 credits in the College of Letters and Science from the courses in the following group. It will also be desirable for students in this major to carry two years of at least one foreign language

## LETTERS AND SCIENCE (20 credits)

	Credits
Economics 5—Money & Banking .....	3
Economics 19—Economic History of the U. S. ....	3
Economics 124—Taxation .....	3
Economics *130—Statistical Methods .....	3
Economics 142—Public Utilities .....	3
Economics 173—The Economics of Consumption .....	3
Geography 106—Agricultural Geography .....	3
Journalism 2—Newspaper Reporting & Corres. ....	3
Journalism 3—Editing .....	3
Journalism 7—The Community Newspaper .....	3
Political Science 7—American Govt. & Politics (Nat'l) .....	3
Sociology 1—Introductory Sociology .....	3
Sociology 46—Social Anthropology .....	3
Sociology *132—Introductory Social Statistics .....	3
Sociology 139—Social Psychology .....	3
Sociology 140—Principles of Sociology .....	3
Sociology 197—Personality & Social Adjustment .....	3
Speech 8—Extempore Speaking .....	2

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\*The two statistical courses to be considered as parallel, one to be chosen.

## AGRICULTURAL INDUSTRY AND COMMERCE

For many years, a large number of graduates of the Agricultural College have entered various industries related to agriculture, and the opportunities in this field seem to be increasing. Some of the more important fields are:

1. Agriculture Commerce
2. The Canning Industry
3. Meat and Poultry Products Industries
4. Commercial Dairy Mfg. Industry
5. The Livestock Feed Industry
6. The Agricultural Equipment Industry
7. The Fertilizer Industry
8. The Seed Industry
9. The Grain Marketing and Processing Industries
10. Soil Conservation and Erosion Control

Positions in rural banks, in the management of co-operative organizations, and other agricultural enterprises closely related to agriculture, offer further splendid opportunities for the agricultural college graduate with the proper training.

Each of the courses of study outlined below consists of two major parts in addition to the basic subjects in Agriculture and Science, which are given in the first two years. Also ten to thirty credits of electives may be selected in any field in which the student is interested.

Part A.—A minimum of 20 credits from a group of selected courses in General Economics and Commerce.

Part B.—Fifteen to thirty-five credits from a group of properly related courses, constituting the Industrial Major.

COURSES IN AGRICULTURE

FRESHMAN YEAR

First Semester		Second Semester	
	Credits		Credits
Engl. 1a—Freshman composition .....	3	Engl. 1b—Freshman composition .....	3
Chem. 1a—General chemistry .....	5	Chem. 1b—Qualitative analysis .....	5
Animal Husb. 1—Livestock production ....	3	Agron. 1—General farm crops .....	3
*Mathematics 1—Algebra .....	4	Bot. 1—General botany .....	5
		or Zool. 1—Animal Biology .....	(5)
	13		16

SOPHOMORE YEAR

First Semester		Second Semester	
	Credits		Credits
Econ. 1a—General economics .....	4	*Econ. 1b—General economics .....	4
Agr. Bact. 1—General survey .....	4	Agr. Econ. 1—Principles of Agr. econ.....	3
Soils 1—Soil and soil fertility .....	4	Biochem. 1—Elementary biochemistry .....	5
or *Math. 7—Theory of investment ....(4)		or *Math. 7—Theory of investment ....(4)	
Agricultural option .....	3	Agricultural option .....	3
Electives .....	1-3	*Speech 7—Public speaking .....	2
	16-18		16-17

\*Recommended courses, but substitutions may be made.

Take Soils 1 the first semester and Mathematics 7 the second or Mathematics 7 the first semester and Biochemistry 1 the second. See the Industrial Major recommendations.

JUNIOR AND SENIOR YEARS

The student should take 16 to 18 credits each semester so as to meet the requirements of sections "A", and "B" as outlined below.

PART "A", GENERAL COMMERCE AND ECONOMICS COURSES

It is suggested but not required that a minimum of 20 credits should be chosen from this group of courses:

	Credits
Agr. Econ. 126—International Trade in Agricultural Products .....	3
Agr. Econ. 128—Marketing Agricultural Products .....	3
Agr. Econ. 155—Prices of Agricultural Products .....	3
Commerce 6—English in Business .....	3
Commerce 8—Elements of Accounting .....	3
Commerce 13—Marketing Methods .....	3
Commerce 15—Principles of Advertising .....	2
Commerce 31—Business Statistics .....	3
Commerce 43—Business Ethics .....	2
Commerce 105—Money and Banking .....	3
Commerce 109—Legal Aspects of Business Relations .....	2
Commerce 114—Marketing Management .....	2
Commerce 137—Corporation Finance .....	3
Economics 19—Economic History of the United States .....	3
Geography 106—Agricultural Geography .....	3

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PART "B", THE INDUSTRIAL MAJOR

The student will consult the Assistant Dean for assignment to an adviser, before the second semester of the Sophomore year, under whose direction a group of properly related courses will be selected, pertaining to the particular field in which he is interested.

The following groups of courses have been organized for the various Industrial Majors mentioned in the general outline of the course. Very careful attention has been given by all departments interested in this phase of training to prepare these groups in such a way that the subjects included within

any particular group are closely related to the work of the particular industry for which the students may be preparing himself.

**SPLIT MAJOR.** The Executive Committee has approved the following list of Groups of Studies to meet the requirements of a split major, and no special action is necessary by the student or adviser other than a statement by the student of his intention to follow one of these majors. Other groups may be selected for a split major to meet a specific need. *If another grouping is selected it must be approved by the Executive Committee not later than the middle of the junior year.*

## THE MAJORS

### AGRICULTURAL COMMERCE

A minimum of 15 credits must be selected from the following:

	Credits
Agr. Economics 10—Farm Organization & Management .....	3
Agr. Economics 117—Outlines of Land Economics .....	3
Agr. Economics 126—International Trade in Agr. Products .....	3
Agr. Economics 127—Cooperative Marketing .....	3
Agr. Economics 128—Marketing Agricultural Products .....	3
Agr. Economics 129—Cooperative Management Problems .....	2
Agr. Economics 152—Farmer Movements .....	2
Agr. Economics 155—Prices of Agricultural Products .....	3

### THE CANNING INDUSTRY

A minimum of 25 credits must be chosen from this group for a split major.

	Credits
Agr. Bacteriology 125—Food Bacteriology .....	3
Agr. Bacteriology 126—Physiology of Bacteria .....	3
Biochemistry 1—Elementary Biochemistry .....	5
Biochemistry 110—Advanced Biochemistry .....	5
Biochemistry 120—Plant Biochemistry .....	5
Agronomy 103—Crop Identification & Standards .....	3
Agronomy 120—Seed and Weed Control .....	3
Agronomy 130—Crop Improvement .....	3
Botany 146—Plant Physiology .....	4
Dairy Industry 108—Dairy Mechanics .....	3
Economic Entomology 105—Field Crop and Garden Insects .....	3
Horticulture 3—Vegetable Gardening .....	3
Home Economics 6—Nutrition .....	4
Plant Pathology 101—Diseases of Plants .....	3
Soils 126—Fertilizers and Soil Management .....	2

In the Sophomore year Soils 1, Entomology 1, and Horticulture 1 should be selected.

It is very desirable to take some of the following courses to supplement the split major listed above.

	Credits
Agr. Journalism 1—Writing Farm News .....	3
Agr. Journalism 3—Agricultural Advertising .....	3
Agr. Journalism 103—Publicity Methods .....	2
Agr. Economics 14—Farm Business & Legal Practice .....	3
Agr. Economics 117—Outlines of Land Economics .....	3

### MEAT AND POULTRY PRODUCTS INDUSTRIES

A minimum of 25 credits must be chosen from the following for a split major.

	Credits
Animal Husbandry 2—Livestock Management .....	3
Animal Husbandry 3—Types and Breeds of Livestock .....	2

Animal Husbandry 126—Livestock Feeding .....	4
Animal Husbandry 130—Sheep & Swine Production .....	3
Animal Husbandry 131—Horse & Beef Cattle Production .....	2
Animal Husbandry 133—Dairy Cattle & Milk Production .....	3
Animal Husbandry 135—Seminary .....	1
Agr. Bact. 121—Dairy Bacteriology .....	3
Agr. Bact. 125—Food Bacteriology .....	3
Poultry Husbandry 1—Poultry Raising .....	3
Poultry Husbandry 8—Marketing Poultry Products .....	3
Poultry Husbandry 106—Poultry Judging .....	3
Poultry Husbandry 107—Advanced Poultry Management .....	3
Veterinary Science 123—Infectious Diseases of Livestock .....	2
Veterinary Science 125—Diseases of Poultry .....	2

In the Sophomore year Biochemistry 1, Vet. Science, and Dairy Industry 1 should be selected.

It is very desirable to take some of the following courses to supplement the split major listed above.

	Credits
Agr. Journalism 1—Writing Farm News .....	3
Agr. Journalism 3—Agricultural Advertising .....	3
Agr. Journalism 103—Publicity Methods .....	2
Agr. Economics 14—Farm Business and Legal Practice .....	2
Agr. Economics 117—Outlines of Land Economics .....	3

### COMMERCIAL DAIRY MANUFACTURING INDUSTRY

A minimum of 25 credits must be chosen from the following:

	Credits
Dairy Industry 103—Creamery Operation & Management .....	3
Dairy Industry 104—Cheese Factory Operation & Management .....	4
Dairy Industry 105—City Milk Supply .....	3
Dairy Industry 106—Ice Cream Making .....	3
Dairy Industry 108—Dairy Mechanics .....	3
Dairy Industry 180—Advanced Dairy Manufacturing Problems .....	3
Dairy Industry 128—Seminary .....	2
Agr. Bacteriology 121—Dairy Bacteriology .....	3
Agr. Bacteriology 125—Food Bacteriology .....	3
Agr. Bacteriology 130—Determinative Bacteriology .....	2-3
Poultry 8—Marketing Poultry Products .....	3

Biochemistry 1, Dairy Industry 1 and either Poultry 8 or Vet. Science 1 should be selected in the sophomore year.

It is very desirable to take some of the following courses to supplement the split major listed above.

	Credits
Agr. Bacteriology 126—Physiology of Bacteria .....	3
Biochemistry 121—Dairy Chemistry .....	5
Chemistry 120 & 121—Organic Chemistry .....	5-10
Physics 61—General Physics .....	5
Agr. Journalism 1—Writing Farm News .....	3
Agr. Engr. 5—Power and Machinery .....	5
Agr. Econ. 14—Farm Business & Legal Practice .....	3

### THE LIVESTOCK FEED INDUSTRY

A minimum of 25 credits must be chosen from the following:

	Credits
Animal Husbandry 2—Livestock Management .....	3
Animal Husbandry 3—Breeds & Types of Livestock .....	2
Animal Husbandry 126—Livestock Feeding .....	4
Animal Husbandry 130—Sheep and Swine Production .....	3
Animal Husbandry 131—Horse & Beef Cattle Production .....	3
Animal Husbandry 133—Dairy Cattle & Milk Production .....	3
Animal Husbandry 135—Seminar .....	2
Agronomy 102—Pastures & Pasture Problems .....	2
Agronomy 106—Forage Crops .....	3
Poultry Husbandry 1—Poultry Raising .....	3
Poultry Husbandry 8—Marketing Poultry Products .....	3



## COURSES IN AGRICULTURE

Poultry Husbandry 107—Advanced Poultry Management .....	3
Veterinary Science 123—Infectious Diseases of Livestock .....	2
Veterinary Science 125—Diseases of Poultry .....	2
Soils 1—Soils and Soil Fertility .....	4

In the Sophomore year Biochemistry 1, Vet. Science 1, and Dairy Industry 1 should be selected.

It is desirable to take some of the following courses to supplement the split major listed above.

	Credits
Agr. Journalism 1—Writing Farm News .....	3
Agr. Journalism 3—Agricultural Advertising .....	3
Agr. Journalism 103—Publicity Methods .....	2
Agr. Economics 14—Farm Business & Legal Practice .....	3
Agr. Economics 117—Outlines of Land Economics .....	3

## AGRICULTURAL EQUIPMENT INDUSTRY

A minimum of 25 credits must be chosen from the following for a split major:

	Credits
Agr. Engineering 5—Power and Machinery .....	5
Agr. Engineering 103—Tractors .....	3
Agr. Engineering 105—Belt Machinery .....	2
Agr. Engineering 100—Thesis .....	4
Agr. Engineering 121—Seminary .....	1
Drawing 1—Elementary Drawing .....	3
Chemical Engineering 8—Metallography .....	2
Shop 2—Bench, Forge & Welding .....	1
Shop 15—General Farm Carpentry .....	1
Animal Husbandry 126—Livestock Feeding .....	4
Dairy Industry 108—Dairy Mechanics .....	3
Plant Pathology 101—Diseases of Plants .....	3
Soils 126—Fertilizers and Soil Management .....	2
Physics 61—General Physics .....	5
Poultry 107—Advanced Poultry Management .....	3

In the Sophomore year Soils 1, Agr. Engineering 1, and Economic Entomology 1 should be selected.

It is desirable to take some of the following courses to supplement the split major listed above.

	Credits
Agr. Journalism 1—Writing Farm News .....	3
Agr. Journalism 3—Agricultural Advertising .....	3
Agr. Economics 14—Farm Business & Legal Practice .....	3
Agr. Economics 117—Outlines of Land Economics .....	3

## THE FERTILIZER INDUSTRY

A minimum of 25 credits must be chosen from the following for a split major.

	Credits
Soils 120—Soil Management .....	2
Soils 121—Soil Analysis .....	4
Soils 126—Fertilizers and Soil Management .....	2
Soils 127—Soil Science and Plant Nutrition .....	2
Soils 128—Soil Seminar .....	1
Botany 146—Plant Physiology .....	4
Agronomy 102—Pastures and Pasture Problems .....	2
Agronomy 106—Forage Crops .....	3
Agr. Bacteriology 123—Soil Bacteriology .....	3
Biochemistry 120—Plant Biochemistry .....	5
Chemistry 20-21—Organic Chemistry .....	5
Chemistry 130-131—Physical Chemistry .....	5
Plant Pathology 101—Diseases of Plants .....	3

In the Sophomore year Soils 1, Horticulture 1, and Agr. Engineering 5 should be taken.

It is desirable to take some of the following courses to supplement the split major listed above.

	Credits
Agr. Journalism 1—Writing Farm News .....	3
Agr. Journalism 3—Agricultural Advertising .....	3
Agr. Journalism 103—Publicity Methods .....	2
Agr. Economics 14—Farm Business & Legal Practice .....	3
Agr. Economics 117—Outlines of Land Economics .....	3

THE SEED INDUSTRY

A minimum of 25 credits must be selected from this group to complete a split major.

	Credits
Agronomy 102—Pastures and Pasture Problems .....	2
Agronomy 103—Crop Identification and Standards .....	2
Agronomy 104—Grain Crops .....	3
Agronomy 106—Forage Crops .....	3
Agronomy 120—Seed and Weed Control .....	3
Agronomy 130—Crop Improvement .....	3
Plant Pathology 101—Diseases of Plants .....	3
Plant Pathology 116—Diseases of Field Crops .....	2
Genetics 101—Principles of Breeding .....	3
Genetics 104—Plant Genetics .....	3
Botany 129—Classification of Cultivated Plants .....	3
Soils 125—Soil and Land Classification .....	3
Soils 126—Fertilizers and Soil Management .....	2
Agr. Engineering 5—Power and Machinery .....	5

In the Sophomore year Soils 1, Economics 1 or Econ. Ent. 1, and Horticulture 3 should be selected.

It is desirable to take some of the following courses to supplement the split major listed above.

	Credits
Horticulture 6—Landscape Gardening .....	3
Animal Husbandry 126—Livestock Feeding .....	4
Agr. Journalism 1—Writing Farm News .....	3
Agr. Journalism 3—Agricultural Advertising .....	3
Agr. Journalism 103—Agricultural Publicity Methods .....	2

THE GRAIN MARKETING AND PROCESSING INDUSTRIES

A minimum of 25 credits must be selected from this group to complete a split major.

	Credits
Agronomy 103—Crop Identification and Standards .....	2
Agronomy 104—Cereal Crops .....	3
Agronomy 120—Seed and Weed Control .....	3
Chemistry 20 and 21—Organic Chemistry .....	5
Biochemistry 110—Principles of Biochemistry .....	5
Botany 146—Plant Physiology .....	4
Thesis 100 .....	4
Plant Pathology 101—Diseases of Plants .....	3
Chemistry 148—Introduction to Physical and Colloidal Chemistry .....	5
Agr. Bacteriology 125—Food Bacteriology .....	3
Agr. Bacteriology 126—Physiology of Bacteria .....	3

In the Sophomore year Biochemistry 1 should be selected.

It is desirable to take some of the following courses to supplement the split major listed above.

	Credits
Agronomy 130—Crop Improvement .....	3
Plant Pathology 116—Diseases of Field Crops .....	3
Genetics 101—Principles of Breeding .....	3
Botany 117—Structure of Economic Plants .....	3
Agr. Journalism 1—Writing Farm News .....	3

## SOIL CONSERVATION AND EROSION CONTROL

A minimum of 25 credits must be chosen from the following:

	Credits
Agricultural Economics 117—Outlines of Land Economics .....	3
Agricultural Engineering 5—Farm Power and Machinery .....	5
Agricultural Engineering 101—Drainage Design .....	2
Agronomy 102—Pastures and Pasture Problems .....	2
Drawing 7—Freehand Drawing .....	2
Geology 1—General Geology .....	5
Geology 136—Principles of Erosion .....	2
Hydraulics 110—Hydrology .....	2
Soils and Agricultural Engineering 106—Soil Erosion, Causes and Control.....	4
Soils 125—Soil and Land Classification: Agricultural Climatology .....	3
Soils 126—Fertilizers and Soil Management .....	2
Hydraulics 1—Elementary Principles .....	3

In the Sophomore year Agr. Engineering 1 and Soils 1 should be selected.

It is desirable to take some of the following courses to supplement the split major listed above.

	Credits
Agricultural Economics 10—Farm Organization and Management .....	3
Agricultural Economics 14—Farm Business and Legal Practice .....	3
Agronomy 106—Forage Crops .....	3
Animal Husbandry 126—Livestock Feeding .....	4
Forest Products 1—General Forestry .....	2
Topographic Engineering 108—Short Course in Surveying .....	3

## THE MIDDLE COURSE

*Leading to the Title of Graduate in Agriculture*

This course is designed to meet the needs of students who have had a high school training but who cannot spend more than two years at the University. Requirements for admission are the same as for the Long Course.

The total requirements for graduation in the Middle Course are 64 credits and 64 grade points. All Middle Course students are required to take the convocation and one year of physical education or band instruction or two years of military science.

A maximum of ten elective credits may be taken outside the College of Agriculture. Subjects of the Long Course taken in the College of Letters and Science and not required in the Middle Course are considered electives outside the College of Agriculture.

Students taking the Middle Course and desiring to transfer to the Long Course must be prepared to spend more than the usual four years in order to complete the requirements.



ON THE AGRICULTURAL CAMPUS

This course gives the maximum opportunity for choosing work for a vocational objective. Students should have an objective in mind when entering the course and plan their work so prerequisites may be taken for all courses desired. Early in the first semester the Assistant Dean should be consulted concerning objectives and future courses desired. Dairy manufacturing, poultry, animal husbandry, horticulture, or farm crops are usual fields of specialization, but others may be made.

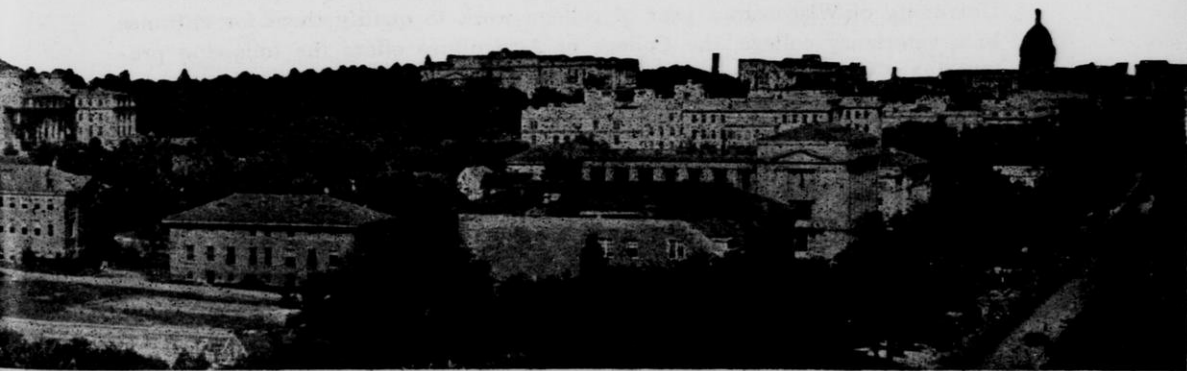
FRESHMAN YEAR			
First Semester		Second Semester	
	Credits		Credits
Engl. 1a—Freshman composition .....	3	Engl. 1b—Freshman composition .....	3
Chemistry 1a—General chemistry .....	5	Chemistry 1b—Qualitative analysis .....	5
Electives .....	7	Electives .....	8
Convocation .....	0	Physical activity requirement .....	0
Physical activity requirement .....	0		
	15		16

In the Sophomore year 16-18 credits of elective work must be carried each semester.

### PRE-FORESTRY WORK

The pre-forestry work has been arranged to permit Wisconsin students who plan a professional training in forestry to attend the University of Wisconsin for two years, later transferring for the balance of the course to any one of the several institutions in other states which offer a degree in forestry. In addition to the sequence of courses listed below, a general course in forestry and identification of trees, and a technical course in the study of wood, its properties and uses, are offered by the Forest Products Laboratory. (See page ?.)

The courses listed below are basic to the forestry work and correspond closely to the requirements of the forestry courses offered by other institutions. It is impossible to plan a course at one institution which exactly parallels that offered at another; however, little or no handicap in finishing the forestry work at another institution should be imposed upon students who complete the following two years of work. Students carrying this work should choose early in the second semester of the sophomore year the institution to which they intend to transfer, so that arrangements can be made for attending the sum-



LOOKING TOWARD THE CAPITOL

mer forestry camp. Virtually all institutions offering a degree in forestry require that summer camp instructions be completed before the junior year.

Courses should not be selected until students have first consulted the forestry school of their choice. Students who have selected a forestry school to which they expect to transfer will be allowed to modify the work of the sophomore year to meet their special needs.

Due to a large increase in enrollment, many of the forestry schools have adopted rather high scholarship requirements. Students whose grades here are low may be refused admittance to a forestry school.

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 1—Genl. farm crops .....	3	Botany 1—General botany .....	5
Mathematics 1—Algebra .....	4	Econ. Ent. 1—Farm insects .....	3
or Math. 2—Trig. & anal. geometry ....(4)		Electives .....	0-2
Convocation .....	0	Physical activity requirement .....	0
Physical activity requirement .....	0		
	15		16-18
SOPHOMORE YEAR			
Soils 1—Soils and soil fertility .....	4	Biochemistry 1—Elem. biochemistry .....	3
Agr. Bact. 1—Genl. bacteriology .....	4	Botany 130—Ident. & classification of seed plants .....	3
Geology 1—Genl. geology .....	5	Botany 131—Dendrology .....	2
Drawing 1—Elements of drawing .....	3	Top. Engr. 108—Short course in engr. ....	3
Electives .....	0-2	Electives .....	5-7
	16-18		16-18

Electives should be chosen from the following: Math. 2, Econ. Ent. 102, Bot. 146, or An. Husbandry 1.

### PRE-VETERINARY TRAINING

College of veterinary medicine confer the degree of Doctor of Veterinary Medicine after the student has completed four years of professional work. The leading veterinary colleges now require applicants for admission to present at least one year of college work to equip them better for the more highly specialized veterinary studies.

In order to give residents of Wisconsin an opportunity to secure at the University of Wisconsin a year of college work to qualify them for entrance in a veterinary college, the College of Agriculture offers the following pre-veterinary work. Satisfactory completion of these studies will enable the student to meet the entrance requirements at any veterinary college.

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
Zoology 1—Animal biology .....	5	Animal husb. 1—Livestock production ....	3
*Electives .....	3 or 4	*Electives .....	5 or 6
Convocation .....	0	Physical activity requirement .....	0
Physical activity requirement .....	0		
	16 or 17		16 or 17

\*It is suggested that the electives selected be German, French, history, zoology, mathematics, or physics. Students desiring information about veterinary medicine as a profession and wishing an introduction to the basic medical sciences may elect Veterinary Science 1 in the first semester and Botany 1 or 17 in the second semester to advantage.

## DEPARTMENTS OF INSTRUCTION

Abbreviations 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—repeated each semester; Cr.—credits, i.e. hours of credit per semester; \*—to be arranged.

### AGRICULTURAL BACTERIOLOGY

EDWIN GEORGE HASTINGS, M.S., *Professor of Agricultural Bacteriology*, Chairman

IRA LAWRENCE BALDWIN, Ph.D., *Professor of Agricultural Bacteriology*

WILLIAM C. FRAZIER, Ph.D., *Professor of Agricultural Bacteriology*

EDWIN BROUN FRED, Ph.D., *Professor of Agricultural Bacteriology*

WILLIAM DODGE FROST, Ph.D., D.P.H., *Professor of Agricultural Bacteriology*,  
*Emeritus*

WILLIAM BOWEN SARLES, Ph.D., *Associate Professor of Agricultural Bacteriology*

ELIZABETH MCCOY, Ph.D., *Assistant Professor of Bacteriology*

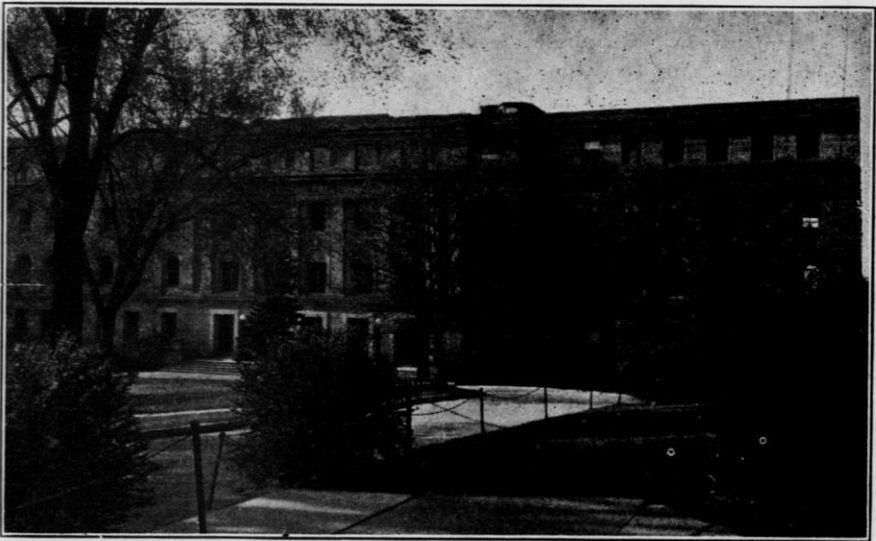
PERRY WILLIAM WILSON, Ph.D., *Assistant Professor of Agricultural Bacteriology*

MILDRED A. ENGELBRECHT, Ph.D., *Instructor in Agricultural Bacteriology*

Students majoring in this department may take Medical Bacteriology 102 or 104 or Veterinary Science 126, and count five of these credits toward the major requirement.

1. GENERAL SURVEY OF BACTERIOLOGY. I; 4 cr. The relation of micro-organisms to soil fertility, to animal diseases, and to foods. Prerequisite: Chemistry 1a. Required of all agricultural students. Lab. fee \$4.50. Mr. Sarles, Mr. Baldwin.
2. GENERAL SURVEY. II; 4 cr. The relation of micro-organisms to water, foods, sewage disposal, and industrial processes. For chemistry course students. Prerequisite: Chemistry 1b. Lab. fee \$4.50. Mr. Wilson.
4. GENERAL SURVEY. II; 4 cr. Survey of bacteriology with special emphasis on the relation of micro-organisms to foods and domestic sanitation. Prerequisite: Chemistry 1a. Required of students in home economics. Lab. fee \$4.50. Mr. Frost, Miss Engelbrecht.
100. THESIS. Yr; 2 cr. A definite problem in dairy, food, soil, or general bacteriology. Prerequisites: Agr. Bact. 1, 2, or 4, and consent of instructor. Lab. fee \$2.25 per lab. cr. Staff.
121. DAIRY BACTERIOLOGY. II; 3 cr. The bacteriology of milk and its products. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bact. 102. Lab. fee \$4.50. Mr. Hastings, Mr. Sarles.

123. SOIL BACTERIOLOGY. I; 3 cr. The relation of micro-organisms to soil fertility. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bact. 102. Lab. fee \$4.50. Mr. Fred.
125. FOOD BACTERIOLOGY. I; 3 cr. The microbiology of foods and of industrial fermentations. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bacteriology 102. Lab. fee \$4.50. Mr. Frazier.
126. PHYSIOLOGY OF BACTERIA. II; 3 cr. The chemistry and physics of bacterial processes. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bact. 102. Lab. fee \$4.50. Mr. Baldwin, Mr. Sarles.
130. DETERMINATIVE BACTERIOLOGY. Yr.; 2-3 cr. Training in the common methods of the bacteriological laboratory. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bact. 102. Lab. fee \$2.25 per lab. cr. Miss McCoy.
200. RESEARCH. Yr.; 2-5 cr. A detailed study of a definite problem in the field of agricultural bacteriology. Prerequisite: Agr. Bact. 121, 123, 125, 126, or 130. Lab. fee \$2.25 per lab. cr. Staff.
231. SEMINARY. Yr.; 1 cr. The seminary work is divided into two parts. In the first part, the students majoring in the department and those in the early part of their graduate study devote one semester to the study of the classification of bacteria; the other semester, to a study of the development of bacteriology in America; in the second part, the graduate students study current problems in the fields covered by the department and report on their own research work. Part one: Mr. Hastings, Miss McCoy. Part two: Staff.



THE BIOLOGY BUILDING

## AGRICULTURAL ECONOMICS

- ASHER HOBSON, Ph.D., *Professor of Agricultural Economics, Chairman*  
 CHRISTIAN LAURITHS CHRISTENSEN, B.S., *Professor of Agricultural Economics*  
 BENJAMIN HORACE HIBBARD, Ph.D., *Professor of Agricultural Economics*  
 ALDO LEOPOLD, M.F., *Professor of Game Management*  
 PRESTON ESSEX McNALL, Ph.D., *Professor of Agricultural Economics*  
 GEORGE SIMON WEHRWEIN, Ph.D., *Professor of Agricultural Economics*  
 DON SHERMAN ANDERSON, B.S., *Associate Professor of Agricultural Economics*  
 HENRY HARRISON BAKKEN, M.A., *Associate Professor of Agricultural Economics*  
 RUDOLPH KNUGAARD FROKER, M.A., *Associate Professor of Agricultural Economics*  
 ISAAC FULTS HALL, Ph.D., *Associate Professor of Agricultural Economics*  
 WILLIAM PETER MORTENSON, Ph.D., *Associate Professor of Agricultural Economics*  
 WALTER AUGUSTUS ROWLANDS, B.S., *Associate Professor and Extension Specialist  
 in Land Economics*  
 WALTER HENRY EBLING, Ph.D., *Assistant Professor of Agricultural Economics*  
 HERBERT HENSLEY ERDMANN, B.S., *Assistant Professor of Agricultural Economics*  
 PARSONS, KENNETH HERALD, B.A., *Assistant Professor of Agricultural Economics*  
 MARVIN ARNOLD SCHAARS, Ph.D., *Assistant Professor of Agricultural Economics*  
 HEDGES, IRWIN RANDOLPH, B.S., *Instructor in Agricultural Economics*  
 DONALD RICHARDS MITCHELL, M.S., *Instructor in Agricultural Economics*  
 CARL FREDERICK WEHRWEIN, Ph.D., *Instructor in Agricultural Economics*  
 MILES CHARLES RILEY, LL.B., *Lecturer in Agricultural Economics*

The courses in agricultural economics are intended to give the students a knowledge of the economic principles which relate to the production and marketing of farm products, and to the economic conditions of the agricultural classes. As such, it is a field of general interest to all concerned with farmers and their welfare.

There are two methods of taking agricultural economics. First, it may be taken as a joint major along with work in one or more other departments, economics being recognized as a phase of farming coordinate with many other lines of inquiry; second, agricultural economics may be taken as full major by those who decide to make it a main line of study preparatory to teaching, research, or work of an economic character.

Students are advised to take Economics 1a and 1b, Agricultural Economics 1 and 8 in the Sophomore year; Agricultural Economics 14, 117, 128, 155 and 179 in the junior year; and Agricultural Economics 10, 126, 127, and 152 in the Senior year. This sequence gives the desired background for graduate work.

1. PRINCIPLES OF AGRICULTURAL ECONOMICS. II; 3 cr. Application of economics to agriculture. Required of all agricultural students. Prerequisite: Economics 1a. Mr. Hibbard, Mr. Parsons.
8. FARM RECORDS AND ACCOUNTS. I; 2 cr. Inventories, bookkeeping, and accounting principles as applied to farm operation. Mr. Mitchell.
10. FARM ORGANIZATION AND MANAGEMENT. II; 3 cr. Farm methods and practices as applied to business management on the farm. Prerequisite: Junior standing. Mr. Mitchell.



14. FARM BUSINESS AND LEGAL PRACTICE. II; 3 cr. Discussion of business practices and forms pertaining to farming in accordance with the law on such matters as contracts, torts, real and personal property, animals, fences, landlords and tenants, owners and croppers. Mr. Riley.
100. THESIS. Yr.; 2 cr. Staff.
106. CROP AND LIVESTOCK ESTIMATING. I; 3 cr. A brief review of the major bodies of existing agricultural data together with attention to their origins and development, followed by a study of methods and problems in the field of agricultural data, particularly the work of crop and livestock estimating. Prerequisite: Senior standing or consent of instructor. Mr. Ebling, Mr. Anderson.
117. OUTLINES OF LAND ECONOMICS. I; 3 cr. Economic principles underlying the utilization and conservation of land or natural resources and the application of these principles to agricultural, forest, recreational, and urban land, and to water, power, and mineral resources. Prerequisite: Economics 1a. Mr. Wehrwein.
118. SURVEY OF GAME MANAGEMENT. II; 1 cr. Mechanism of animal populations and animal environment. History, principles and techniques of game management or cropping. An orientation course not open to freshmen and sophomores. Mr. Leopold.
126. INTERNATIONAL TRADE IN AGRICULTURAL PRODUCTS. I; 3 cr. Review of theories of international trade and foreign exchange; history of foreign trade in agricultural products; analysis of agricultural imports and exports; agricultural price supporting measures; current international trade problems in their relation to American agriculture. Prerequisite: Economics 1a. Mr. Schaars.
127. COOPERATIVE MARKETING. I, II; 3 cr. An analysis of marketing organizations, methods and theory underlying cooperative and private enterprises. Current agricultural marketing problems together with a consideration of the economic, legal and social aspects of cooperative marketing. Governmental relations and selected phases of the cooperative movement will be considered. Prerequisite: A course in marketing or junior standing and consent of instructor. Mr. Bakken.
128. MARKETING AGRICULTURAL PRODUCTS. I; 3 cr. Development of agricultural marketing, services, agencies, methods; emphasis on principles and practices; price factors; commodity exchanges; current marketing problems; governmental relations; marketing costs. Prerequisite: Economics 1a. Mr. Schaars.
129. COOPERATIVE MANAGEMENT PROBLEMS. I; 2 cr. A consideration of the business structure of cooperative associations engaged in commercial activities; problems involving membership relations, pooling, financing, internal control, directors' responsibilities, trade and sale practice, and administrative policies. Prerequisite: Agr. Economics 127 or consent of instructor. Mr. Hobson, Mr. Froker.

152. FARMER MOVEMENTS. I; 2 cr. History of the efforts of farmers to better their economic condition by forming general, even nation-wide, organizations designed to control markets and influence legislation in the interest of fairness. Prerequisite: Econ. 1a, concurrent registration, or consent of instructor. Mr. Hibbard.
155. PRICES OF AGRICULTURAL PRODUCTS. II; 3 cr. An analysis and interpretation of the factors affecting the prices of agricultural products, together with a study of price movements, trends, cycles and minor fluctuations. The interrelationship of price, demand and supply of various types of agricultural products. Attention given to the interpretation of materials contained in public and private outlook reports. Prerequisite: Economics 1b or Agricultural Economics 1. Mr. Mortenson.
161. GAME MANAGEMENT TECHNIQUES. Yr; cr. Preparation of plant, animal, and food collections; analysis of stomach and pellet contents; winter-feeding game; planting food patches and coverts; preparing reviews and bibliographies of game literature; compiling statistics and graphing data. This course covers the skills prerequisite to individual research work under Research 200. Prerequisite: Game Management 118 or consent of instructor. Mr. Leopold.
179. URBAN LAND ECONOMICS. II; 3 cr. Urbanization, location and structure of cities, urban land utilization, home ownership and tenancy, housing and credit, zoning, city and regional planning. Prerequisite: Economics 1a. Mr. Wehrwein.
180. TOPICAL WORK. Yr; \*cr. Staff.
192. RURAL-REGIONAL PLANNING. II; 3 cr. Discussion of the technique and principles of rural-regional planning and zoning, the assembling of basic data underlying a plan for a selected county or region, followed by student reports each covering a segment of the complete project. Only one credit of this course may be counted toward a major in Agricultural Economics. Open to students majoring in the departments represented by the staff or the consent of the instructors. Mr. Wehrwein, Mr. Aust, Mr. Kolb.
200. RESEARCH. Yr.; \*cr. Cooperation and marketing, Mr. Hobson, Mr. Bakken. Mr. Froker and Mr. Schaars. Farm survey and financial accounts in their relation to farm management, Mr. McNall and Mr. Mitchell. Cost accounting and its relation to farm management, Mr. McNall and Mr. Mitchell. History of agricultural production, Mr. Hibbard. Farmer movements, taxation and farm credit, Mr. Hibbard. Land economics and land problems, Mr. Wehrwein. Crop and livestock estimating and agricultural data, Mr. Anderson and Mr. Ebling. Agricultural prices and statistics, Mr. Mortenson. International agricultural relations, Mr. Hobson.
221. LAND INCOME. II; 3 cr. The characteristics of land as a factor of production, spatial element of land, economics of land utilization, theories of

- rent, principles of land valuation and taxation. Prerequisite: Graduate standing. Mr. Wehrwein.
226. SEMINARY: LAND PROBLEMS. Yr.; 2 cr. Land tenure and utilization in the principal countries studied in a two year cycle; the countries with a feudal heritage; the new countries including the United States. Prerequisite: Agricultural Economics 117, 229 or concurrent registration. Mr. Hibbard, Mr. Wehrwein.
228. SEMINARY: THEORY OF MARKETS AND MARKETING. II; 2 cr. A study of the historical development of markets from early continental fairs; the practices and customs of auctions, clearing houses, exchanges, and boards of trade; the emergence of modern sales agencies, operating under cooperative, private, and governmental initiative. Prerequisite: Graduate standing. (Given in 1938-39 and in alternate years.) Mr. Bakken.
229. SEMINARY: ADVANCED AGRICULTURAL ECONOMICS. Yr.; 2 cr. The field of agricultural economics with respect to its origin and the main issues around which the thinking of those interested in agriculture revolves. Prerequisite: Graduate standing. Mr. Hibbard.
252. SEMINARY: INTERNATIONAL AGRICULTURAL RELATIONS. I; 2 cr. An examination of international agricultural organizations and institutions, and their activities, together with an analysis of national agricultural measures and their influences in the international sphere. Prerequisite: Graduate standing or consent of instructor. (Given in 1938-39 and in alternate years.) Mr. Hobson.
255. SEMINARY: PRICE ANALYSIS. II; 3 cr. The application of statistical and other methods involved in isolating and analyzing agricultural price problems. Stress will be placed on proper interpretations. Prerequisite: Economics 130 or equivalent. (Given in 1939-40 and in alternate years.) Mr. Mortenson.

## AGRICULTURAL EDUCATION

JOHN AMBROSE JAMES, B.S., *Professor of Agricultural Education, Chairman*

THOMAS LYMAN BEWICK, M.S., *Professor of Agricultural Extension*

WARREN WILLIAM CLARK, M.S., *Professor of Agricultural Extension*

VINCENT EARL KIVLIN, M.S., *Professor of Agricultural Education*

WILLIS D. FREITAG, B.S., *Instructor in Agricultural Education*

HAROLD J. MORRISSEY, B.S., *Instructor in Agricultural Education*

Students in the College of Agriculture who wish to prepare for the teaching of agriculture in secondary schools must complete a major and certain elective courses in animal husbandry, poultry, dairying, agronomy, horticulture, soils, agricultural engineering, agricultural economics, and agricultural journalism as a background of agriculture and also the eighteen credits in education required for the University Teachers' Certificate as outlined below.

Some students wish a major in a department other than agricultural education and also to be prepared as teachers of vocational agriculture. In many cases this is possible. Students desiring this combination should see the chairman of the department of agricultural education early in the sophomore year. Farm experience beyond summers is necessary and farm reared students are desired. A satisfactory scholarship record is necessary to begin teacher training preparation.

Students completing the requirements for graduation in Agriculture as suggested above and qualifying for a University Teachers' Certificate will receive the degree Bachelor of Science (Agriculture and Education) and a license to teach issued by the State Superintendent of Public Instruction. Such students must (a) register for the certificate in the School of Education at the beginning of the junior year, (b) receive the recommendation of the teacher training committee of the College of Agriculture, (c) complete the following courses:

	Credits
Educ. 75—Psychology and practice of teaching .....	5
Agr. Educ. 1—Rural education .....	2
Agr. Educ. 128—Program building in vocational agriculture .	3
Agr. Educ. 50—Teaching of agriculture .....	5
Educ. 31—Principles of secondary education .....	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 or the first semester of the junior 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. During the senior year Education 31 and the courses in agricultural education are prescribed. This provides the best sequence and one which interferes least with

technical subjects. Each senior spends a week each semester in a high school vocational agricultural department.

**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 50 credits required in the strictly agricultural subjects. Course 103, 2 crs., given jointly by the departments of Horticulture and Agronomy may be counted as a portion of the five credits of the major requirement outside the department of agricultural education.

### VOCATIONAL AGRICULTURAL TEACHERS OR AGRICULTURAL EXTENSION WORKERS

The teacher of agriculture in high school and the county agricultural agent require very similar preparation in technical subject matter. The extension department prefers men as county agricultural agents who have been successful in high school teaching. The following contains the eighteen credits required for the University Teachers' Certificate and a minimum of additional agricultural electives necessary to properly prepare for the teaching of agriculture in high school. Substitution of other courses in Education may be made by those persons looking to the extension field and not desiring to teach in high schools. The person completing this curriculum will receive the degree of Bachelor of Science (Agriculture and Education). *Although the courses listed beyond the College and University Teachers' Certificate requirements are merely suggested and not required. Graduates who lack a broad background of agricultural courses will find it difficult if not impossible to secure a position in Smith-Hughes departments.*

#### FRESHMAN YEAR

All subjects required—see freshman year on page 17.

#### SOPHOMORE YEAR

First Semester		Second Semester	
	credits		credits
Agr. Bact. 1—Genl. survey .....	4	Agr. Econ. 1—Prin. of agr. econ. ....	3
Soils 1—Soils and soil fertility .....	4	Agr. Educ. 1—Rural education .....	2
Economics 1a—General economics .....	4	Agr. Engr. 1—Surveys and structures .....	4
Agr. Engr. 5—Power and machinery....	5	Dairy Ind. 1—Introduction to dairying .....	3
		Electives outside College of Agr. ....	5(x)
	17		17

#### JUNIOR YEAR

Educ. 75—Psychology and practice of teaching .....	5*†	Agronomy, horticulture or soils .....	3*
An. Husb. 126—Livestock feeding ....	4	Animal Husb. 3—Types and breeds of livestock .....	2
Poultry 1—Poultry raising .....	3	Econ. Ento. 1—Farm insects .....	3
Rural Sociology 25 .....	3	Shop 2 and 15—Bench work and car- pentry .....	2
Agr. Journ. 1—Writing farm news ....	3*	Agr. Econ. 127—Cooperative market ing .....	3(1)
	18	Agronomy elective .....	2-3
		Electives outside College of Agr. ....	3-2
			18

## SENIOR YEAR

Agr. Educ. 128—Program building in vocational agriculture .....	3†	Agr. Educ. 103—Seminary .....	1*
Agr. Educ. 50—Teaching of agriculture	1	Agr. Educ. 50—Teaching of Agriculture	4†
Hort.—Agron. 103—Crop identification and standards .....	2	Agr. Econ. 10—Farm organization and management .....	3
Genetics 1—Animal Breeding .....	4	Educ. 31—Prin. of secondary education	3*
Plant Path. 101—Diseases of Plants .....	3	Electives .....	5
Electives .....	3		
			16

16

† If Education 75 is taken during the first semester Agricultural Education 50 for 4 credits should be taken during the second semester of the senior year and Agricultural Education 50, one credit during the first semester of the senior year.

\* May be taken first or second semester.

(x) Botany or Zoology 1 for 5 credits each are suggested but not required.

(1) 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."

1. **RURAL EDUCATION. II; 2 cr.** Origin and development of vocational education for rural communities. Problems, principles, and practices of rural education. For future leaders, farmers, and teachers. Open to sophomores. Mr. James.
5. **JUNIOR EXTENSION. I; 2 cr.** Place of boys' and girls' clubs in rural education. Educational values, methods of organization, leadership, meetings, demonstrations, follow-up materials, exhibits and reports. For prospective extension workers and teachers. Lectures and demonstrations. Mr. Bewick.
25. **RURAL LIFE. (Rural Sociology 25). I; 3 cr.** Counts as part of agricultural education major. Mr. Kolb.
50. **TEACHING OF AGRICULTURE. I, II; 1 to 5 cr.** Directed teaching based upon participation in agricultural activities of the Wisconsin High School and a vocational department of agriculture, problems of subject matter and methods of teaching. Prerequisites: Education 75 and senior standing. Mr. Kivlin, Mr. Freitag, Mr. Morrissey.
100. **THESIS. Yr.; 2 cr.** Original work on problems of agricultural extension or teaching. Staff.
103. **SEMINARY. I, II; \*cr.** Special problems in rural education and educational problems of county agent, extension workers, teachers, and rural leaders. Mr. James.
110. **TRAINING COURSE FOR COUNTY AGENTS. II; 2 cr.** Development and administration of county agent system. The agent's responsibilities to the federal and state governments and the community. Projects, plans for work, and county organization; relation of college specialists and local organizations. Open only to seniors and graduate students. Given 1938-39 and alternate years. Mr. Clark.
128. **PROGRAM BUILDING IN VOCATIONAL AGRICULTURE. I, II; 3 cr.** Factors determining the program of work, directed practice, part-time and evening schools, etc., adapted to teaching agriculture in secondary schools. Prerequisites: Agr. Educ. 1 and senior standing. Mr. James.



A WISCONSIN "GRAD" TEACHING FARMERS OF THE FUTURE  
Students in agricultural education do practice work with classes of high school age.

- 142S. ADMINISTRATION AND SUPERVISION OF EXTENSION. Summer Session, 2 cr. Mr. Clark.
- 175S. ORGANIZATION AND PLANNING OF EXTENSION. Summer Session, 2 cr. Mr. Clark.
200. RESEARCH. Yr.; \*cr. Topical work relative to problems of elementary vocational, or college agricultural education; extension, county agent, or demonstration work. Mr. James, Mr. Clark.

## AGRICULTURAL ENGINEERING

FLOYD WALDO DUFFEE, B.S.A., *Professor of Agricultural Engineering, Chairman*  
FRED BENJAMIN TRENK, M.S., *Associate Professor of Agricultural Engineering*  
(*Forestry*)

STANLEY ARTHUR WITZEL, M.S.C.E., *Associate Professor of Agricultural Engineering*

OTTO REINHART ZEASMAN, B.S.A., *Associate Professor of Agricultural Engineering and Soils*

MAX JAMES LA ROCK, B.S., *Arch. E., Assistant Professor of Agricultural Engineering*

HJALMAR DIEHL BRUHN, B.S.A., M.S.M.E., *Instructor in Agricultural Engineering*

EUGENE CLARENCE MEYER, B.S.E.E., M.S.A., *Instructor in Agricultural Engineering*

JUSTIN WESLEY WATERMAN, *Assistant in Agricultural Engineering*

DONALD COVEY WIGGINS, *Assistant in Agricultural Engineering*

The undergraduate courses in this department are service courses for students majoring in other departments, as well as the basis for advanced work of majors in agricultural engineering, both the non-technical and the technical.

Students inclined toward engineering and desiring to return to their farms or to take positions as agricultural agents or farm managers or to enter the farm equipment business, are advised to major in non-technical engineering, which has no special requirement in mathematics. They are advised to take, in addition to their major studies electives in soils, agronomy, agricultural economics, and business methods (see pages 23, 24, and 27). A major in non-technical agricultural engineering may be combined with a University Teachers' Certificate giving the legal qualifications to teach in high schools.

Those desiring to enter the more technical fields of mechanical, electrical, civil, or structural engineering as applied to agriculture, are recognized as majors in technical agricultural engineering, and are requested to consult the department chairman before or during the first semester of the freshman year so that the proper sequence of studies in mathematics, drawing, and mechanics may be followed, substituting Mathematics 51 for Mathematics 71.

Freshmen entering technical agricultural engineering should inform the assistant dean prior to registration, so that he can designate an agricultural engineering staff member as adviser.

Because the College of Agriculture and the College of Engineering are on the same campus, Wisconsin is enabled to train and develop agricultural engineers, who receive bachelor's degrees in both Agriculture and Engineering. It takes five years to complete the combined courses. This curriculum is designed to train engineers with a broad agricultural background and a thorough engineering training. It is essential that an agricultural engineer should have the same basic engineering training that is required of other professional en-



gineers; yet he must have a training in and understanding of agriculture that other professional engineers can not or will not acquire. Technical agricultural engineers are trained for the research departments of farm implement companies and the agricultural engineering departments of other colleges and universities; for managers of rural electric lines; for the design of farm structures; and for the development of drainage, irrigation and soil erosion control works.

Upon completion of four years of required work, including 50 credits in Agriculture, the B.S. Agriculture degree is granted, with a B.S. degree in Civil, Mechanical, or Electrical Engineering after the fifth year, if all requirements for those degrees have been met. The curriculum for Mechanical Engineering appears in this circular. The Civil and Electrical Engineering curricula may be obtained from the department.

Throughout the year the majors in both technical and non-technical agricultural engineering function as a student branch of the American Society of Agricultural Engineers, and during the first semester of either the junior or senior years they take Agricultural Engineering 121.

### TECHNICAL AGRICULTURAL ENGINEERING

Offered by the College of Agriculture in Co-operation with the  
College of Engineering

Due to the fact that students carrying the following curriculum complete the requirements of both the College of Agriculture and Engineering in five years, practically all of the courses listed are required. For the semester preceding a semester in which more than 18 credits are scheduled, the student must have received grades of B or better in each subject.

### MECHANICAL ENGINEERING MAJOR

FRESHMAN YEAR		Second Semester	
First Semester	Credits		Credits
Engl. 1a—Freshman Composition .....	3	Engl. 1b—Freshman Composition (2) .....	3
Chem. 1a—Gen'l. Chemistry .....	5	Chem. 1b—Gen'l. Chemistry .....	5
Math. 51—Elem. Analysis .....	5	Math. 52—Elem. Analysis .....	5
An. Husb. 1—Livestock Prod. ....	3	Agron. 1—Farm Crops .....	3
Shop 1—Elem. Pattern Making .....	1	Shop 2—Forge & Bench .....	1
	17		17
SOPHOMORE YEAR			
Agr. Eng. 5—Power and Mach'y .....	5	Agr. Eng. 1—Surveys & Structures .....	4
Soils 1—Soil Fertility .....	4	Dairy 1—Introd. to Dairying (3) .....	3
Math. 54—Calculus .....	4	Math. 55—Calculus .....	4
Drawing 1—Elements of Drawing .....	3	Drawing 2—Elements of Drawing .....	3
Shop 4—Lathe Work .....	1	Econ. 1a—Gen'l Economics .....	4
Shop 5—Shaping & Milling .....	1	Shop 6—Tool Development .....	2
	18		20
JUNIOR YEAR			
Agr. Bact. 1—General Survey .....	4	Agr. Econ. 1—Principles .....	3
Poultry 1 (3) .....	3	Agr. Econ. 14—Farm Law .....	3
Physics 51—Gen'l Physics .....	5	Physics 52—Gen'l Physics .....	5
Mach. Des. 1—Mach. Elements .....	4	Mach. Des. 2—Design Practice .....	1
Shop 13—Foundry .....	1	Mech's 1 & 2—Statics & Dynamics .....	5
	17	Drawing 3—Descriptive Geom. ....	3
			20

NOTE 1: Mechanics 3—Mechanics of Materials—5 credits—to be taken during summer school.

## SENIOR YEAR

Agr. Engr. 100—Thesis .....	2	Agr. Engr. 100—Thesis .....	2
Agr. Engr. 121—Seminary .....	1	Agr. Engr. 105—Tractors .....	4
Agr. Electives (4) .....	4	Agr. Electives .....	2
Steam & Gas 1—Thermodynamics .....	4	Steam & Gas 2—Thermodynamics .....	4
Mach. Design 3—Machine Elements .....	4	Steam & Gas 22—Testing .....	2
Hydraulics 1—Mech. of Fluids .....	3	E. E. 6—D. C. Mach. .....	3
Shop 7—Industrial Methods .....	2	E. E. 56—D. C. Lab. .....	2
	20		19

## FIFTH YEAR

Engr. Econ. 101—Elements of Business Practice .....	3	Engr. Econ. 102—Commercial Engineering .....	3
Engr. Econ. 105—Manuf. Methods .....	2	Engr. Econ. 106—Power Plants .....	3
Steam & Gas 105—Calculations .....	2	Steam & Gas 124—Adv. Testing .....	1
Steam & Gas 108—(6) .....	3	Mach. Design 4—Adv. Design .....	4
Steam & Gas 23—Adv. Testing .....	2	Mach. Design 12—Mach. Testing .....	2
Mech. 53—Materials of Construction .....	2	Hydraulics 105 (6) .....	2
E. E. 7—A. C. Mach. .....	3	Chem. Eng. 8—Metallography .....	2
E. E. 57—A. C. Lab. .....	2	Shop 9—Adv. Pattern Practice .....	1
	19		18

NOTE 2: Students earning a grade of A in Engl. 1a are excused from further work in Freshman English.

NOTE 3: Recommended sophomore option.

NOTE 4: Agricultural Elective 4 credits in senior year; part may be taken first semester, junior year.

NOTE 5: Six weeks industrial shop practice required before graduation.

NOTE 6: Recommended advanced electives in Steam and Gas and in Hydraulics.

- SURVEYS AND STRUCTURES. I, II; 4 cr.** Surveys, plans and specifications for buildings, drainage, and sewage disposal. Leveling, chaining, sub-division of land, plane table mapping, planning fields and farmsteads, general design of farm buildings and concrete construction. Three lectures and two field or drafting periods. Optional subject for all agricultural sophomores. Lab. fee \$2.25. Mr. Witzel.
- POWER AND MACHINERY. I, II; 5 cr.** Construction, operation, care, adjustment of gasoline engines, farm field machinery, light plants and water systems. Power transmission. Selection and management of machinery. Optional subject for all agricultural sophomores. Two lectures two laboratory periods and one quiz per period per week. Lab. fee \$4.50. Mr. Duffee.
- 100. THESIS. Yr.; 4 cr.** Lab. fee \$2.25 per lab. cr. Staff.
- 101. DRAINAGE DESIGN. I; 2 cr.** Preliminary and final surveys and designs for farm and community drainage systems near Madison and other convenient places. Optional work is provided for those specializing in erosion control or irrigation. Field work and conferences by appointment. Prerequisite: Agr. Engr. 1, or Top. Engr. 1 and 2. Offered 1939-40 and alternate years. Mr. Witzel, Mr. Zeasman.
- 105. FARM TRACTORS AND TRACTOR MACHINERY. II; 4 cr.** Lectures and laboratory studies on the construction, operation, care, and adjustment of farm tractors, threshers, ensilage cutters, feed grinders, and tractor plows. Field laboratory work with tractors and tractor plows. Two lectures and two laboratory periods per week. Prerequisite: Agricultural Engineering 5. Lab. fee \$4.50. Mr. Duffee.

106. **SOIL EROSION, CAUSES AND CONTROL.** I; 4 cr. Extent and kinds of erosion. Rate of water absorption and soil erodability as affected by rainfall, soil, vegetation and cultural practices. Erosion control structures, including surveys for and design of terraces, terrace outlets, and soil saving dams. Saturday forenoons reserved for field and laboratory. Joint, Soils and Agricultural Engineering. Only two credits of this course may be counted toward a major in Agricultural Engineering. Prerequisites: Soils 1 and a course in topography. Mr. Whitson, Mr. Zeasman.
121. **SEMINARY.** I; 1 cr. Review of current literature and studies of agricultural engineering problems. For juniors, seniors and graduate students. Mr. Duffee and staff.
180. **SPECIAL PROBLEMS.** I, II; \*cr. Open to technical majors who have had prerequisite training for advanced work in farm machinery, farm power, farm structures, erosion control, drainage or irrigation. Lab. fee \$2.25 per lab. cr. Staff.
200. **RESEARCH.** Yr.; \*cr. Agricultural Engineering problems for students qualifying for advanced degrees. Lab. fee \$2.25 per lab. cr. Staff.

#### ELECTIVES IN THE COLLEGE OF ENGINEERING

- SHOP 2. BENCH WORK, FORGE, AND WELDING.** I, II; 1 cr. Instruction in the use of bench metal tools, acetylene and electric welding, splicing, soldering and drill press work, pipe fitting, forge practice, tempering and brazing. Fee \$3.00. Mr. Schumann, Mr. Peters.
- SHOP 15. GENERAL FARM CARPENTRY.** I, II; 1 or 2 cr. The use and care of tools and principles involved in the construction of such structures as concrete forms and farm buildings; framing of doors and windows, and interior finishing. Lab. fee \$3.00. Mr. Dorrans.

#### ELECTIVES GIVEN BY FOREST PRODUCTS STAFF

1. **GENERAL FORESTRY.** I; 2 cr. An outdoor study of trees and their identification. Lectures on the natural forest conditions and the development of forest policy in the United States and elsewhere. No prerequisite. Mr. Tiemann.
102. **WOOD TECHNOLOGY.** II; 2 cr. Wood as a biological product; its anatomy and variation with species; properties and uses; moisture relations and kiln drying. Inherent physical and chemical nature of cellulosic fibers. Prerequisite: knowledge of physics, mechanics, and simple organic chemistry. Mr. Tiemann.

These two courses form a logical sequence, and cover subjects with which anyone who intends going into the fields of wood utilization or any of its branches should be thoroughly conversant. The two courses may be taken consecutively or in different years.

## AGRICULTURAL JOURNALISM

ANDREW WINKLE HOPKINS, B.L., *Professor of Agricultural Journalism, Chairman*  
 WILLIAM ALLISON SUMNER, Ph.M., *Professor of Agricultural Journalism*  
 GRACE LANGDON, M.A., *Instructor in Agricultural Journalism*  
 RUPERT HENRY RASMUSSEN, B.S., *Instructor in Agricultural Journalism*  
 WILLIAM K. HOWISON, M.S., *Assistant in Agricultural Journalism*

Agriculture must be made more articulate. To render the greatest service the technically trained worker must use the printed page. The ability to write simply and understandably is invaluable to the teacher, the extension worker, and the farmer.

Selling and advertising are important in the neglected half of farming—the business side. More and more farmers are coming to appreciate the need for salesmanship, sales letter writing, effective classified and display advertisement, and systematic sales campaigns.

For students returning to the farm, Agricultural Journalism 1 and 3 are suggested. For prospective teachers and extension workers, courses 1, 3 and 103 are recommended. For research workers and future college staff workers Agricultural Journalism 1 and 103 are advised.

Majors in the department will be expected to take Agricultural Journalism, 1, 2, 3, 100, 103, 111 and 150. Courses in the Department of Journalism in the College of Letters and Science should be taken in addition, and not to exceed 5 credits from the following courses may count toward the major; Journalism 2, Newspaper reporting and correspondence; Journalism 3, Copy reading.

Home Economics students majoring in the department will be expected to take Agricultural Journalism 8, 103, 106, 111, and 150. The following courses in the School of Journalism should be taken and count toward the major: 2, Newspaper reporting; 3, Copy reading; 7, Community newspaper, or 123, Women's departments in newspapers and magazines.

A special curriculum for home economics journalism is presented in the home economics circular.

The following group of courses is typical for a major in Agricultural Journalism. *Courses listed beyond the College requirements are merely suggested and not required.*

## FRESHMAN YEAR

All subjects required—see freshman year on page 17.

## SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Econ. 1a—General economics .....	4	Agric. Econ. 1—Prin. of agr. econ. ....	3
Soils 1—Soils and soil fertility .....	4	Agr. Journ. 3—Farm advertising .....	3
Agr. Journ. 1—Writing farm news .....	3	Agricultural option .....	3
Agricultural option .....	3	Electives .....	7-9
Electives .....	2-4		
	16-18		16-18

## COURSES IN AGRICULTURE

## JUNIOR YEAR

Journ. 2—Reporting* .....	3	Agr. Journ. 111—Writing farm features....	2
Rural Soc. 25—Rural life .....	3	Psychology 1—Intro. to psychology .....	3
Agr. Bact. 1—General survey .....	4	Electives .....	11-13
An. Husb. 126—Feeds & feeding .....	4		
Electives .....	2-4		

16-18

16-18

\* Journalism 22 may be substituted for Journalism 2 in case the course cannot be taken until the second semester.

## SENIOR YEAR

Journ. 3—Copy reading .....	3	Agr. Journ. 103—Publicity methods .....	2
Journ. 7—Community newspaper .....	2	Agr. Journ. 180—Methods & problems .....	2
Agr. Journ. 150—Seminary .....	2	Pol. Science 7—Am. govt. & politics .....	2
Electives .....	9-11	Electives .....	10-12

16-18

16-18

1. **WRITING FARM NEWS.** I, II; 3 cr. An elementary course to help students who expect to write farm news articles for publication in the weekly or daily papers or the various farm papers. Mr. Sumner.
2. **PRACTICE IN EDITING.** I, II; 1 cr. The editorial, business, and circulation problems of the Wisconsin Country Magazine are analyzed and actual practice given on the magazine. Mr. Sumner.
3. **AGRICULTURAL ADVERTISING.** I, II; 3 cr. How to write "want ads," advertisements to sell livestock, dairy products, fruit, berries, truck, food



"THE COUNTRY MAGAZINE"

This student magazine offers practical training to students interested in publication work.

- products; how to write the business letters of the farmer; the preparation of booklets, posters, sales bills, and other mediums. Lectures and assignments for practice. Mr. Sumner.
7. THE COMMUNITY NEWSPAPER. I; 2 cr. A course for those interested in the country weekly newspaper. Prerequisite: Agricultural Journalism 1 and 2. Mr. Sumner.
  8. WRITING HOME ECONOMICS NEWS. I; 3 cr. A course in the fundamentals of writing home economics material. Designed to aid teachers and extension workers in publicity and to give training to students who plan to major in Home Economics journalism. Mr. Sumner.
  100. THESIS. Yr.; 2 cr. Original studies of a journalistic or advertising nature. Practical problems are investigated. Mr. Hopkins, Mr. Sumner.
  103. AGRICULTURAL PUBLICITY METHODS. II; 2 cr. Outlining and finding effective methods of publicity. This course takes up the publicity campaign, the different mediums as to their advantage and use, publicity copy, exhibits, and charts. Prerequisite: Agr. Journ. 1 or 8. Mr. Hopkins.
  105. WRITING AND EDITING BULLETINS. I; 2 cr. A course for those who have to use or write popular bulletins and circulars. Prerequisite: Senior or Graduate Standing. Given alternate years. Offered 1937-38. Miss Langdon.
  111. WRITING FARM AND HOME FEATURES. II; 2 cr. A course to follow the elementary courses in writing farm and home stories. The technique of writing the longer feature stories for the farm papers and women's magazines is given primary consideration. Mr. Sumner.
  150. SEMINARY. I, II; 2 cr. Mr. Sumner.
  180. METHODS AND PROBLEMS. I, II; \*cr. Mr. Hopkins.
  200. RESEARCH. I, II; \*cr. A practice problem such as confronts the county agent, scientist, publicity man, extension worker, or editor is analyzed and an effort made for a constructive solution. Advertising problems and policies such as confront the breeder or pure-bred seed grower may be studied. Mr. Hopkins, Mr. Sumner.

## AGRONOMY

OLAF SVERRE AAMODT, Ph.D., *Professor of Agronomy, Chairman*  
 GEORGE McSPADDEN BRIGGS, B.S., *Professor of Agronomy*  
 EDMUND JOSEPH DELWICHE, M.S., *Professor of Agronomy*  
 LAURENCE FREDERICK GRABER, Ph.D., *Professor of Agronomy*  
 BENJAMIN DONALD LEITH, B.S., *Professor of Agronomy*  
 RANSOM ASA MOORE, M.A., *Professor of Agronomy, Emeritus*  
 ANDREW HAMILTON WRIGHT, M.S., *Professor of Agronomy*  
 ALDEN LESCOMBE STONE, *Associate Professor of Agronomy*  
 HENRY LAWRENCE AHLGREN, Ph.D., *Assistant Professor of Agronomy*  
 EUGENE DAVENPORT HOLDEN, M.S., *Assistant Professor of Agronomy*  
 NORMAN PERCY NEAL, Ph.D., *Assistant Professor of Agronomy and Genetics*  
 HAZEL LEE SHANDS, Ph.D., *Assistant Professor of Agronomy*  
 RUEBUSH GEORGE SHANDS, Ph.D., *Assistant Professor of Agronomy*

Not to exceed five credits from the following courses may be counted as a portion of the major requirement in Agronomy.

Soils 126, Soils 127, Pl. Path. 101, Botany 117, Botany 129, Genetics 104, Genetics 106, and Agr. Engr. 106.

1. PRINCIPALS AND PRACTICES IN CROP PRODUCTION. I, II; 3 cr. Includes a study of farm crop seeds, growth requirements, crop varieties and types, botanical relations, adaptations, cultural practices, crop improvement and studies of individual crops. Required of all agricultural students. Lab. fee \$4.50. Mr. Graber.
100. THESIS. Yr.; 2 cr. Investigation of some problems in agronomy. Subject should be chosen early, preferably the preceeding spring, in order to



THE NEW AGRONOMY BUILDING

take advantage of the summer season to secure material. Lab. fee \$2.25 per lab. cr. Staff.

102. PASTURES AND PASTURE PROBLEMS. I; 2 cr. Methods of establishing, maintaining, and improving pastures. A survey of pasture crops and problems with emphasis on recent developments relative to the use and improvement of grassland. Prerequisite: Agronomy I and preferably some courses in Soils and Botany. Mr. Ahlgren.
103. CROP IDENTIFICATION AND STANDARDS. I; 2 cr. A consideration of the classification, identification and standard of excellence of field, orchard and garden crops. Laboratory exercises in identification, judging and exhibiting crops. Lab. fee \$2.25. Mr. Holden, Mr. J. G. Moore.
104. GRAIN CROPS. I; 3 cr. Small grain and corn varieties, types and botanical relationships, geographical distribution, uses and culture. Problems of production, grading and commercial utilization. A one day trip to Milwaukee to visit the grain and stock exchange and cereal industries. Lab. fee \$2.25. Mr. Leith, Mr. Dickson.
106. FORAGE CROPS. II; 3 cr. Growing alfalfa, clovers, soybeans, corn, and other forages with emphasis on recent developments in feed production on livestock farms. Growth habits, morphology and physiology of forages as applied to practice, with emphasis on food reserves, winter survival and other field problems. Sophomore standing. Mr. Graber.
120. SEED AND WEED CONTROL. I; 3 cr. A study of the economic relations of farm seeds and weeds to profitable agriculture. Prerequisite: Agronomy 1. Lab. fee \$4.50. Mr. Stone.
130. FARM CROPS BREEDING AND IMPROVEMENT. II; 2 cr. Methods and principles involved in the breeding and improvement of field crops. Production and distribution of pure seeds. The raising of pure seed on farms. Prerequisites: Agronomy 1 and Botany 1, and preferably some course in Genetics. Given 1938-39 and alternate years. Mr. Aamodt and Staff.
131. SEMINARY. Yr; 1 cr. A review of current literature and studies of agronomic problems. For seniors and graduate students. Prerequisites: Agronomy 1 and Botany 1. Mr. Aamodt and Staff.
180. SPECIAL CROP PROBLEMS. Yr.; \*cr. Offered at Madison and the branch experiment stations. Senior standing. Lab. fee \$2.25 per lab. cr. Staff.
190. METHODS IN FIELD PLOT TECHNIQUE AND PLANT BREEDING. II; 3 cr. The application of biometrical methods to laboratory and field plot experiments and to the breeding and improvement of field crops. Practice in planning modes of attack on special plant breeding problems. Given in 1937-38 and alternate years. Prerequisites: Agronomy 1, Botany 1, and preferably some course in Genetics. Senior standing. Mr. Aamodt, Mr. Torrie.
200. RESEARCH. Yr; \*cr. Agronomic problems for students qualifying for advanced degrees. Given in connection with thesis or graduate study. Lab. fee \$2.25 per lab. cr. Staff.



## ANIMAL HUSBANDRY

- GEORGE COLVIN HUMPHREY, B.S., *Professor of Animal Husbandry, Chairman*  
 GUSTAV BOHSTEDT, Ph.D., *Professor of Animal Husbandry*  
 JAMES GARFIELD FULLER, M.S., *Professor of Animal Husbandry*  
 ALBERT EDWARD DARLOW, M.S., *Associate Professor of Animal Husbandry*  
 JAMES JEROME LACEY, B.S., *Associate Professor of Animal Husbandry*  
 ARLIE MAX MUCKS, B.S., *Associate Professor of Animal Husbandry*  
 ARTHUR OWEN COLLENTINE, B.S., *Assistant Professor of Animal Husbandry*  
 ALBERT JULIUS CRAMER, B.S., *Assistant Professor of Animal Husbandry*  
 JOHN MERRILL FARGO, M.S., *Assistant Professor of Animal Husbandry*  
 BENJAMIN HAMILTON ROCHE, M.S., *Assistant Professor of Animal Husbandry*  
 ISAAC WALKER RUPEL, Ph.D., *Assistant Professor of Animal Husbandry*  
 GLEN WALLACE VERGERONT, B.A., *Assistant Professor, In Charge of Office of Farm Accounts and Dairy Records*  
 ROY THEODORE HARRIS, *Instructor in Animal Husbandry*  
 EARL H. HANSON, B.S., *Assistant in Animal Husbandry*

## GENERAL ANIMAL HUSBANDRY CURRICULUM

The courses offered in this department are designed to give the student an understanding of the principles of livestock production and are intended for students going into teaching in either high school or college, and for those planning to do extension or county agent work, as well as for those who expect to take up farming. In some cases joint majors with other departments may be arranged. The following curriculum is suggested for students majoring in the department. *Courses listed beyond the College requirements are merely suggested and not required.*

## FRESHMAN YEAR

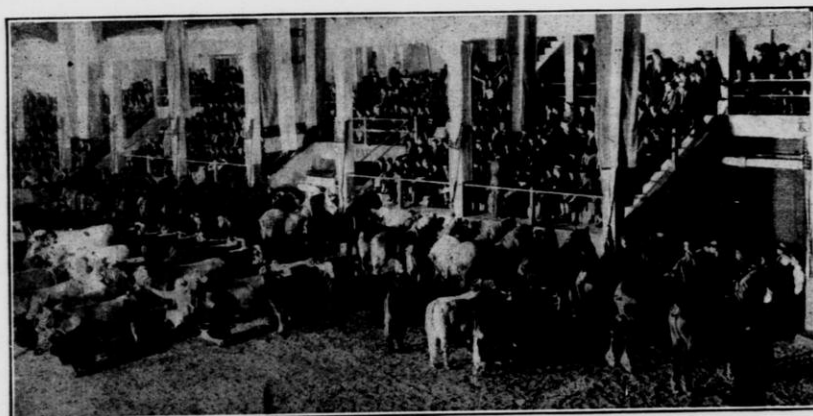
All subjects required.

## SOPHOMORE YEAR

First Semester		Second Semester	
	Credits		Credits
Economics 1a—General economics .....	4	Agr. Econ. 1—Principles of agricultural economics .....	3
Agr. Bact. 1—General survey .....	4	Biochem. 1—Elementary biochemistry ....	4
Vet. Sci. 1—The animal body .....	3	Physiology 3—Animal physiology .....	4
A. H. 125—Meat production and carcass values .....	2	Dairy Ind. 1—Introduction to dairying ....	3
Electives .....	2-5	A. H. 3—Types and breeds of livestock....	2
		Electives .....	0-2
	16-18		16-18

## JUNIOR YEAR

Genetics 1—Principles of genetics .....	4	Chemistry 20, 21—Organic chemistry .....	5
Soils 1—Soils and soil fertility .....	4	Agr. Econ. 10—Farm organization and management .....	3
A. H. 130—Sheep and swine production....	3	A. H. 2—Livestock management .....	2
A. H. 126—Livestock feeding .....	4	A. H. 133—Dairy cattle and milk production .....	3
Electives .....	1-3	Electives .....	3-5
	16-18		16-18



THE WISCONSIN LITTLE INTERNATIONAL  
During the Farmer's Week the students hold a livestock show and have a fine entertainment for our visitors.

## SENIOR YEAR

Agron. 102—Pastures and pasture problems .....	2	Agron. 106—Forages and forage problems .....	3
A. H. 131—Horse and beef cattle production .....	3	Genetics 103—Reproduction of farm animals .....	2
A. H. 135—Seminary .....	1	A. H. 135—Seminary .....	1
Agr. Econ. 128—Marketing agricultural products .....	3	Electives .....	10-12
Electives .....	7-9		
	16-18		16-18

To meet the needs of those students seeking training in the combined field of dairy production and dairy industry, a joint major may be arranged in accordance with the plan indicated on page 29.

Students desiring a more scientific training in preparation for graduate work may elect such courses as Zool. 104, Chem. 12, 120, 121, Math. 1, 51, Physics 61, Biochemistry 110, Vet. Sci. 2, 123, and courses in German and French.

Not to exceed five credits from the following courses may be counted as a portion of the major requirement in animal husbandry: Biochemistry 110, Genetics 103, Vet. Sci. 2 and 123.

1. **LIVESTOCK PRODUCTION.** I, II; 3 cr. Livestock survey, breed history, judging, market classification; practical problems, lectures, and laboratory exercises. Required of all agricultural students. Lab. fee \$4.50. Mr. Fuller, Mr. Darlow, Mr. Fargo.
2. **LIVESTOCK MANAGEMENT.** II; 2 cr. A study of fundamental principles of practice underlying the successful management of useful farm animals. Lectures and laboratory demonstrations. Recommended especially for non-animal husbandry majors. Prerequisite: An. Husb. 1 or consent of instructor. Lab. fee \$2.25. Mr. Fuller and Staff.
3. **TYPES AND BREEDS OF LIVESTOCK.** II; 2 cr. An advanced study of types and breeds; standards of excellence for market, showyard and breeding

- animals, respectively; judging and selection. Prerequisite: An. Husb. 1. Not open to freshmen. Lab. fee \$2.25. Mr. Darlow, Mr. Rupel.
100. **THESIS.** Yr.; 2 cr. Lab. fee \$2.25 per lab. cr. Mr. Humphrey and staff.
125. **MEAT PRODUCTION AND CARCASS VALUES. I;** 2 cr. A study will be made of the effect of feed, type, and condition of animal on the quality, yield and value of carcasses of beef, mutton, and pork. Meat characteristics will be studied and used in judging fresh and cured cuts. The live animals from which carcasses are secured will be judged before slaughter. Prerequisite: Animal Husbandry 1. Laboratory fee: \$4.50. Mr. Fargo.
126. **LIVESTOCK FEEDING. I;** 4 cr. A study of the principles of feeding and the composition of feeds; practice in formulating rations for the various classes of livestock; evaluation of feeds and feeding practices from a study of experiments and customs. Prerequisite: Junior standing. Mr. Bohstedt, Mr. Roche.
130. **SWINE AND SHEEP PRODUCTION. I;** 3 cr. History of the hog and sheep industries and of the leading herds and flocks in America; breeding practices; systems and costs of production; methods of marketing; the breeding of high class purebred foundation stock. Prerequisite: An. Husb. 1. Lab. fee \$2.25. Mr. Fargo, Mr. Darlow.
131. **HORSE AND BEEF CATTLE PRODUCTION. I;** 3 cr. Development and present status of the horse and beef cattle industries; leading stud and herd owners in America; practices in breeding, production and marketing; fundamentals in the successful use of horses. Prerequisite: An. Husb. 1. Lab. fee \$2.25. Mr. Fuller.
133. **DAIRY CATTLE AND MILK PRODUCTION. II;** 3 cr. Selection of animals for milk production and for breeding purposes. Present day types and breed characteristics. Herd management, breeding practices, testing, record keeping, calf raising, selling of surplus breeding stock. Control measures relating to quality in commercial and special grades of milk. A one day tour to visit leading pure-bred herds, dairy equipment plants, and farms producing certified milk is conducted; the cost is from \$4 to \$5. Prerequisite: An. Husb. 1. Lab. fee \$2.25. Mr. Rupel.
135. **SEMINARY. I, II; Yr.;** 1 cr. Studies and discussions of research work in animal husbandry and related fields; reports on articles of interest. For advanced and graduate students. Mr. Bohstedt.
180. **SPECIAL PROBLEMS.** Yr; \*cr. Special problems on feeding, management, selection, or breeding of livestock, including laboratory, library, or field work with conferences and reports. These problems will be assigned by respective members of the staff. Consent of instructor required. Lab. fee \$2.25 per lab. credit. Staff.
200. **RESEARCH.** Yr; \*cr. A detailed study of a definite research problem in animal husbandry. Conferences on experimental methods. Mr. Bohstedt and staff.

## BIOCHEMISTRY

- EDWIN BRET HART, B.S., *Professor of Biochemistry, Chairman*  
 CONRAD ARNOLD ELVEHJEM, Ph.D., *Professor of Biochemistry*  
 KARL PAUL LINK, Ph.D., *Professor of Biochemistry*  
 WILLIAM HAROLD PETERSON, Ph.D., *Professor of Biochemistry*  
 HARRY STEENBOCK, Ph.D., *Professor of Biochemistry*  
 WILLIAM EDWARD TOTTINGHAM, Ph.D., *Associate Professor of Biochemistry*  
 PAUL HORRELL PHILLIPS, Ph.D., *Assistant Professor of Biochemistry and Animal Husbandry*  
 CARL AUGUST BAUMANN, Ph.D., *Instructor and Research Associate in Biochemistry*  
 MARVIN JOYCE JOHNSON, Ph.D., *Instructor and Research Associate in Biochemistry and Agricultural Bacteriology*  
 BLANCHE RIISING PLATZ, M.S., *Instructor in Biochemistry*  
 FRANK MORGAN STRONG, Ph.D., *Instructor and Research Associate in Biochemistry*

The courses offered in this department are intended to give a broad view of biological chemistry useful to the general agricultural student, and to develop men fitted for instructional or experimental work in the various fields of chemical activity applied to agriculture. Courses 110 and 120 are for students desiring a more detailed knowledge of the special subjects treated and are preliminary to greater specialization. These courses should be preceded or accompanied by work in biology and organic chemistry. Physiology and bacteriology are desired prerequisites. All advanced courses in this department are open to undergraduates and graduates who have had the necessary preliminary training.

The following grouping of courses is typical of a major in Biochemistry. Most students who complete this curriculum would be interested in a commercial or educational position in teaching or research and would continue graduate work for advanced degrees. *The courses listed beyond the College requirements are merely suggested and not required.*

## SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Economics 1a—General economics .....	4	Agr. Econ. 1—Prin. of Agr. econ. ....	3
Agr. Bact. 1—General survey .....	4	Biochem. 1—Elementary biochemistry ....	4
Vet. Science 1—The animal body .....	3	Dairy Industry 1—Intro. to dairying .....	3
Chemistry 11—Quantitative analysis .....	5	Physiology 3—Animal physiology or	4
Electives .....	0-2	Botany 146—Plant Physiology .....	4
		Electives .....	2-4
	16-18		16-18

## JUNIOR YEAR

Chem. 120, 121—Organic chemistry .....	5	Chem. 120, 121—Organic chemistry .....	5
German or French .....	4	German or French .....	4
Biochem. 121—Dairy chemistry .....	5	Physics 1 .....	5
Electives .....	2-4	Electives .....	2-4
	16-18		16-18

## SENIOR YEAR

Chem. 130, 131—Physical chemistry ....	5	Chem. 130, 131—Physical chemistry .....	5
Biochem. 110—Principles of biochemistry	5	Biochem. 233—Seminary .....	1
Chem. 10—Mathematical chemistry .....	3	Biochem. 100—Thesis .....	2
Biochem. 233—Seminary .....	1	Electives .....	8-10
Biochem. 100—Thesis .....	2		
Electives .....	0-2		16-18

16-18

1. **ELEMENTARY BIOCHEMISTRY. II;** 2 or 4 cr. Introduction to the chemistry of living matter. Laboratory work includes chemical analysis of agricultural materials. Prerequisite: Chemistry 1b. Lab. fee \$4.50. Mr. Elvehjem.
3. **FOOD BIOCHEMISTRY. I;** 4 cr. Lectures and laboratory work on the chemistry and metabolism of the essential food constituents: carbohydrates, fats, proteins, etc. Required of all home economics students. Prerequisite: Chemistry 1b. Lab. fee \$4.50. Mr. Peterson.
100. **THESIS. Yr;** 2 cr. May be taken in plant, animal, fermentation, or dairy chemistry. Lab. fee \$2.25 per lab. cr. Staff.
110. **PRINCIPLES OF BIOCHEMISTRY. I;** 3 or 5 cr. The biochemistry of lipids, carbohydrates, proteins, inorganic elements, water, enzymes, and other constituents of the cell. Three lectures, 3 cr.; two laboratory periods, 2 cr. Prerequisite: Quantitative and Organic Chemistry. Laboratory fee \$4.50. Mr. Elvehjem, Mr. Hart, Mr. Link, Mr. Peterson, Mr. Steenbock, Mr. Tottingham.
120. **PLANT BIOCHEMISTRY. II;** 2 or 5 cr. The mechanism and course of chemical processes in the growth of plants, including the effect of environmental factors. Selected methods for the determination of plant constituents. Prerequisites: Chemistry 1b and 120. Lab. fee \$2.25 per lab. cr. Mr. Tottingham.



THE MEMORIAL UNION  
A center of student activities and social life.

121. DAIRY CHEMISTRY. I; 2 or 5 cr. The chemistry of milk and its products, including the chemistry of fermentation and detection of adulterants. Prerequisites: Chemistry 1, 12, and 120. Lab. fee \$2.25 per lab. cr. Mr. Hart.
125. ANIMAL METABOLISM AND VITAMINS. II; 4 cr. Caloric relations; the chemistry of urine, blood, bone, and other tissues and vitamins, with feeding experiments on animals. Two lectures and two laboratory periods. Prerequisites: Biochemistry 110 or its equivalent. Laboratory fee \$4.50. Mr. Steenbock.
126. MODERN VIEWS OF ANIMAL NUTRITION AND THEIR APPLICATION. II; 2 cr. A course of lectures and conferences on the newer knowledge of nutrition applied to man, poultry, dairy cattle, swine, etc. Prerequisite: Biochemistry 110, 121 or their equivalent. Mr. Hart.
127. FERMENTATION BIOCHEMISTRY. II; 2-4 cr. Lectures on the chemical composition of microorganisms and the mechanism of fermentation processes. Prerequisite: Biochemistry 110 or Chemistry 120. Agr. Bact. 1, 2 or 4 desirable. Mr. Peterson.
128. CARBOHYDRATE CHEMISTRY. I; 2 cr. Offered in 1938-39 and in alternate years. Lectures on the structural and biochemical relationship of the simple sugars and sugar derivatives. II; 1 cr. The chemistry and biochemistry of the polysaccharides. Prerequisite: 1 year of Organic Chemistry or consent of instructor. Mr. Link.
200. RESEARCH. Yr.; \*cr. Carbohydrate and plant chemistry, Mr. Link. Plant nutrition and plant metabolism, Mr. Tottingham. Fermentation biochemistry, Mr. Peterson. Animal chemistry and animal nutrition, Mr. Hart, Mr. Steenbock, Mr. Elvehjem. Dairy chemistry, Mr. Hart. Lab. fee \$2.25 per lab. cr.
233. SEMINARY. Yr.; 1 cr. Original articles of importance are studied in detail, to broaden and deepen the understanding and to act as a stimulus to further research. Mr. Elvehjem and Mr. Link.

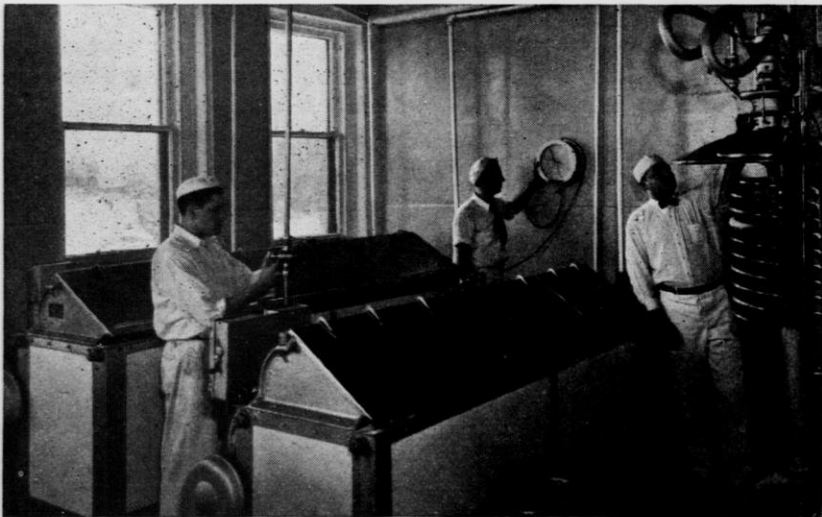
## DAIRY INDUSTRY

HOWARD CAMPBELL JACKSON, Ph.D., *Professor of Dairy Industry, Chairman*  
WALTER VAN PRICE, Ph.D., *Professor of Dairy Industry*  
HUGO HENRY SOMMER, Ph.D., *Professor of Dairy Industry*  
JOHN LANGLEY SAMMIS, Ph.D., *Associate Professor of Dairy Industry*  
LOUIS CHARLES THOMSEN, B.S., *Associate Professor of Dairy Industry*  
EVERT WALLENFELDT, M.S., *Assistant Professor of Dairy Industry*  
KENNETH GRANVILLE WECKEL, Ph.D., *Assistant Professor of Dairy Industry*  
CHARLES ALFRED BUCK, B.S., *Instructor in Dairy Industry*

The department offers instruction in the science and art of manufacturing dairy products, suited to the needs of (a) farm dairymen, (b) investigators and teachers, (c) managers, operators, and inspectors of creameries, cheese factories, city milk, ice cream plants, and condenseries, and (d) engineers.

Positions available to dairy majors are not limited to the farm, the factory or the laboratory. Some graduates are employed in such activities as the design and manufacture of dairy equipment, the selling of dairy supplies and machinery, and the sales promotion of dairy products. Students desiring to major in the department and who do not wish to become research workers or dairy technologists may take work in Engineering or Commerce. Courses in Commerce are listed on pages ?? and ?? under the headings of General Commerce and Economics courses and commercial Dairy Manufacturing Industry. Those who desire to become dairy engineers should work out their program with staff members of the department.

The following curriculum is suggested for the student interested in becoming a research worker or dairy plant laboratory technologist. *Courses listed beyond the College requirements are merely suggested and not required.*



PASTEURIZING MARKET MILK AND CREAM

FRESHMAN YEAR

All subjects required—see freshman year on page 17.

SOPHOMORE YEAR

First Semester		Credits		Credits
Econ. 1a—General economics .....		4	Agr. Econ. 1—Prin. of agr. econ. ....	3
Vet. Sci. 1—The animal body or			Dairy Ind. 1—Introduction to dairying....	3
Poultry 8—Marketing poultry products		3	Biochem. 1—Elementary biochemistry .....	4
Agr. Bact. 1—General survey .....		4	Physiology 3—Animal physiology	
Electives .....		5-7	or Economics 1b .....	4
			Electives .....	2-4
				<hr/>
		16-18		16-18

JUNIOR YEAR

Chem. 120, 121—Organic chemistry .....	5	Dairy Ind. 104—Cheesemaking .....	4
Biochem. 121—Dairy chemistry .....	5	Agr. Bact. 121—Dairy bacteriology .....	3
Dairy Ind. 105—City milk supply .....	3	Dairy Ind. 108—Dairy mechanics .....	3
Agr. Bact. 130—Determinative bact. ....	2-3	Dairy Ind. 124—Physical chemistry of	
Electives .....	1-3	dairy products .....	3
		Electives .....	3-5
			<hr/>
	16-18		16-18

SENIOR YEAR

Dairy Ind. 103—Creamery operation			Dairy Ind. 180—Advanced dairy manu-	
or management .....	3		facturing problems .....	3
Dairy Ind. 123—Seminary .....	1	Agr. Bact. 126—Physiology of bact. ....	3	
Electives .....	12-14	Dairy Ind. 123—Seminary .....	1	
		Dairy Ind. 106—Ice cream and con-		
		densed milk products .....	3	
		Electives .....	6-8	
			<hr/>	
	16-18		16-18	

1. INTRODUCTION TO DAIRYING. II; 3 cr. A general survey course designed to give the student an understanding of the relationship of dairy manufacturing to general farm problems. Emphasis is given to methods of quality control, grading, and elementary analysis of dairy products. Lab. fee \$4.50. Mr. Jackson, Mr. Thomsen, Mr. Weckel.
100. THESIS. Yr.; 2 cr. Lab. fee \$2.25 per lab. cr. Staff.
103. CREAMERY OPERATION AND MANAGEMENT. I; 3 cr. The theory and practice of cream separation, the pasteurization and handling of dairy products under commercial conditions, composition and flavor control of butter, and the management and operation of creameries. Lab. fee \$4.50. Mr. Jackson, Mr. Thomsen.
104. CHEESE FACTORY OPERATION AND MANAGEMENT. II; 4 cr. A combined lecture and laboratory course to study the manufacture of cheese. Several types of cheese are made by the students in the laboratory to acquaint them with commercial practices and to illustrate the importance of certain physical, chemical, and biological factors which influence curd-making and cheese-ripening. Lab. fee \$4.50. Mr. Price.
105. MARKET MILK. I; 3 cr. The production and commercial handling, processing, and distribution of market milk and related products. Quality factors and defects in these products. Milk ordinances and board of health regulations. Lab. fee \$4.50. Mr. Weckel.
106. ICE CREAM AND CONDENSED MILK PRODUCTS. II; 3 cr. The theory and practice of ice cream making. The manufacture of milk powder, malted milk,



- condensed milk, and evaporated milk. Quality factors and defects in these products. Lab. fee \$4.50. Mr. Sommer.
108. DAIRY MECHANICS. II; 3 cr. Dairy plant construction, heating, ventilation, power plant operation, sewage disposal, refrigeration, installation, testing, and operation of dairy machinery. A two-day field trip to well known plants is usually included in the course. Lab. fee \$2.25. Mr. Thomsen.
123. SEMINARY. Yr; 1 cr. For advanced and graduate students. Mr. Sommer and staff.
124. PHYSICAL CHEMISTRY OF DAIRY PRODUCTS. II; 3 cr. Physical chemistry of dairy products, laboratory exercises on hydrogen ion concentration, oxidation-reduction potentials, surface tension, absorption, viscosity and plasticity, isoelectric point of proteins, colloidal properties of milk constituents. Lab. fee \$4.50. Mr. Sommer.
180. ADVANCED DAIRY MANUFACTURING PROBLEMS. Yr; 1-3 cr. Problems relating to dairy manufacturing and quality of dairy products. Prerequisite: Senior standing or consent of instructor. Lab. fee \$2.25 per lab. cr. Staff.
200. RESEARCH. Yr.; \*cr. Experimental study of problems in dairy manufacturing. Lab. fee \$2.25 per lab. cr. Staff.

### ECONOMIC ENTOMOLOGY

HARLEY FROST WILSON, M.S., *Professor of Economic Entomology, Chairman*  
 CHARLES LEWIS FLUKE, JR., Ph.D., *Professor of Economic Entomology*  
 EDWARD MARLBOROUGH SEARLS, Ph.D., *Assistant Professor of Economic Entomology*  
 THOMAS CORT ALLEN, Ph.D., *Instructor in Economic Entomology*  
 JOHN ANTON CALLENBACH, M.S., *Instructor in Economic Entomology*  
 JOHN HENRY LILLY, M.S., *Instructor in Economic Entomology*  
 CARL WILLIAM SCHAEFER, Ph.D., *Instructor in Economic Entomology*

Students majoring in economic entomology and desiring to be trained in entomological or beekeeping research for the positions offered by the state agricultural experimental stations and the government service, should follow the curriculum as outlined. Those preparing for entomological chemical work, especially with insecticides, should elect more work in chemistry and physics. Students pursuing specialized lines, such as biological control of insects, insect physiology, and insects in relation to plant diseases, should elect more work in plant pathology, botany, and physiology.

Those interested in the opportunities for graduate work in entomology and beekeeping should write to the Department of Economic Entomology for a special circular of information.

The following is suggested as a suitable grouping of courses for a major in Entomology. Courses listed beyond the College requirements are merely suggested and not required.

## FRESHMAN YEAR

All subjects required—see freshman year on page 17.  
Take Zoology 1

## SOPHOMORE YEAR

First Semester		Second Semester	
	Credits		Credits
Agr. Bact. 1—General survey .....	4	Agr. Econ. 1—Prin. of agr. econ. ....	3
Economics 1a—General economics .....	4	Biochem. 1—Elementary biochemistry .....	4
Econ. Ent. 10—Elementary beekeeping .....	3	Econ. Ent. 1—Farm insects .....	3
Agr. option .....	3	Electives .....	6-8
Electives .....	2-4		
	16-18		16-18

## JUNIOR YEAR

First Semester		Second Semester	
	Credits		Credits
Econ. Ent. 102—Insect morphology and taxonomy .....	3	Botany 146—Plant physiology .....	4
Botany 1—General botany .....	5	Physics 61—General physics .....	5
*German or French .....	4	Econ. Ent. 103—Orchard insects or Econ. Ent. 105—Field and garden crop insects .....	2
Electives .....	4-6	*German or French .....	4
	16-18	Electives .....	1-3
			16-18

## SENIOR YEAR

First Semester		Second Semester	
	Credits		Credits
Zool. 110—Entomology, anatomy and embryology .....	3	Zool. 107—Organic evolution .....	2
Econ. Ent. 100—Thesis .....	2	Bot. 130—Classification of seed plants .....	3-4
Econ. Ent. 107—Principles of insect control .....	3	Econ. Ent. 120—Insect ecology .....	3
Econ. Ent. 123—Insect taxonomy of larval forms or Econ. Ent. 125—Insects in relation to plant diseases .....	2-3	Econ. Ent. 100—Thesis .....	2
Econ. Ent. 130—Seminary .....	1	Econ. Ent. 130—Seminary .....	1
Electives .....	5-6	Electives .....	5-6
	16-18		16-18

1. **ELEMENTARY ENTOMOLOGY (FARM INSECTS). II; 3 cr.** A study of the insect groups, especially those in relation to the farm and home. Each student makes a collection of at least one hundred specimens, which he classifies. Optional subject for all agricultural students. Lab. fee \$4.50. Mr. Fluke.
10. **ELEMENTARY BEEKEEPING. I; 3 cr.** Elementary principles of beekeeping with lectures and practical laboratory work. A general survey of the subject is taken up, with the fall and winter care in the apiary being stressed. Lab. fee \$2.25. Mr. Wilson.
100. **THESIS. Yr.; 2 cr.** Lab. fee \$2.25 per lab. cr. Mr. Wilson and staff.
102. **INSECT MORPHOLOGY AND TAXONOMY. I; 3 cr.** A detailed study of the external morphology of insects and a determinative survey of the important Orders, Families, and Genera. Prerequisite: Economic Entomology 1 or equivalent. Discussion and laboratory. Lab. fee \$4.50. Mr. Fluke.

\* Suggested for those expecting to do graduate work.

103. ORCHARD INSECTS. II; 2 cr. A laboratory study of the life histories and controls of the principal insect pests of the orchard and bush fruits. Prerequisite: Economic Entomology 1 or 102, or a course in Zoology. Offered 1938-39 and in alternate years. Lab. fee \$2.25. Mr. Fluke.
105. FIELD CROP AND GARDEN INSECTS. II; 2 cr. A laboratory study of the principal insect pests of field, garden, and truck crops; their life histories and controls. Prerequisite: Economic Entomology 1 or 102, or a course in Zoology. Offered 1937-38 and in alternate years. Lab. fee \$2.25. Mr. Searls.
107. PRINCIPLES OF INSECT CONTROL. I; 3 cr. Planned for advanced students in economic entomology, pharmacy, plant pathology, and horticulture. A study of the preparations, uses, and toxicities of insecticides and their applications. Lecture and laboratory. Offered 1938-39 and in alternate years. Prerequisite: Chemistry I and consent of instructor. Lab. fee \$2.25. Mr. Allen.
120. INSECT ECOLOGY. II; 3 cr. Insects in relation to their environment. A survey of the principles and practices of Ecology, including terminology and methods, especially as they relate to Economic Entomology and Conservation. Lectures, laboratory and field trips. Prerequisite: Economic Entomology 1 or 102, or a course in Zoology. Offered 1938-39 and in alternate years. Lab. fee \$2.25. Mr. Lilly.
123. TAXONOMY OF INSECT LARVAE. I; 3 cr. A study of the identification and morphology of immature insects. Lecture and laboratory. Prerequisites: Economic Entomology 102 or consent of instructor. Offered 1938-39 and in alternate years. Lab. fee \$4.50. Mr. Searls.
125. INSECTS IN RELATION TO PLANT DISEASE. I; 2 cr. A study of the principal insect carriers and their habits; types of insect injuries affecting health of plants; modes of insect transmission and dissemination of plant diseases; and the methods of rearing and handling the carriers. Arranged to meet the needs of students in entomology, plant pathology, horticulture, and agronomy. Prerequisite: A course in entomology and plant pathology or consent of instructor. Offered 1937-38 and in alternate years. Lab. fee \$2.25. Mr. Searls.
130. SEMINARY. I, II; 1 cr. For advanced and graduate students. Mr. Wilson.
180. TOPICAL WORK. I, II; \*cr. Taxonomy, methods, etc. Senior standing. Lab. fee \$2.25 per lab. cr. Staff.
200. RESEARCH. Yr.; \*cr. Lab. fee \$2.25 per lab. cr. Mr. Wilson and staff.

## GENETICS

- LEON JACOB COLE, Ph.D., *Professor of Genetics, Chairman*  
 ROYAL ALEXANDER BRINK, D.Sc., *Professor of Genetics*  
 MALCOLM ROBERT IRWIN, Ph.D., *Associate Professor of Genetics*  
 GUSTAVE H. RIEMAN, Ph.D., *Associate Professor of Genetics, Horticulture and  
 Plant Pathology*  
 LESTER EARL CASIDA, Ph.D., *Assistant Professor of Genetics*  
 DELMAR CLAIRE COOPER, Ph.D., *Assistant Professor of Genetics and Research  
 Associate in Botany*  
 NORMAN P. NEAL, Ph.D., *Assistant Professor of Agronomy and Genetics*  
 ARTHUR BARCLAY CHAPMAN, Ph.D., *Instructor in Genetics*  
 WILLIAM KENNETH SMITH, Ph.D., *Assistant Professor of Genetics*  
 GORDON EDWIN DICKERSON, Ph.D., *Instructor in Genetics and Dairy Records*

The following courses are designed for those who desire a general knowledge of the subjects of heredity and breeding, or who contemplate following these lines, either from the theoretical or practical point of view. Special opportunity is offered those doing advanced work to get experience in the application of genetics to practical problems.

1. PRINCIPLES OF BREEDING. I; 4 cr. Elementary principles of heredity in their application to plant and animal breeding. Additional prescribed reading and written reports for graduate credit. Prerequisite: A course in biology. Lab. fee \$2.25. Mr. Irwin, Mr. Chapman.
100. THESIS. Yr.; 2 cr. Lab. fee \$2.25 per lab. cr. Mr. Cole, Mr. Brink.
103. REPRODUCTION OF FARM ANIMALS. II; 2 cr. The process of reproduction and the internal and external factors affecting it. Prerequisite: Physiology 3 or Veterinary Science 1. Mr. Casida.
104. PLANT GENETICS. II; 3 cr. Inheritance and variation in plants; the chromosomes in relation to plant breeding; mutation; principles of plant improvement. Prerequisite: Genetics 101. Mr. Brink.
105. ANIMAL GENETICS. II; 3 cr. Inheritance of economic and other characters in domesticated animals; study of animal breeding methods; evaluation and analysis of pedigrees; application of genetics to the problems of livestock production. Prerequisite: Genetics 101. Mr. Cole, Mr. Dickerson.
106. BIOMETRIC METHODS. I; 2 cr. Lectures and laboratory work in calculation of statistical measures of variability and correlation and their practical application; tests of significance; analysis of variance. Prerequisite: Same as for Genetics 104. Lab. fee \$2.25. Mr. Brink.
120. SEMINARY. Yr; 1 cr. Consent of instructor required before election. Mr. Cole.

180. TOPICAL WORK. Yr.; \*cr. Either (a) assigned topics in laboratory or field work with reading, conference, and report, or (b) practice work, including practical experience in the various lines of research carried on in the department; problems, technique, and methods of record keeping. For those not prepared to elect Course 200. May be taken in connection with, or subsequent to, Genetics 101; consent of instructor required. Lab. fee \$2.25 per lab. cr. Mr. Cole, Mr. Brink, Mr. Casida, Mr. Irwin, Mr. Rieman.
200. RESEARCH. Yr.; \*cr. Animal genetics, Mr. Cole, Mr. Irwin. Plant genetics, Mr. Brink, Mr. Rieman, Mr. Cooper. Physiology of reproduction, Mr. Casida. Lab. fee \$2.25 per lab. cr.  
(For courses in probability and statistics see Math. 118 and 137.)

## LIBRARY

CLARENCE SCOTT HEAN, B.A., *Librarian*

1. LIBRARY PRACTICE. I; 2 cr. The classification and arrangement of books, filing of bulletins, use of card catalogs, periodical indexes, abstract journals, public documents, standard reference works, including handbooks in the various fields of knowledge, and the compiling of bibliographies. Mr. Hean.



## HORTICULTURE

- JAMES GARFIELD MOORE, M.S., *Professor of Horticulture, Chairman*  
 JAMES JOHNSON, Ph.D., *Professor of Horticulture*  
 JAMES GARFIELD MILWARD, M.S., *Professor of Horticulture*  
 RAY HARLAND ROBERTS, Ph.D., *Professor of Horticulture*  
 FRANZ AUGUST AUST, M.S., M.L.D., *Associate Professor of Horticulture*  
 GEORGE WILLIAM LONGENECKER, M.S., *Associate Professor of Horticulture*  
 GUSTAVE H. RIEMAN, Ph.D., *Associate Professor of Genetics, Horticulture and  
 Plant Pathology*  
 JOHN WILLIAM BRANN, M.S., *Assistant Professor of Horticulture and Plant  
 Pathology*  
 CONRAD LOUIS KUEHNER, B.S., *Assistant Professor of Horticulture*  
 OVA BEETUM COMBS, M.S., *Instructor in Horticulture*  
 LAURENCE GERMAIN HOLMES, B.S., *Instructor in Horticulture*  
 WILLIAM BUTLER OGDEN, M.S., *Instructor in Horticulture*

The courses offered in horticulture permit the student to specialize in fruit growing, landscape design, 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.

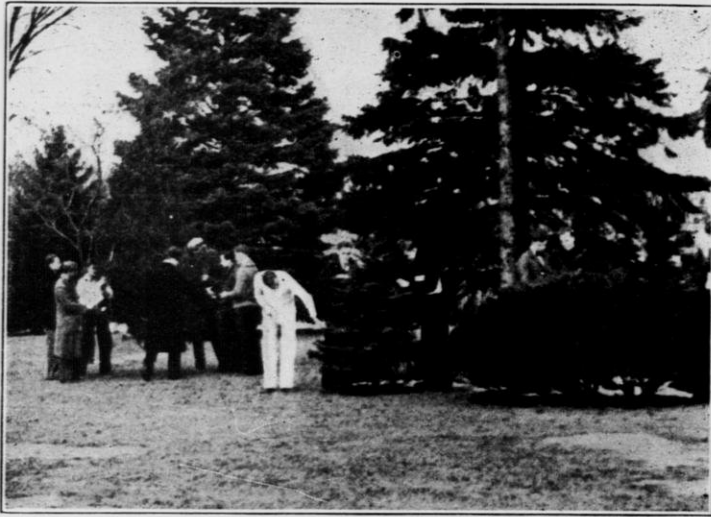
Majors in horticulture may count a maximum of five credits toward the major requirement by electing Economic Entomology 103 or 105 and Plant Pathology 101. Students majoring in Landscape are not required to count as credits in their major the following courses in the Department of Horticulture:

Horticulture 1, 3, 5, and 103. Landscape majors may substitute Art Education 50 for Animal Husbandry 1 and Topographical Engineering 107 or 108 for Mathematics 71 in the freshman year. With the consent of the major adviser Agricultural Economics 117 may be substituted for Agricultural Economics 1, offered in the sophomore year and Rural Sociology 25 or Plant Pathology 101 for Botany 146 in the junior year. Their attention is called to courses in city planning offered by the College of Engineering.

## LANDSCAPE DESIGN

Because the College of Agriculture, College of Engineering, and the School of Education are on the same campus, Wisconsin is enabled to train and develop students in the specialized fields of landscape design, landscape construction, and nature education.

For the student who is interested in science, the openings in the more specialized branches of plant propagation and nursery practice afford an opportunity for service.



PLANNING HOME GROUNDS

For the person who is interested in outdoor life—who is a lover of animal and bird as well as plant life,—there is an ever-widening field of activity in conservation and nature education.

Those who desire professional training in landscape architecture may attend the University of Wisconsin for two years, later transferring for the balance of their course to any one of the several institutions in other states which offer a degree in landscape architecture.

The University of Wisconsin has, for the last twenty years, offered a course in the field of landscape horticulture, landscape design, and landscape construction. It is important that students who wish to enter this field should consult the Professor in charge of landscape work in the Department of Horticulture upon entering the University so that the work taken the Freshman year may be such as to permit suitable arrangements for subsequent courses.

The field of landscape design and construction is extremely diversified and interesting. Its aim is to use the imagination and the organizing abilities so that the beauty and charm of nature can be united with the formal creations and buildings of man. Training in this field requires a fine balance between the fields of art and art appreciation, science and engineering, forestry and agriculture. A great deal of out-door work, tours of inspection, supervision, planting and construction, is an important part of the training. Landscape class problems are selected to enable the student to get the practical application as well as the basic principles involved in the execution of such work.

Openings for men in the field of landscape construction are found in the following branches of service: *National and State Park service* as landscape foremen, superintendents, park naturalists, and supervisors of wilderness areas; *Highway service* as roadside development and highway landscape engineers; *Municipal Park service* as park superintendents, park foremen, superintendents

of cemeteries, and specialists in nature education; and in the *field of private practice*, as construction foremen for landscape architects, maintenance superintendents, nursery foremen and plant propagators, and in private practice offering landscape service.

Openings for women are instructors in gardening at various schools and colleges; specialists in horticultural therapy in hospitals; writing and editorial work for horticultural papers; directors of Girl Scout work; managers of display gardens for the larger nurseries; technical assistants, specialists in garden design, and secretarial work for nurseries; landscape specialists working with home demonstration agencies in university and government service; directors of gardening in subsistence homestead and housing projects; gardening and nature education on private estates; and limited private professional practice.

The following grouping of courses is suggested for those students wishing to major in landscape design. *Courses listed beyond the College requirement are merely suggested and not required.*

SUGGESTED ELECTIVES IN AGRICULTURE

	Credits
Agricultural Economics 14—Farm Business and Legal Practice II; .....	3
Agricultural Economics 117—Outlines of Land Economics I; .....	3
Agricultural Economics 118—Survey of Game Management II; .....	1
Agricultural Economics 179—Urban Land Economics II; .....	3
Agricultural Economics 192—Rural-Regional Planning II; .....	3
Agricultural Engineering 101—Drainage Design I; .....	2
Agricultural Engineering 106—Soil Erosion, Causes and Control I; .....	4
Agricultural Journalism 3—Agricultural Advertising I, II; .....	3
Agronomy 120—Seed and Weed Control I; .....	3
Genetics 1—Principles of Breeding I; .....	4
Home Economics (Related Art) 8—House Decoration I, II; .....	2
Home Economics (Related Art) 18—House Decoration Laboratory I, II; .....	2
Home Economics (Related Art) 95—Weaving: Development and Construction I, II; .....	1-3
Plant Pathology 101—Diseases of Plants I; .....	3
Soils 106—Soil Erosion, Causes and Control I; .....	4
Soils 123—Forest Soils II; .....	3

SUGGESTED ELECTIVES IN HORTICULTURE

	Credits
Horticulture 1—Principles of Fruit Growing I; .....	3
Horticulture 3—Vegetable Gardening II; .....	3
Horticulture 6—Principles of Landscape Design I, II; .....	3
Horticulture 7—Plant Propagation II; .....	2
Horticulture 12—Elementary Home Grounds Design II; .....	3
Horticulture 13—Lawns I; .....	2
Horticulture 14—Landscape Construction Problems Yr; .....	3
Horticulture 100—Thesis Yr; .....	2
Horticulture 101—Advanced Home Grounds Design I; .....	3
Horticulture 102—Public Grounds II; .....	3
Horticulture 104—Landscape Plants Yr; .....	2
Horticulture 110—Seminary Yr; .....	1
Horticulture 180—Horticultural Problems Yr; .....	1-3
Horticulture 192—Rural-Regional Planning II; .....	3

SUGGESTED ELECTIVES OUTSIDE THE COLLEGE OF AGRICULTURE

	Credits
Art Education 18—Architectural Drawing II; .....	2
Art History 22—Elements of Fine Art I; .....	3
Art History 131—American Architecture II; .....	3
Art History 139—Development of Modern Architecture II; .....	3
Art History 159—Development of American Art II; .....	3
Drawing 1—Elements of Drawing I, II; .....	3
Drawing 7—Freehand Lettering I, II; .....	1-2
Music 65—Appreciation of Music Yr; .....	1
Botany 129—Classification of Cultivated Plants I; .....	3
Botany 131—Dendrology II; .....	2
Botany 160—The Flora of Wisconsin II; .....	3-4
Botany 164—Plant Ecology II; .....	3



Engineering 101—Contracts and Specifications II; .....	2
Highway Engineering 102—Highway Engineering II; .....	3
City Planning 101—City Planning I, II; .....	2
City Planning 104—Municipal Engineering Practice I; .....	2
Physics 61—General Physics II; .....	5
Geography 3—Economic Geography I; .....	3
Geography 104—Geography of Wisconsin I; .....	2
Geography 128—Conservation of Natural Resources I, II; .....	3
Geology 17—Survey of Geology: The Earth's Story II; .....	3
Meteorology 1—Weather and Climate I; .....	3
Meteorology 2—Climate and Man II; .....	3
Commerce 6—English in Business I, II; .....	3
Philosophy 25—Philosophy and the Human Enterprise II; .....	3
Philosophy 53—Philosophy of the Arts I; .....	3
Philosophy 153—Current Problems in Aesthetics II; .....	2-3
Political Science 7—American Government and Politics (Nat'l) I, II; ....	3
Political Science 165—History of American Political Thought I, II; .....	3
Speech 1—Fundamentals of Speech I, II; .....	3-2-1
Speech 7—Public Speaking I, II; .....	2

1. **PRINCIPLES OF FRUIT GROWING. I; 3 cr.** The principles of fruit growing and their application to our common tree fruits. Optional subject for all agricultural students. Lab. fee \$2.25. Mr. Moore.
3. **VEGETABLE GARDENING. II; 3 cr.** The growing of vegetables out-of-doors. Practical work in the gardens. Optional subject for all agricultural students. Lab. fee \$4.50. Mr. Moore.
5. **SMALL FRUIT CULTURE. I; 2 cr.** Culture of cane, bush and other small fruits. Offered in 1938-39 and alternate years. Mr. Moore.
6. **PRINCIPLES OF LANDSCAPE DESIGN. I and II; 1938-39; Only I, 1939-40. 3 cr.** Discussion of the principles of landscape art. Field and laboratory work in the study of landscape plants and the making of planting plans. A trip will be taken for the purpose of studying plant materials and nursery practice. Lab. fee \$2.25. Mr. Longenecker.
7. **PLANT PROPAGATION. II; 2 cr.** Principles and practices involved in propagating horticultural plants. Lectures and laboratory. Lab. fee \$2.25. Mr. Moore.
8. **HOME HORTICULTURE. II; 3 cr.** A consideration of the growing and use of plants and flowers for home beautification and the production of vegetables and small fruits for home use. Designed primarily for women. Offered in 1939-40 and alternate years. Lab. fee \$2.25. Mr. Moore.
12. **ELEMENTARY HOME GROUNDS DESIGN. II; 3 cr.** A continuation of Horticulture 6 dealing specifically with the problems of ground beautification. Prerequisite: Hort. 6 or consent of instructor. Lab. fee \$2.25. Mr. Aust, Mr. Longenecker.
13. **LAWNS. I; 2 cr.** A study of ground forms, terracing, grading, and estimating; assigned problems. Prerequisite: consent of instructor. Offered in 1938-39 and alternate years. Lab. fee \$2.25. Mr. Longenecker.
14. **LANDSCAPE CONSTRUCTION PROBLEMS. Yr; 3 cr.** I, Design and construction of walls, steps, ramps, drives, and walks. II, Design and construction of garden features such as pools, bird baths, arbors, and seats. Prerequisite: Hort. 6. Offered in 1939-40 and in alternate years. Lab. fee \$4.50. Mr. Longenecker.

100. THESIS. Yr.; 2 cr. Research work on horticultural subjects. Fees depend upon character of thesis work. Lab. fee \$2.25 per lab. cr. Mr. Aust, Mr. Johnson, Mr. Moore. Mr. Roberts.
101. ADVANCED HOME GROUNDS DESIGN. I; 3 cr. Design of estate, country home grounds, and related problems. Prerequisite: Hort. 6 and 12. Lab. fee \$4.50. Offered in 1939-40 and alternate years. Mr. Aust, Mr. Longenecker.
102. PUBLIC GROUNDS. II; 3 cr. Landscape problems in connection with public buildings. Park and cemetery design. Roadside planting. Lab. fee \$4.50. Offered in 1939-40 and in alternate years. Mr. Aust.
103. CROP IDENTIFICATION AND STANDARDS. I; 2 cr. A consideration of the classification, identification and standards of excellence of field, orchard and garden crops. Laboratory exercises in identification, judging and exhibiting crops. Lab. fee \$2.25. Only one credit of this course may be counted toward a major in Horticulture. (Also listed as Agronomy 103.) Mr. Moore, Mr. Holden.
104. LANDSCAPE PLANTS. Yr.; 2 cr. I; A study of plant forms, color, and texture in landscape design. II; Advanced study of annuals and herbaceous perennials. Prerequisite: Hort. 6. Offered 1938-39 and alternate years. Lab. fee \$2.25. Mr. Longenecker.
110. SEMINARY. Yr.; 1 cr. For advanced and graduate students. Mr. Aust, Mr. Roberts.
122. ADVANCED POMOLOGY. Yr.; 2 cr. Recent theory, and practice regarding problems of commercial orcharding. Lectures, laboratory and field work on fruitfulness, cultural practices, thinning, harvesting, storing, marketing, classification, identification, and judging fruits. First semester problems relating to fruit; second semester problems of orchard practice. Prerequisite: Hort. 1 or consent of instructor. Lab. fee \$2.25. Mr. Roberts.
180. HORTICULTURAL PROBLEMS. Yr.; 1-3 cr. Assigned problems in the phase of horticulture in which the student is particularly interested: (a) fruit growing, Mr. Moore, Mr. Roberts; (b) gardening and floriculture, Mr. Moore, (c) landscape, Mr. Aust, Mr. Longenecker. Lab. fee \$2.25 per lab. cr.
192. RURAL-REGIONAL PLANNING. II; 3 cr. Discussion of the technique and principles of rural-regional planning and zoning; the assembling of basic data underlying a plan for a selected county or region, followed by student reports each covering a segment of the complete project. Only one credit of this course may be counted toward a major in Horticulture. Open to students majoring in the department represented by the staff or the consent of the instructors. Mr. Aust, Mr. Kolb, Mr. Wehrwein.
200. RESEARCH PROBLEMS. Yr.; \*cr. Horticultural problems for students qualifying for advanced degrees. Fee; \$2.25 per lab. cr. Staff.

## MATHEMATICS

MARK HOYT INGRAHAM, Ph.D., *Professor of Mathematics, Chairman*

RUDOLPH ERNEST LANGER, Ph.D., *Professor of Mathematics*

HERMAN WILLIAM MARCH, Ph.D., *Professor of Mathematics*

CYRUS COLTON MACDUFFEE, Ph.D., *Professor of Mathematics*

IVAN STEPHEN SOKOLNIKOFF, Ph.D., *Associate Professor of Mathematics*

HERBERT PULSE EVANS, Ph.D., *Assistant Professor of Mathematics*

STEPHEN COLE KLEENE, Ph.D., *Assistant Professor of Mathematics*

## INSTRUCTORS

FLORENCE ELIZA ALLEN, Ph.D.

STANLEY BARTLETT JACKSON, Ph.D.

CHURCHILL EISENHART, Ph.D.

RICHARD BRANDON KERSHNER, Ph.D.

BERNARD FRIEDMAN, Ph.D.

ROBERT WANNER WAGNER, Ph.D.

DONALD HOLMES HYERS, Ph.D.

71. MATHEMATICS FOR AGRICULTURAL STUDENTS. I; 4 cr. For students presenting one unit of algebra for entrance. Staff.
72. MATHEMATICS FOR AGRICULTURAL STUDENTS. I; 4 cr. For students presenting one and one-half units of algebra for entrance. Staff.
135. INTRODUCTION TO STATISTICAL METHODS IN THE NATURAL SCIENCES. I; 3 cr. An introductory course designed to furnish the student with an elementary knowledge of some of the statistical measures and technique used in the natural sciences. Two lectures; 3 hrs. laboratory. Prerequisite: A freshman course in mathematics. Lab. fee \$2.25. Mr. Eisenhart.

Students who wish to procure a more adequate preparation in mathematical statistics than that furnished by Mathematics 135 should take the courses prerequisite to Calculus followed by Math. 5a, 5b, 118 and 137. Mathematics 54 and 55 may be taken in place of Mathematics 5a and 5b.

## PLANT PATHOLOGY

- GEORGE WANNAMAKER KEITT, Ph.D., *Professor of Plant Pathology, Chairman*  
 JAMES GEERE DICKSON, Ph.D., *Professor of Plant Pathology*  
 BENJAMIN MINGE DUGGAR, Ph.D., *Professor of Physiological and Applied Botany*  
 EDWARD MARTINIUS GILBERT, Ph.D., *Professor of Botany and Plant Pathology*  
 LEWIS RALPH JONES, Ph.D., Sc.D., *Emeritus Professor of Plant Pathology*  
 ALBERT JOYCE RIKER, Ph.D., *Professor of Plant Pathology*  
 RICHARD ENGLISH VAUGHAN, M.S., *Professor of Plant Pathology*  
 JOHN CHARLES WALKER, Ph.D., *Professor of Plant Pathology*  
 GUSTAVE H. RIEMAN, Ph.D., *Associate Professor of Genetics, Horticulture and Plant Pathology*  
 JOHN WILLIAM BRANN, M.S., *Assistant Professor of Horticulture and Plant Pathology*  
 CLARICE AUDREY RICHARDS, Ph.D., *Lecturer in Forest Products*  
 RUSSELL H. LARSON, Ph.D., *Research Associate in Plant Pathology*  
 OTIS C. WHIPPLE, B.S., *Instructor in Plant Pathology*

Courses 104, 220, 221, 249 and 252 are offered in the Department of Botany, College of Letters and Science, and do not count toward the 50 credits required in the College of Agriculture.

100. THESIS. Yr.; 2 cr. Investigation of some problem in plant pathology. Subject should be chosen early, preferably the preceeding spring, in order to take advantage of the summer season to secure material. Lab. fee \$2.25 per lab. cr. Staff.
101. DISEASES OF PLANTS. I; 3 cr. The nature, causes and remedies of the diseases of economic plants, including field and laboratory studies of a typical series of examples. Prerequisites: Botany 1 and Agr. Bact. 1. Lab. fee \$4:50. Mr. Walker, Mr. Backus.
102. METHODS IN PLANT PATHOLOGY. I; 3 cr. Research procedure including: use of the literature, isolation and inoculation practices, special technique according to individual needs, and preparation of manuscripts. Prerequisite: Plant Path. 101. Lab. fee \$4.50. Mr. Riker.
104. MORPHOLOGY OF FUNGI. I; 3 cr. Prerequisite: Botany 1. Lab. fee \$3.50. Mr. Gilbert.
116. DISEASES OF FIELD CROPS. II; 2 cr. Arranged to meet the needs of students in plant pathology and agronomy. Prerequisite: Plant Path. 101. Not offered 1938-39. Lab. fee \$2.25. Mr. Dickson.
117. DISEASES OF ORCHARD FRUITS. II; 2 cr. A study of the more important diseases of deciduous orchard fruits. Prerequisite: Plant Path. 101. Not offered 1938-39. Lab. fee \$2.25. Mr. Keitt.
119. FUNGUS DETERIORATION OF FOREST PRODUCTS. I; 2 cr. A survey of the cause and prevention of stains and decay in forest products, and control

- measures. Prerequisite: Plant Path. 101 and Botany 220. Not offered in 1938-39. Lab. fee \$2.25. Miss Richards.
120. DISEASES OF VEGETABLE CROPS. II; 2 cr. A study of the more important field and storage diseases of vegetable crops. Prerequisite: Plant Path. 101. Offered 1938-39 and in alternate years. Lab. fee \$2.25. Mr. Walker.
122. FUNGICIDES IN RELATION TO HOST AND PARASITE. II; 1 cr. Advanced course, intended primarily for students in plant pathology, horticulture, and economic entomology. Prerequisite: Plant Path. 101. Offered 1938-39 and in alternate years. Mr. Keitt.
200. RESEARCH. Yr.; \*cr. Lab. fee \$2.25 per lab. cr. Staff.
220. ADVANCED MYCOLOGY. Yr.; 2 cr. Prerequisite: Botany 104. Lab. fee \$2.00. Mr. Gilbert.
221. CLASSIFICATION OF PARASITIC FUNGI. Yr.; 1 cr. Prerequisite: Botany 104 or Plant Path. 101. Mr. Backus, Mr. Green.
223. SEMINARY IN PLANT PATHOLOGY. Yr.; 1 cr. For advanced and graduate students. Mr. Keitt.
249. SPECIAL PHYSIOLOGY OF PATHOGENIC FUNGI. II; 2 cr. Prerequisite: Botany 146. Mr. Duggar.
252. CYTOLOGY OF FUNGI. II; 2 cr. Prerequisite: At least one semester of general cytology. Lab. fee \$1.50 per cr. Mr. Gilbert.

## POULTRY HUSBANDRY

JAMES GARFIELD HALPIN, B.S., *Professor of Poultry Husbandry, Chairman*  
 JOHN BARRY HAYES, B.S., *Professor of Poultry Husbandry*  
 GERALD EVERETT ANNIN, B.S., *Assistant Professor of Poultry Husbandry*  
 CLAYTON ERNEST HOLMES, M.S., *Assistant Professor of Poultry Husbandry*  
 WINDSOR CRAVENS, M.S., *Assistant in Poultry Husbandry*  
 MAURICE H. MESHEW, B.S., *Assistant in Poultry Husbandry*

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. Poultry majors should supplement their training by electing such courses as Animal Husbandry 126, Biochem. 1, Agr. Econ. 127 and 128, and Genetics 1. Students preparing for educational work along the more scientific lines should elect Chemistry 120, Biochem. 110, Zoology 105 and 109. Not to exceed five credits from the following courses may be counted as a portion of the major requirement in poultry husbandry; Veterinary Science 120, Parasites of Domestic Animals; Veterinary Science 125, Diseases of Poultry; Animal Husbandry 126, Livestock Feeding; Biochemistry 110, Principles of Biochem-

istry; Agricultural Economics 127, Cooperative Marketing; Agricultural Economics 128, Marketing Agricultural Products; Genetics 105, Animal Genetics.

1. **POULTRY RAISING. I;** 3 cr. A general survey course designed to give the student an understanding of the problems concerned in poultry raising. Emphasis is given to the study of judging for egg production. Optional subject for all agricultural students. Lab. fee \$2.25. Mr. Holmes, Mr. Cravens.
8. **MARKETING POULTRY PRODUCTS. I;** 3 cr. A study of the factors that tend to produce quality in market poultry and eggs. Methods of marketing poultry and eggs. Laboratory practice in caponizing; dressing, grading, and packing market poultry; candling, grading, and packing market eggs. Lab. fee \$2.25. Mr. Annin, Mr. Meshew.
100. **THESIS. Yr.;** 2 cr. Lab. fee \$2.25 per lab cr. Mr. Halpin, Mr. Holmes, Mr. Annin.
102. **POULTRY FEEDS AND FEEDING. I;** 3 cr. A study of poultry feeds and formulation of poultry rations with special reference to the mineral, protein, and vitamin requirements. The influence of recent investigation upon modern methods of poultry feeding. Prerequisite: Poultry Husbandry 1 or Animal Husbandry 126. Offered 1938-39 and in alternate years. Mr. Halpin, Mr. Cravens.
105. **HATCHERY MANAGEMENT. II;** 3 cr. A study of the factors influencing the fertility and the hatchability of eggs; a study of practical chick embryology. Brooding requirements of baby chicks; cost of production and methods of marketing. Prerequisite: Poultry Husbandry 1. Offered 1937-38 and in alternate years. Lab. fee \$2.25. Mr. Holmes.
106. **POULTRY JUDGING. I;** 3 cr. Origin, history, and points of excellence of the various breeds and varieties of poultry as described in the American Standard of Perfection. A study of the inheritance of common characters in poultry. Prerequisites: Poultry Husbandry 1 or Genetics 1. Offered 1937-38 and in alternate years. Lab. fee \$2.25. Mr. Halpin, Mr. Annin.
107. **ADVANCED POULTRY MANAGEMENT. II;** 3 cr. Influence of recent investigations in poultry husbandry as they affect modern methods of feeding, housing, breeding, care and management of poultry. Offered in 1938-39 and in alternate years. Prerequisite: Poultry Husbandry 1. Mr. Halpin.
200. **RESEARCH PROBLEMS. Yr.;** \*cr. Lab. fee \$2.25 per lab. cr. Mr. Halpin, Mr. Holmes, Mr. Annin.

## RURAL SOCIOLOGY

JOHN HARRISON KOLB, Ph.D., *Professor of Rural Sociology, Chairman*  
 ARTHUR FREDERICK WILEDEN, M.S., *Associate Professor of Rural Sociology*  
 JOHN RECTOR BARTON, B.D., *Assistant Professor of Rural Sociology*  
 GEORGE WILLIAM HILL, B.A., *Assistant Professor of Rural Sociology*

Social and human relationships in modern agriculture are of increasing importance. This is true when viewed from any standpoint, whether of the farm and home, the professional worker as teacher, extension worker, clergy, editor, or the various agricultural industries. Courses in this department seek to give a broad as well as an intensive view of the rapidly changing phases of rural life. Changes imply adjustments in the many social institutions and agencies working in rural society, such as family, school, church, store, newspaper, farmers' organization, or marketing association. Farming needs to be considered as a mode of life and as a series of group relations beginning with the family and extending to the neighborhood, the town-country community and, in these days of rapid travel, even on to the city.

There are at least two ways in which students may work in the field of Rural Sociology. First, a program leading to a full major and looking toward teaching, research, or extension work may be arranged. In such a plan 10 credits shall be taken in the department and 5 credits selected in any one of the following departments: Agricultural Economics, Agricultural Education, Agricultural Journalism, Horticulture, Home Economics, or Sociology in the College of Letters and Science. Credits thus chosen in Letters and Science may count on the major, but shall not be counted as a portion of the 50 credits required in agricultural subjects. Second, courses in the department may be selected as electives by students majoring in other departments, who wish to gain a wider perspective concerning the social arrangements of present-day rural society.

25. RURAL LIFE. I; 3 cr. The study of rural society. Its organization and relations, such as families, neighborhoods, villages, interest groups, town-country and rural-urban relations; its people, such as their changing characteristics and mobility; its social institutions, such as those for education, religion, standards of living, sociability, recreation, health, social welfare, local government. Prerequisite: Sophomore standing. Mr. Kolb.
100. THESIS. Yr.; 2 cr. Original work on problems pertaining to rural communities. Staff.
125. RURAL SOCIAL TRENDS. I; 2 cr. An advanced course in the study of rural society through a systematic examination of important source materials from Europe and America, and recent findings in rural social trends. A consideration of problems arising out of the impact of certain trends in rural social organization. Mr. Barton.
126. RURAL STANDARDS OF LIVING. II; 2 cr. Development of standards of living in rural communities. A study of all elements composing the standard of living such as food, housing, clothing, transportation, education, recreation in relation to various material and non-material conditioning factors. Special reference is made to the growth of a consumer consciousness

- in rural areas, and the various agencies, governmental and cooperative, which give it expression. Prerequisite: Junior standing or consent of instructor. Mr. Barton.
192. RURAL-REGIONAL PLANNING. II; 3 cr. Discussion of the technique and principles of rural-regional planning and zoning, the assembling of basic data underlying a plan for a selected county or region, followed by student reports each covering a segment of the complete project. Only one credit of this course may be counted toward a major in Rural Sociology. Open to students majoring in the departments represented by the staff or the consent of the instructors. Mr. Kolb, Mr. Aust, Mr. Wehrwein.
200. RESEARCH AND THESIS. Yr.; \*cr. Rural social organization and trends. Mr. Kolb. Community organization, leadership and extension methods. Mr. Wileden. Rural standards of living and social aspects of consumer activities. Mr. Barton. Social and family relations in public welfare. Mr. Hill.
225. SEMINARY IN RURAL SOCIAL RESEARCH. I; 2 cr. Emphasis upon the scope and method of research in this field. Case studies of current research projects with particular attention to those concerned with various phases of community organization, standards of living, rural population, farmers' organizations, social institutions, rural government, social psychology and social trends. Mr. Kolb.

## SOILS

- ANDREW ROBINSON WHITSON, B.S., *Professor of Soils, Chairman*  
 CLINTON JOSEPH CHAPMAN, B.S., *Professor of Soils*  
 EDWARD JOHN GRAUL, M.S., *Professor of Soils*  
 FREDERICK LUDWIG MUSBACH, B.S., *Professor of Soils (Marshfield)*  
 EMIL TRUOG, M.S., *Professor of Soils.*  
 SERGIUS ALEXANDER WILDE, Dr. Tech. Sci., *Associate Professor of Soils*  
 OTTO REINHART ZEASMAN, B.S., *Associate Professor of Soils and Agricultural Engineering*  
 ARTHUR ROBERT ALBERT, B.S., *Assistant Professor of Soils (Hancock)*  
 HAROLD HAIGHT HULL, Ph.D., *Instructor in Soils*  
 ROBERT JOHN MUCKENHIRN, Ph.D., *Instructor in Soils*

Soils 1 or its equivalent is prerequisite to all other courses in soils. Soils 1 and 126 are general in character and are adapted to the needs of all students of agriculture. The summer period is particularly suited to field studies and advanced work in soil fertility.

GENERAL MAJOR. Students majoring in soils and preparing for practical farming positions as farm managers, teachers of agriculture, or county agricultural agents, should elect courses in Physics, Botany, Mathematics, Agr. Economics, Agr. Engineering, Agronomy, Animal Husbandry, Agr. Bacteriology, and Geology to supplement the required work in soils.

TECHNICAL MAJOR. Students desiring to prepare for the work of soil surveying, land classification or field experimentation should follow the general suggestions given above for the general major, but choose supplementary elec-



tives from the following group: Agr. Engr. 1, 101, 106; Agronomy 102, 106; Botany 129; Chemistry 11 or 12; Geography 106; Geology 1, (10 cr.) 11, 133; Land Economics 117; and a foreign language in addition to all courses in soils.

Students preparing to become soil chemists or physicists should elect courses in Chemistry 12, 3 cr.; Geology 17, 3 cr.; Agronomy 102, 2 cr., 106, 3 cr.; Chemistry 120, 3 or 5 cr.; German or French; and Agr. Bact. 123, 3 cr.; Chemistry 130, 5 cr., in the senior year; in addition to all courses in Soils.

Not to exceed 5 credits from the following courses may be counted as a portion of the undergraduate major requirement in Soils; Agr. Bact. 123, 3 cr.; Geology 1, 5 cr.; Geology 17, 3 cr.; Agronomy 102, 2 cr.; Agronomy 106, 3 cr.

Students are urged to consult a member of the department not later than the second semester of their sophomore year so that a logical sequence of courses may be arranged.

### SOIL TECHNOLOGY

The following is suggested as a suitable grouping of courses for a technical major in Soils. *Courses listed beyond the College requirements are merely suggested and not required.*

#### FRESHMAN YEAR

All subjects required—see freshman year on page 17.

Take Math. 1

#### SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Soils 1—Soils and soil fertility .....	4	Soils 126—Fertilizers and soil management .....	2
Agr. Bact. 1—General Survey .....	4	Agr. Econ. 1—Prin. of agr. econ. ....	3
Econ. 1a—General economics .....	4	Bot. 146—Plant physiology .....	4
Agr. Engr. 1—Surveys & Structures .....	4	Math. 2—Trig. & anal. geometry .....	4
Electives .....	0-2	Agr. Option .....	3
	16-18	Electives .....	0-2
			16-18

#### JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Soils 127—Soil science .....	2	Soils 121—Soil analysis .....	4
Agron. 102—Pastures .....	2	Soils 122—Soil physics .....	3
Geology 1—General geology .....	5	Soils 125—Origin & classification .....	3
Chem. 12—Quantitative analysis .....	3	Chem. 20 & 21—Organic chemistry .....	4
Physics 1 or Electives .....	5	Agron. 106—Forage crops .....	2
	17	Electives .....	2
			18

#### SENIOR YEAR

First Semester	Credits	Second Semester	Credits
> Physical Chem. or Language .....	5	> Geog. 6—Regional econ. geography .....	3
Agr. Bact. 123—Soil bacteriology .....	3	Soils 123—Forest soils .....	3
Plant Path. 101—Diseases of plants .....	3	> Soils 128—Seminary .....	1
> Soils 128—Seminary .....	1	Soils 180 or thesis .....	2-4
Soils 180 and electives .....	4-6	Agr. Econ. 117—Outlines of land econ. ....	2
	16-18	Electives .....	5
			16-18

1. SOILS AND SOIL FERTILITY. I; 4 cr. Discussions and laboratory work on the formation, composition, properties, fertility, and management of soils in relation to the growth of plants. Prerequisite: Chemistry 1b. Lab. fee \$4.50. Mr. Graul, Mr. Muckenhirn.
100. THESIS. Yr.; 2 cr. Lab. fee \$2.25 per lab. cr. Mr. Whitson and staff.
106. SOIL EROSION, CAUSES AND CONTROL. I; 4 cr. Extent and kinds of erosion. Rate of water absorption and soil erodability as affected by rainfall, soil,

- vegetation and cultural practices. Erosion control structures, including surveys for terraces, terrace outlets, and soil saving dams. Saturday forenoons reserved for field and laboratory. Joint, Soils and Agricultural Engineering. Only two credits of this course may be counted toward a major in Soils. Prerequisites: Soils 1, and a course in topographic mapping. Mr. Whitson, Mr. Zeasman.
121. SOIL ANALYSIS. II; 4 cr. Lectures and laboratory. Soil acidity and base exchange methods, availability methods for essential elements and fertilizer requirements, complete soil analysis, including separation and analysis of soil colloids. Prerequisites: Soils 1, Chemistry 12. Lab. fee \$4.50. Mr. Truog.
122. SOIL PHYSICS. II; 3 cr. Lectures and laboratory work on the physical properties of soils and the methods of physical soil analysis, with applications to crop production and engineering. Prerequisites: Soils 1 or graduate standing, and Chemistry 12 or course in Physics. Lab. fee \$2.25. Mr. Muckenhirn.
123. FOREST SOILS. II; 3 cr. Lectures and one 2-hr. lab. period. Forest physiography. Physics, chemistry, biology and genesis of forest soils. Relation of forest vegetation to soil. Forest soil survey. Silviculture on different soils. Management of nursery soils. Prerequisite: Soils 1, Chemistry 1, Gen. Botany. Mr. Wilde.
125. SOIL AND LAND CLASSIFICATION; AGRICULTURAL CLIMATOLOGY. II; 3 cr. Lectures and field work in soil mapping. The principles of climatology, soil origin and land classification in relation to agriculture, including a study of the soils and climate of the chief foreign countries. Prerequisite: Soils 1 or graduate standing. Mr. Whitson.
126. FERTILIZERS AND SOIL MANAGEMENT. II; 2 cr. Lectures and discussions on the composition, manufacture, and characteristics of artificial fertilizers. Methods of application, deportment in the soil, and practical use in the management of soils, and in crop production. Prerequisite: Soils 1. Mr. Graul.
127. SOIL SCIENCE AND PLANT NUTRITION. I; 2 cr. Lectures and discussions. The constitution of the soil, especially as a medium for plant growth. The nature and importance of soil colloids. The newer application of scientific principles to such problems as soil acidity, use of fertilizers, soil amendments, and toxic agents. Prerequisite: Soils 1 or graduate standing. Mr. Truog.
128. SEMINARY IN SOILS. I; 1 cr., Mr. Truog. II; 1 cr., Mr. Whitson.
180. TOPICAL AND FIELD WORK. I, II; \*cr. Staff.
200. RESEARCH. I, II; \*cr. Lab. fee \$2.25 per lab cr. Staff.

### VETERINARY SCIENCE

FREDERICK BROWN HADLEY, D.V.M., *Professor of Veterinary Science, Chairman*

BURR ABRAHAM BEACH, D.V.M., *Professor of Veterinary Science*

CHESTER ALBERN HERRICK, Sc.D., *Associate Professor of Veterinary Science and Zoology*

EDWIN REINHOLD CARLSON, D.V.M., M.S., *Instructor in Veterinary Science*

LLOYD C. FERGUSON, D.V.M., M.S., *Instructor in Veterinary Science*  
 SAMUEL WAXLER, B.A., *Assistant in Veterinary Science*

The subjects described below give students an appreciation of the various branches of veterinary science. They are taught largely by the laboratory method. Besides giving information needed for the intelligent care and management of sick animals, they aid advanced students to secure a knowledge of animal breeding, animal hygiene, animal pathology, animal parasitology and veterinary bacteriology.

The undergraduate subjects numbered from 1 to 100 are non-technical. The subjects with numbers above 100 are designed for graduate and advanced undergraduate students. Some of them are comparable with courses offered in a regular veterinary curriculum; others are especially suited to the needs of advanced students in the College of Agriculture and to those who contemplate qualifying for the combined degrees of Bachelor of Science and Doctor of Veterinary Medicine.

1. THE ANIMAL BODY. I; 3 cr. The structure, functions, and derived products of the animal body. The student learns about the form, capacity and productivity of farm animals as well as the fundamentals relative to their feeding and breeding. Optional subject for all agricultural students. Lab. fee \$4.50. Mr. Hadley.
2. NON-INFECTIOUS DISEASES OF LIVESTOCK. I; 2 cr. Their causes, symptoms, and prevention, including conformation and soundness. Mr. Hadley.
100. THESIS. Yr.; 2 cr. Lab. fee \$2.25 per lab. cr. Mr. Hadley, Mr. Beach, Mr. Herrick.
120. PARASITES OF DOMESTIC ANIMALS. I; 3 cr. Structure, life history, diagnosis and prevention of parasites of the lower animals. Prerequisite: Zool. 1 or Vet. Science 1. Lab. fee \$5.00. Mr. Herrick.
123. INFECTIOUS DISEASES OF LIVESTOCK. II; 2 cr. Their causes, control and eradication. Prerequisite: A course in veterinary science or bacteriology. Mr. Hadley.
125. DISEASES OF POULTRY. II; 2 cr. A study of the more common diseases of poultry. Prerequisite: Vet. Science 1 or Poultry Husb. 1. Not offered 1938-39. Mr. Beach.
126. INFECTION AND IMMUNITY. II; 3 cr. An experimental study of the principles of infection and immunity. Prerequisite: A course in bacteriology. Offered 1938-39. Lab. fee \$4.50. Mr. Hadley, Mr. Ferguson.
127. FUR FARMING. II (last half of semester); 1 cr. The theory and practice of propagating fur-bearing animals. Emphasis will be placed on methods followed by successful fur farmers. Prerequisite: Sophomore standing. Mr. Hadley.
180. TOPICAL WORK. Yr.; \*cr. Assigned work for advanced students. Mr. Hadley and staff.
200. RESEARCH. Yr.; 2 cr. Lab. fee \$2.25 per lab cr. Mr. Beach, Mr. Hadley, Mr. Herrick.

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JOHN CALLAHAN, State Superintendent of Public Instruction, <i>ex officio</i>	

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