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BULLETIN

VOLUME XLI

FEBRUARY 23, 1937

NUMBER 11

COLLEGE OF AGRICULTURE

1937 - 1938

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COLLEGE OF AGRICULTURE

1937-1938

**THE OHIO STATE UNIVERSITY
COLUMBUS**

CONTENTS

	PAGE
Administration	6
Admission	15
Automobiles, Student.....	14
Broadcasting Service, Instruction for.....	50
Bulletins Issued by the University.....	98
Calendars.....	4, 5
College of Agriculture.....	11
Cost of a Year's Work.....	20
Curricula in Agriculture.....	28
Suggested Programs	28
Specialized Curricula.....	36
Professional Curriculum in Agricultural Engineering.....	36
Home Economics.....	43
Combination Curricula.....	44
Departments of Instruction.....	50
Farmers' Week	49
Fees and Expenses.....	17
Freshman Week	16
General Information.....	11
Graduation	25
Junior Deans.....	10
Junior School of Agriculture.....	12, 44
Laboratory, Franz Theodore Stone.....	12
Living Arrangements	21
Marking System and Point System.....	23
Military Science	13
Officers and Faculty.....	7
Ohio State University, The.....	10
Part-time Employment	22
Penalties—Special Fees	19
Plant Institute.....	12
Registration	16
Return of Fees on Withdrawal.....	19
Rules and Regulations.....	23
Scholarships	12
School of Home Economics.....	11
Short Courses in Agriculture.....	12, 49
Student Personal Expense Funds.....	20
Teachers Placement Service.....	14
Transfer Student Day.....	17
University Health Service.....	14

CALENDAR FOR 1987

JANUARY.							FEBRUARY.							MARCH.							APRIL.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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31																											

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JANUARY.							FEBRUARY.							MARCH.							APRIL.						
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MAY.							JUNE.							JULY.							AUGUST.						
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SEPTEMBER.							OCTOBER.							NOVEMBER.							DECEMBER.							
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UNIVERSITY CALENDAR

1937

SUMMER QUARTER

May 24 to 28

June 21 to 28

June 21

June 22

June 26

July 4

July 26, 27, 28

July 23, 24

July 28

July 29

July 31

September 1, 2, 3

September 3

September 3

Entrance Examinations.

Physical Examinations for all new students.

Latest day for registration and payment of fees without penalty. (See page 18).

Classes begin, 7:30 A.M.

Intelligence Test for all new students (Saturday P.M.).

Independence Day.

Final Examinations, first term (at regular class hours).

Physical Examinations for all new students.

First term ends, 5:30 P.M.

Second term begins, 7:30 A.M.

Intelligence Test for all new students (Saturday P.M.).

Final Examinations (at regular class hours).

Summer Convocation (Commencement), 2:00 P.M.

Summer Quarter ends, 6:00 P.M.

AUTUMN QUARTER

September 20 to 24

September 22 to 27

September 27

September 27

September 28

October 2

November 11

November 25, 26, 27

December 17, 18, 20, 21, 22

December 22

December 22

Entrance Examinations.

Freshman Week.

Physical Examinations for students other than Freshmen.

Latest day for registration and payment of fees without penalty. (See page 18).

Classes begin, 8:00 A.M.

Intelligence Test for all new students other than Freshmen (Saturday A.M.).

Armistice Day. No classes after 12 M.

Thanksgiving Recess.

Final Examinations.

Autumn Convocation (Commencement), 2:00 P.M.

Autumn Quarter ends, 6:00 P.M.

1938

WINTER QUARTER

January 3 to 6

January 3

January 4

January 8

February 22

March 15, 16, 17, 18, 19

March 18

March 19

Physical Examinations for all new students.

Latest day for registration and payment of fees without penalty. (See page 18).

Classes begin, 8:00 A.M.

Intelligence Test for all new students (Saturday A.M.).

University Day. No classes.

Final Examinations.

Winter Convocation (Commencement), 2:00 P.M.

Winter Quarter ends, 6:00 P.M.

SPRING QUARTER

March 28

March 29

March 28 to 30

April 2

May 27

May 30

June 7, 8, 9, 10, 11

June 11

June 12

June 13

June 13

June 13

June 20

September 2

October 4

Latest day for registration and payment of fees without penalty. (See page 18).

Classes begin, 8:00 A.M.

Physical Examinations for all new students.

Intelligence Test for all new students (Saturday A.M.).

R.O.T.C. Review and Presentation of Commissions.

Memorial Day. No classes.

Final Examinations.

Alumni Day.

Baccalaureate Sermon.

Class Day.

Spring Convocation (Commencement).

Spring Quarter ends.

Summer Quarter (1938) begins.

Summer Quarter (1938) ends.

Autumn Quarter (1938) classes begin.

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THE OHIO STATE UNIVERSITY

LOCATION

The Ohio State University is situated within the corporate limits of the city of Columbus. It is supported by appropriations from the State and Federal governments. The University has almost 1,400 acres of land with nearly 400 acres in the campus. The total value of land, buildings, and equipment is \$22,888,501.00.

ORGANIZATION

For convenience of administration the departments of the University are grouped into organizations called Colleges. The Ohio State University comprises ten Colleges and a Graduate School, each under the administration of a Dean and College Faculty, as follows:

Graduate School, College of Agriculture (including the School of Home Economics), College of Arts and Sciences, College of Commerce and Administration (including the Schools of Journalism and Social Administration), College of Dentistry, College of Education (including the School of Nursing), College of Engineering (including the School of Mineral Industries), College of Law, College of Medicine, College of Pharmacy, College of Veterinary Medicine.

THE UNIVERSITY YEAR—FOUR QUARTERS

The University year is divided into four Quarters, approximately eleven weeks in length. The Summer Quarter is further divided into two terms of approximately six weeks each. Complete courses that are so announced may be taken for either term or for the entire Quarter.

This *Bulletin* is devoted to the work of the College of Agriculture for the Autumn, Winter, and Spring Quarters, 1937-1938. The announcements for the Summer Quarter are printed in the Summer Quarter Bulletin.

NOTE: Bulletins describing the work of the several Colleges may be obtained by addressing the University Examiner, Ohio State University, Columbus, and stating the College in which the writer is interested. (For list of bulletins, see the last page.)

JUNIOR DEANS

The Junior Deans are the chief advisers of the Freshmen and Sophomores in all University matters. They keep a close supervision over the work of these students and help them to adjust themselves to their new surroundings.

The Junior Council, consisting of the Junior Deans and certain other members of the University Faculty under the leadership of the President of the University, have under consideration constantly the problems of providing more satisfactory methods of instruction for the increasing number of underclassmen, as well as the problem of adjusting the curricula of the various colleges to meet the varying needs of particular groups of students.

COLLEGE OF AGRICULTURE

GENERAL INFORMATION

The offices of the President of the University, the University Examiner, the Registrar, and the Bursar are located in the Administration Building.

The office of the College of Agriculture is located in Room 100, Townshend Hall, on the west side of the University Campus, on Neil Avenue. The office is open from 8 A. M. to 5 P. M., except Saturday. On Saturday the office hours are from 8 A. M. to 12 M.

SCOPE OF WORK OFFERED

The College of Agriculture offers instruction in the fundamental sciences as well as special and technical training in the various branches of Agriculture and Home Economics. The courses offered form a broad foundation for specialized training. The College includes the following departments: Agricultural Education, Agricultural Chemistry, Agricultural Engineering, Agronomy, Animal Husbandry, Botany, Dairy Technology, Horticulture and Forestry, Poultry Husbandry, Rural Economics, and Zoology and Entomology. It also includes the School of Home Economics.

FOUR-YEAR CURRICULA

The four-year curricula of this College consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Animal Science, Applied Entomology, Dairy Production, Dairy Technology, Horticulture (Pomology, Vegetable Gardening, Floriculture), Plant Science, Rural Economics and Rural Sociology, and Home Economics.

HOME ECONOMICS

The School of Home Economics, which is under the supervision of the College of Agriculture, aims to give general training in home economics and also to provide special opportunity for study of the problems of home making, teaching, extension work, hospital dietetics, textiles and clothing, institutional management, social welfare work, and other phases of the home economics field. Students desiring to specialize should consult the Director of the School not later than the close of the second year.

Its curriculum leads to the degree, Bachelor of Science in Home Economics.

GRADUATE COURSES

All departments in the College of Agriculture offer opportunities for graduate study. The Bulletin of the Graduate School gives full information concerning the requirements and nature of this work. This bulletin may be obtained upon application to the University Examiner.

All graduate students registered in "600" courses are required to complete a certain amount of work in addition to that required of undergraduates. This

may consist of reading additional books on the subject, the presentation of reports, or of such other work as the instructor in charge of the course may designate.

GRADUATE CREDIT FOR SENIORS

A Senior whose full time is not required for the completion of the work for his baccalaureate degree, may select certain courses for graduate credit, *but to do this the permission of the Graduate Council (Room 106, University Hall) must be obtained before registering for the course.*

THE JUNIOR SCHOOL OF AGRICULTURE

In order to meet the needs of those who cannot spend four years at college, the College of Agriculture has set up a plan whereby students may come for two years or less and take courses in Agriculture or Home Economics. Under efficient and sympathetic guidance students may elect most of their work in the College of Agriculture, so that they may get the particular instruction they wish. When 100 hours of credit have been earned a certificate will be awarded. The entrance requirements are the same as for the four-year courses.

THE FRANZ THEODORE STONE LABORATORY

The University maintains a Laboratory on Gibraltar Island, Put-in-Bay, Ohio, during the Summer Quarter, which provides opportunity for the study of the biology of the Lake Region and for giving certain advanced courses of instruction in Zoology, Entomology, and Botany.

SHORT COURSES

The College of Agriculture offers Short Courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in Agricultural Engineering, Animal Husbandry, Dairy Technology, Floriculture, Horticulture, Poultry Husbandry, and Rural Economics. They vary in length from a few days to eight weeks. There are no educational requirements for admission to these courses.

Special circulars describing the Short Courses will be mailed on request. (See page 49.)

SCHOLARSHIPS

There are eighty scholarships, good for the four-year courses in the College of Agriculture. Twenty of these scholarships are assigned to each of the four districts into which the State is divided by the State Director of Education for the purpose of supervising agricultural instruction given in public schools. Each scholarship is good for four years, and five of them become available in each district each year. They are awarded to members of the graduating class of first and second grade high schools, through a competitive examination in high school agriculture that is held under the supervision of the State Director of Education and the Dean of the College of Agriculture. Each scholarship has a value of \$60.00 a year, which covers the University fixed fees.

For further information concerning these scholarships address the Dean of the College of Agriculture, The Ohio State University, Columbus.

THE PLANT INSTITUTE

The Plant Institute of the Ohio State University is an organization within the College of Agriculture for furthering research with plants. It affords graduate students the combined facilities of the departments of Botany, Horticulture, Agricultural Chemistry, and Agronomy.

The instructional force and graduate students of these departments meet for the discussion of problems connected with plant life.

THE ANIMAL INSTITUTE

The Animal Institute is an organization drawing its membership largely from the College of Agriculture and the College of Veterinary Medicine. It encourages and promotes research in the animal field. Members are drawn from the teaching staffs and graduate students of the departments of Agricultural Chemistry, Animal Husbandry, Poultry Husbandry, Zoology and Entomology, in addition to the College of Veterinary Medicine, and they meet to discuss problems in the animal field.

COOPERATIVE WILDLIFE RESEARCH STATION

The Ohio Cooperative Wildlife Research Station is located on the campus. It is supported by contributions through the U. S. Bureau of Biological Survey, the Ohio Division of Conservation and the Ohio State University for the purpose of scientific research in wildlife problems. Under the supervision of the director of the station, and in collaboration with various university departments, the actual work in field and laboratory is carried on by students working toward a Master's or a Doctor's degree. At intervals fellowships are available to such advanced students.

MILITARY SCIENCE

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curricula. The Board of Trustees therefore requires all male students, both special and regular, unless excused by the Department of Military Science and Tactics, to receive military instruction during the first two years of Engineer Corps, Field Artillery, or Signal Corps.

The Reserve Officers' Training Corps was established under the National Defense Act of June 3, 1916, and June 4, 1920, the required two years' work being included in its four-year course, the third and fourth years being elective. Instruction is given in Engineer Corps, Field Artillery, and Signal Corps.

Uniform is furnished Freshmen upon deposit of approximately \$25.00 being made with the Contractor. The University has adopted its own style of uniform, which is required to last two years. Last year the Basic Course students were paid commutation of uniform amounting to \$9.00 each for the academic year. This allowance is prorated monthly to students who did not remain in attendance during the entire academic year, but is paid by the Bursar in whole or in part only at the close of the Spring Quarter of each academic year.

Students taking Advanced Courses in Military Science receive commutation of rations which last year amounted to twenty-five cents a day and is payable quarterly, and commutation of uniform which last year amounted to \$29.00 for the First Year Advanced men (Juniors), and to \$7.00 for the Second Year Advanced men (Seniors).

The total credit in this department allowed toward a degree is eighteen Quarter-hours, exclusive of Field Artillery 421-422-423, 424-425, 426, Signal Corps 441-442-443, 444-445-446, or Engineer Corps 407-408-409, 410-411-412, required of all male students in the first and second years, for which six credit hours are granted.

Enrollment in the Engineer Unit will be confined to students of the Engineering College. Engineering students who intend to take Electrical Engineering or Engineering Physics are eligible for the Signal Corps Unit. All other students required to take Military Science will be assigned to the Field Artillery Unit.

THE JOHN GORDON BATTELLE MILITARY PRIZE

The income of the John Gordon Battelle fund, established in 1916, is to be used as a yearly prize for senior officers in the cadet regiments of the Infantry and Field Artillery Units for the best solution of a military map problem. The income is now sufficient to offer a substantial prize to the winner in each of these units.

THE SWORD OF '86

The Class of 1886 presented the Military Department with a prize sword to be presented to the Cadet Captain of the Infantry Company which wins the Annual Competitive Drill of the Cadet Regiments, who has the privilege of wearing it for one year. At the close of the year he is presented with a regulation Officer's sword and belt to be his personal property, and the Sword of '86 is returned to the Military Department.

PHYSICAL EDUCATION

Courses in Physical Education and Health Education are conducted by the Department of Physical Education.

Regular class-exercise, two hours each week, is required during the first year of a male student's residence at the University or until he has successfully completed one year of Physical Education. Women students are required to complete two years' work. Hygiene, one hour each week, is required of both men and women during one Quarter of the first year. A thorough physical examination is required of all undergraduate students entering the University for the first time. Physical defects, abnormalities, and weaknesses are noted, and exercise is prescribed to fit the student's individual needs.

TEACHERS PLACEMENT SERVICE

The Ohio State University maintains a Teachers Placement Service for the convenience of the Superintendents and Boards of Education of the State. Graduates and graduate students of the University are invited to enroll with the Appointments Office.

The Placement Service is under the direction of the Bureau of Educational Research. This service is rendered free of charge to the applicants. Graduates of experience who desire to better their locations are invited to communicate with the Appointments Office.

The Appointments Office has available such statistical information that advice and direction may be given in the matter of supply and demand for teachers in their various fields.

The service offered will be rendered on the exact basis of merit.

Superintendents and Boards of Education are invited to state their needs to the Appointments Office. Prompt attention to all calls is assured.

UNIVERSITY HEALTH SERVICE**Hayes Hall**

Medical Staff: Dr. John W. Wilce, Director; Dr. M. F. Osborn, Dr. J. M. Foley, Dr. James A. Beer, Dr. Shirley Armstrong, Dr. Charlotte Winnemore, Dr. Theodore Allenbach, four occasional clinical and examination assistants, eight specialized occasional consultants, two nurses, and one technician.

Office Hours: When the University is in session, daily 8:30 to 12:00 and 1:00 to 4:30; Saturday, 8:30 to 12:00. Limited service, 12:00 to 1:00. Phone: Campus 461.

The objects of the University Health Service are:

(1) To protect, maintain, and improve the health of students by cooperation in entrance examination; early diagnosis and control of all contagious conditions, in cooperation with other health agencies; individual health guid-

ance, through personal conference; first aid and casual treatment of students on the campus; periodic health examinations for seniors, food-handlers, and special cases; consultant specialist service for certain cases; full cooperation with family physician, other physicians, and health agencies; centralized correlation of other health agencies on the campus; maintained emphasis of preventive medicine.

(2) To serve as the primary coordinating agency with University Personnel officials in individual student health appraisal and health problems which involve the maintenance, discontinuance, or improvement of students' university relationships.

(3) To furnish a limited degree of hospitalization for observation, diagnosis, or treatment of emergency conditions, when in the judgment of University Health Service physicians it is thought necessary. (Responsibility for special hospital treatment is not assumed by the University Health Service).

STUDENT AUTOMOBILES

The University does not bar the use of automobiles by students. However, students can be given only very limited parking space on the campus, and the use of autos is discouraged. Unless the student drives a long distance to and from his home each day or is physically incapacitated, he does not need a car while attending the University. The cooperation of parents in this matter is earnestly desired.

ADMISSION

The College is open on equal terms to men and women.

METHOD OF ADMISSION

The admission of students is in charge of the University Entrance Board, which determines the credits that shall be issued on all entrance examinations and certificates, and furnishes all desired information to applicants. Correspondence relating to admission should be addressed to the University Examiner, The Ohio State University, Columbus.

ADMISSION TO THE COURSES LEADING TO A DEGREE

ADMISSION TO FOUR-YEAR CURRICULA

An applicant for admission must be a graduate of a high school of the first or second grade.

REQUIREMENTS FOR AGRICULTURE

To obtain full standing applicants must have credit by examination for fifteen units or a certificate of graduation from a high school of the first or second grade. It is strongly recommended that the following combination of units be presented by all applicants for admission, except in the case of students who have been enrolled in courses in Vocational Agriculture: three in English; two in foreign language; one in algebra; one in geometry; one in American history and civics; one in physics; one in biological science; and five in other topics.

NOTE: Unless American History is presented for admission a course in this subject must be taken in the University.

Credit for Farm Experience not to exceed two units will be granted only to male applicants on the following terms: for one unit, the applicant must have resided on a farm two successive years after he was twelve years of age, and such residence must be certified on the high school certificate by the proper school official.

REQUIREMENTS FOR HOME ECONOMICS

Fifteen units from any first grade high school will be accepted, but it is expected that the following combination will be presented: three in English; two in foreign language; one in algebra; one in geometry; one in American history and civics; one in physics; one in botany, zoology, or physiology; and five in other topics.

NOTE: Unless American History is presented for admission a course in this subject must be taken in the University.

ADMISSION WITH ADVANCED STANDING

An applicant who comes from an approved college and submits through his college registrar an official and explicit transcript describing his entrance credits, his courses of study and scholarship, and giving evidence of good standing, will be admitted to the University, provided he has maintained at least an average scholastic record. If the applicant is deficient in high school units the deficit will be made up from his college credits.

If no high school units are presented, one full year of college credits (forty-five Quarter or thirty semester hours) will be used to satisfy the entrance requirements.

A special application blank for students who desire to enter with advanced standing, will be forwarded upon request addressed to the University Examiner's office.

SPECIAL STUDENTS OF MATURE YEARS

A person of mature years who is unable to meet the entrance requirements in all respects, under certain circumstances may be permitted to matriculate for specified courses for which he can demonstrate adequate qualifications. An applicant under twenty-one years of age will not be considered. Inquiry concerning such admission should be addressed to the Entrance Board, and, to receive consideration, must reach the Board not less than ten days in advance of the opening of the Quarter. A personal interview with an applicant for admission as a special student is desired.

REGISTRATION

FRESHMAN WEEK

All Freshmen are required to be present at the University for a special Freshman Program which precedes the opening of the University. This program will begin on Wednesday, September 22, at 3:00 p. m., and will continue through the following Monday, September 27. This session is known as Freshman Week.

During this period Freshmen will become familiar with the Campus. They will be given needed information on the history and traditions of the University, as well as definite information on student activities and eligibility requirements. There will be lectures and discussions of vital importance to any student beginning his college career. Faculty advisers will conduct personal interviews with students to discuss their plans for a university education.

Intelligence tests, physical examinations, and placement tests are also a part of the Freshman Week Program.

The program of Freshman Week is planned to give students, new to the Campus, an opportunity to adjust themselves to new conditions before the regular routine of class-room work begins.

Freshmen must be present on the opening date, September 22, for the first meeting scheduled at 3:00 p. m. A penalty of \$5.00 for each day of absence will be imposed. This is the usual penalty for late registration. The exercises

of Freshman Week will be of the greatest benefit to the Freshmen and attendance upon them is required. All cases of failure to appear on this day or to be present at any of the exercises of Freshman Week will be reported to the President for action.

All Freshmen are urged to complete their registration and pay their fees before September 22, in order that they may be free to participate in the program of Freshman Week.

TRANSFER STUDENT DAY

All students above freshman standing, i.e., with more than 45 Quarter-hours of transferred credit, who enter the Ohio State University from other institutions in the Autumn Quarter are required to attend the Transfer Student Day orientation program. This program is held during the first week of the Autumn Quarter. Its purpose is to give these students an opportunity early in the academic year to become better acquainted with the University which they have entered, to make appropriate adjustments, to meet the Deans and other members of the faculty, and to become informed concerning some of the University regulations which will have a bearing upon their satisfactory progress.

Three meetings will be held. The first of these is University-wide in character and is for all students above freshman standing who are entering from other universities and colleges. For the second meeting students will assemble in groups by Colleges. The third meeting is for all women students above freshman standing who are entering Ohio State University from other institutions.

Detailed programs will be furnished to each advanced transfer student before the opening of the Autumn Quarter. Attendance at these meetings is required. No one will be excused except upon written permission of the Secretary of the College.

REGISTRATION

Under the Quarter plan each student will present his program of studies for only one Quarter at a time. Election cards for registration are obtained from the Registrar and are ready for distribution approximately two months prior to the opening of the Quarter. The exact date will be published in the Official Daily Bulletin and definite days will be announced during which every student in residence will be required to file his program of studies for the following Quarter. Persons who are not in residence may register in person or by mail at any time after the election cards are available for the following Quarter. Fees may be paid as soon as fee cards have been received by the student from the Registrar. *Students are expected to pay their fees before the day designated in the University Calendar for classes to begin and to report promptly to their classes on the first day that classes are scheduled.* Students who have registered sufficiently early usually receive fee cards approximately three weeks prior to the opening of the Quarter. *It is to the advantage of all students to register as early as possible, since the size of many sections is limited and they are completely filled early during the registration period.*

Applicants presenting themselves after the opening of the Quarter can be admitted only for exceptional reasons and by action of the Executive Committee of the College. In general, a student who is permitted to enter after the close of the first week of a Quarter will be given a schedule diminished by one full course below the normal requirement for that student.

FEES AND EXPENSES

Registration is not complete until all fees have been paid. No student will have any privileges in the classes or laboratories until all fees and deposits are paid.

Since all fees are due and payable as a part of the student's registration before the day designated in the University Calendar for classes to begin, no person should come to the University for registration without money sufficient to cover all his fees and deposits.

A penalty of \$5.00 for each succeeding day or fraction thereof will be assessed for failure to comply with this rule except in the case of a new student granted permission by the Dean of his College to register after the opening of the University.

1. Matriculation fee (non-returnable)
 - Required of every student on first admission to the University\$15.00
2. Incidental fees
 - Incidental fees do not vary with the number of courses taken
 - Quarter fee for a resident of Ohio..... 20.00
 - *Quarter fee, including non-resident fee, for a non-resident of Ohio 70.00
3. Special fees
 - (a) General Activities fee..... 4.00
 - (b) Physical Education Laboratory fee..... 2.00
 - Required each Quarter of all students taking gymnasium work. It includes locker and towel service
 - (c) Swimming fee..... 1.00
 - Students enrolled in swimming classes are required to pay a Natatorium deposit for the use of bathing suits
 - (d) Laboratory Breakage deposit—amount varies with course.....from 1.00 to 20.00
 - Students are required to pay for all materials consumed in laboratory work. The laboratory deposit must be made at the time of registration before the student may enter the laboratory. All laboratory supplies are sold to students at the Laboratory Supply Store, Chemistry Building, and charged against the deposits (See page 19). Instructors shall not permit students to engage in laboratory work unless the student has shown a receipt from the Bursar for deposit paid
 - (e) Deposit for military uniform for Freshmen (approximately) 25.00

NOTE: When checks given in payment of fees are not paid on presentation at bank, registration will be automatically cancelled and receipts given considered null and void.

*NON-RESIDENT FEE

Every student who is not a legal resident of the State of Ohio is required to pay a non-resident fee of \$50.00 each Quarter (or \$25.00 each term of the Summer Quarter) of his residence in the University in addition to other University fees. The burden of registering under proper residence is placed upon

the student. If there is any possible question of his right to legal residence the matter should be brought to the attention of the Registrar and passed upon, previous to registration or the payment of fees. Any student who registers improperly under this rule shall be required to pay not only the non-resident fee but shall be assessed a penalty of \$10.00. Students who do not pay this fee within thirty days after they have been notified that the non-resident fee has been assessed against them, will have their registration in the University cancelled.

No person shall be considered eligible to register in the University as a resident of the State of Ohio unless he has been a *bona fide* resident in the State twelve consecutive months next preceding the date of his original enrollment, and no person shall be considered to have gained or lost a residence in this State for the purpose of registering in the University by any conduct of his own while he is a student in the University, unless after attendance at the University for one year it can be clearly established by the student that his previous legal residence has been abandoned and a new one established in Ohio for purposes other than merely attending the University; but persons whose legal residence follows that of other persons, as hereinafter provided, shall be considered to have gained or lost legal residence in this State for such purpose while students in the University according to changes of legal residence of such other persons, except that such legal residence shall not be considered to be so gained until twelve months after such other person becomes a legal resident of this State.

MINORS: The residence of minors shall follow that of the legal guardian, regardless of emancipation; but in case a resident of Ohio is appointed guardian of a non-resident minor, the legal residence of such minor for the purpose of this rule shall not be considered to be established in the State of Ohio until the expiration of twelve months after such appointment.

WIVES: The residence of wives shall follow that of husbands.

ALIENS: Aliens who have taken out their first citizenship papers and who have been residents of Ohio for twelve months next preceding the date of their original enrollment in the University, shall be regarded as eligible for registration as residents of Ohio.

TEXTBOOKS

Textbooks. Students should not purchase textbooks until they are advised by the instructors of their respective classes.

ROOM AND BOARD

Room and Board. (See Living Arrangements, page 21.)

RETURN OF FEES ON WITHDRAWAL

Fees are returnable in case a student withdraws on account of sickness or for other causes entirely beyond his control, if such withdrawal is made during the first thirty days of the Quarter. Students withdrawing under request from the University are not entitled to any return of fees. Permission to withdraw, given in writing by the Dean of the College, must be presented to the Bursar within this thirty-day period. Ordinarily no more than one-half of the fees paid will be refunded; if the case has exceptional circumstances it should be referred to the President for his judgment.

No fees will be returned in case of withdrawal of students until thirty days have elapsed from the date of withdrawal.

If fees are paid under mistake of law or fact they are returnable in full. Fees are not returnable except as provided in this rule.

On Laboratory Deposit. If a student is forced to withdraw from a laboratory course during a Quarter, he must first secure permission from his Dean.

No portion of a laboratory deposit of \$5.00 or less shall be returned, unless the course is officially dropped by the student and request for refund presented within thirty days after the payment of the deposit.

On a laboratory deposit of \$6.00 or more the unexpended part of the deposit is returnable if called for on or before the close of the Spring Quarter of the fiscal year in which the deposit has been made.

An order for refund for the unexpended portion of the deposit may be obtained by applying at the Laboratory Supply Store, Chemistry Building. The unexpended part of the deposit will be paid at the Bursar's Office on presentation of the order for refund.

SPECIAL FEES—PENALTIES

PENALTY FOR ABSENCE DURING FRESHMAN WEEK

Freshmen must be present on the opening date, September 22, for the first meeting scheduled at 3:00 p. m. A penalty of \$5.00 for each day of absence will be imposed. This is the usual penalty for late registration. The exercises of Freshman Week will be of the greatest benefit to the Freshmen and attendance upon them is required. All cases of failure to appear on this day or to be present at any of the exercises of Freshman Week will be reported to the President for action.

PENALTY FOR FAILURE TO KEEP APPOINTMENT FOR PHYSICAL EXAMINATION

A fee of \$1.00 will be assessed for failure to keep appointment for Physical Examination or for change in date of Physical Examination.

FEE FOR LATE FILING OF ELECTION CARDS

A student who fails to file his election card within the required time (see page 17) will be assessed a fee of \$1.00 for each day of delay, the maximum fine being \$5.00.

FEE FOR CHANGES IN APPROVED ELECTION CARDS

Changes in approved election cards will be made only upon the approval of the Dean and payment of \$1.00 for each change involved, unless such payment is waived by the Dean approving the change.

FEE FOR CHANGES IN APPROVED SCHEDULE ASSIGNMENTS

Changes in approved schedule assignments will be made only upon the approval of the Registrar and the payment of \$1.00 for each change involved unless such payment is waived by the Registrar.

COST OF A YEAR'S WORK

One of the most perplexing questions that confronts a prospective student is what the course is going to cost him.

The total cost of a year's work—three Quarters, will depend considerably upon the course pursued. In some courses, such as chemistry, considerable material is used by the student, and this must be paid for by him. The cost of books is an item which varies greatly with the course.

In order to furnish information, we have listed below an estimate of the average payments required by the University for the Freshman year and have estimated the cost for room and board at a safe price. These two items are sometimes reduced slightly where two students occupy the same room and where boarding clubs are economically managed. Fees to the University are paid at the beginning of each Quarter.

ESTIMATE OF EXPENSES

Matriculation Fee (non-returnable).....	\$ 15.00
Incidental Fee.....	60.00
General Activities Fee.....	12.00
Physical Education Laboratory Fee.....	6.00
Deposits to cover laboratory materials and breakage.....	38.00
Deposits to cover military uniform..... (approximately)	25.00
Books and Instruments.....	30.00
Board—Men (\$5.00 a week).....	180.00
Women (Dormitories).....	180.00
Room Rent—Men (\$10.00 a month).....	90.00
Women (Dormitories).....	117.00
Total—(Men).....	\$456.00
(Women).....	483.00

NOTE: In order to meet all the necessary expenses of registration, deposit for uniform, books, and other expenditures incident to securing a room and board, a student should come prepared to spend from \$75 to \$100 during the first ten days of a Quarter. After that period, his board and room rent will constitute the major part of his expenses.

STUDENT PERSONAL EXPENSE FUNDS

The incoming student will save himself much time and trouble by taking a few simple precautions in regard to his personal expense money. The student should bring enough cash to cover all expenses for several days. If he does not wish to carry cash, he should use travellers checks, as they are readily cashed. If he does bring a check, it should be in the form of a bank draft or cashier's check. The student who has a check should not wait until he has spent all his money before cashing the check for it may take several days to collect it. Be sure that any checks that are for the payment of fees are drawn for the exact amount of the fees.

The following facts concerning the cashing of checks should be borne in mind by parents and prospective students.

(a) The Ohio State University does not cash checks.

(b) Checks for fees will be accepted by the University, but only when the check is drawn for the exact amount of the fees.

(c) Banks do not cash checks for strangers unless the check is endorsed by a customer of the bank or some person of known responsibility. This rule applies to cashier's checks, bank drafts, and certified checks.

The student who intends to use a checking account will find that an account in Columbus will be of more value than an account at home or in some other city. An account with a Columbus bank will provide a safe place for depositing funds, will help create a local credit standing, will furnish a means of depositing and cashing checks, and will help the student to understand banking practices.

LIVING ARRANGEMENTS

The President of the University has the authority to supervise living arrangements of students not residents of the city of Columbus and to order the immediate withdrawal of any student from any boarding or lodging house in which the surroundings are undesirable.

ROOMS AND BOARD FOR MEN

Furnished rooms can be obtained at prices varying from \$7.00 to \$15.00 a month (single) and \$10.00 to \$20.00 (double). The cost of the table board in

the clubs and restaurants near the University is from \$4.00 to \$6.00 a week. Board can be secured at the Ohio Union, as well as at Pomerene Hall, at reasonable prices.

Board with furnished rooms can be obtained in private families within convenient distance from the University at rates varying around \$8.00 a week.

MEN'S DORMITORIES

The University possesses only two dormitories for men, the Tower Club and the Buckeye Club. The Clubs were organized for men who are in great need of financial assistance and no others should apply for admission.

Applicants with unusually good records in the high school and advanced students who have made unusually good records in college are eligible for consideration.

The Clubs are run on a cooperative dormitory plan with very simple accommodations. The Club fee is \$1.00 a Quarter for each man. Board is available at approximately \$3.25 a week.

Applications should be sent to B. L. Stradley, University Examiner.

MEN'S HOUSING BUREAU

The absence of dormitories for men at The Ohio State University, with the exception of the Tower Club and the Buckeye Club, makes it necessary for the men students to reside in private rooming houses in the University district. In order to assist the students (especially those entering for the first time) in finding desirable rooms at the greatest saving, the University has created the Men's Housing Bureau, located in the office of the Dean of Men, first floor, Administration Building.

Classified lists of rooms available for every student and for any number of students are always available at this office. Boarding houses are likewise listed.

If the student signs a "Rooming House Agreement" he shall be expected to be responsible for the rental price of the room as specified in the agreement, unless he can present satisfactory reasons to the Men's Housing Bureau for moving out before the expiration of that period, or unless he can secure a satisfactory substitute. If he moves out before the expiration of the Quarter without presenting a satisfactory excuse he shall forfeit one month's rent. The signing of such agreement is optional.

The University warns students not to rent rooms which have not been placed on the approved list by the Men's Housing Bureau. Anyone renting a room which is not on the approved list does so at his own risk.

WOMEN STUDENTS

Every woman student, whether undergraduate or graduate, must register with the Dean of Women at her office in Pomerene Hall during the first four days of each Quarter. The exact dates of registration will be fully announced each Quarter.

LIVING ARRANGEMENTS FOR WOMEN

All living arrangements for women are under the supervision of the Dean of Women. Immediately after a new student is admitted to the University, the Dean of Women will receive official notification from the Examiner and thereupon, if requested, the Dean of Women will place the student in housing. Under the rules of the Faculty, Freshman women so far as possible will be placed by the Dean of Women in the University Residence Halls.

Freshmen who are admitted after the University Residence Halls are filled are then placed by the Dean of Women in the privately operated Residence Halls and in the University Houses. Sophomore, Junior, and Senior students are placed in the privately operated Residence Halls, in University Houses, and

in their Sorority Houses. Freshmen and other students who wish to work for room and board in private homes will be thus placed, and those who wish to live with relatives in Columbus will be given permission to do so.

UNIVERSITY RESIDENCE HALLS FOR WOMEN

The three University Residence Halls are known as Oxley, Mack, and Neil Halls. All three Halls are governed by student government with the advice and supervision of the House Superintendent. Booklets describing these residence halls will be sent upon request to the Superintendent. Students living in these residence halls shall not change to another residence at any time during the year without the previous consent of the Dean of Women.

PRIVATELY OPERATED RESIDENCE HALLS AND UNIVERSITY HOUSES FOR WOMEN

Westminster Hall, 52 Fifteenth Avenue, under the supervision of the Presbyterian Church and St. Hilda's Hall, 169 West Eleventh Avenue, under the supervision of the Episcopal Church are open as places of residence to women students. Students living in these residence halls shall not change to another residence at any time during the year without the previous consent of the Dean of Women.

The University Houses, which are really small dormitories privately owned and operated, are also under the supervision of the Dean of Women. The privately operated Residence Halls and University Houses all operate under the student government with the advice and supervision of their superintendents and head residents.

PROCEDURE FOR FRESHMEN AND NEW ADVANCED STUDENTS TO OBTAIN HOUSING

(1) The student should complete application blanks for admission to the University.

(2) The student should, upon receipt of notice of admission from the University Examiner, send application to the Dean of Women for the type of residence desired (see "Information for Prospective Students"), or make a personal visit to the Dean of Women to secure possible housing. The Dean of Women will not place any new student in housing for whom she does not have the notification of admission from the Examiner.

(3) Thereupon, housing will be arranged by the Dean of Women for the student, who should then send the required deposit directly to the superintendent or head resident whose name has been furnished.

RANGE IN PRICES IN VARIOUS TYPES OF HOUSING

Price per student per Quarter

Residence Halls

Room and Board (three meals daily)

Oxley, Mack, Neil	\$90.00 to \$140.00
St. Hilda's	95.00 to 110.00
Westminster	97.50

University Houses

Rooms without board	30.00 to 45.00
Rooms with board (two meals daily)	85.00 to 95.00

PART-TIME EMPLOYMENT

FOR MEN

The University cannot promise work to students who expect to work their way through college. Many students find work in private families, in offices, and in various occupations, by means of which they defray a portion of their expenses. A person of ability and energy who is master of a trade, or who can

do good work of any kind, can generally find employment, but prospective students are cautioned against depending wholly upon such uncertain sources of income.

Students should understand that where they attempt entire or partial self-support they should lengthen the term of study by applying for a part-time schedule. Special arrangement of class hours to accommodate a student's outside work is not possible. All outside work should be arranged with due regard to University obligations and classes which may occupy the Saturday morning hours as well as the late afternoon hours.

The University maintains a Student Employment Office where names of those seeking work and of those desiring workers are recorded. Students desiring work should file applications with this office which is located on the first floor of the Administration Building on the Campus.

FOR WOMEN

Approximately twenty per cent of the women students earn a part of their university expenses either by part-time employment during the college year or by full-time employment during the summers. Counsel and cooperation in seeking such opportunities is heartily rendered by the office of the Dean of Women in Pomerene Hall.

Comparatively few students, however, can successfully carry on a full schedule of courses and at the same time earn any large proportion of their expenses. The schedule should be reduced to fit the student's limited time for study and recreation. New students should on entering come with sufficient funds to meet all expenses until they have had time to become adjusted and to demonstrate their caliber as students. Even then they should not count too confidently on profitable work. As a rule students seeking employment outnumber opportunities for employment. In many cases a student receives her room or room and board for her services and is not given any money compensation.

Students who must plan to earn money during the college year should ask the Dean of Women's Office for advice well ahead of the time that their schedule of courses must be made out. Otherwise they may find themselves in difficulty.

Special arrangement of class hours to accommodate a student's outside work is not possible. All outside work should be arranged with due regard to University obligations and classes which may occupy the Saturday morning hours as well as the late afternoon hours.

RULES AND REGULATIONS

For rules and regulations concerning student responsibility and procedure, see the *University Rules and Regulations for Students*, a copy of which may be obtained from the Registrar.

THE MARKING SYSTEM AND POINT SYSTEM

The grade marks given in the several Colleges of the University are: A—Excellent; B—Good; C—Average; D—Poor; E—Failed.

K (Credit) shall be used for work credited from other institutions and by the University Examiner only.

Em (Examination) credit shall be used to indicate that the credit given is for work not done in residence.

A value in "Points" is assigned to each of these grades as follows:

For each hour of A grade, 4 credit points shall be allowed.

For each hour of B grade, 3 credit points shall be allowed.

For each hour of C grade, 2 credit points shall be allowed.

For each hour of D grade, 1 credit point shall be allowed.

For each hour of K credit, no credit points shall be allowed.

For each hour of Em credit, no credit points shall be allowed.

The grade of E receives no credit either in hours or points.

The mark E cannot be removed by re-examination. (For removal of failures see page 26.)

POINTS REQUIRED FOR GRADUATION

The number of credit points required for graduation shall amount to not less than 1.8 times the number of credit hours undertaken at this institution.

LOW STANDING

DISMISSAL AND PROBATION FOR LOW STANDING

At the end of each Quarter, any student who has failed to earn a point-hour ratio of at least .65 on the number of credit hours for which he was scheduled shall be dismissed from the University. Any student, not dismissed under the above rule, who has failed to earn a point-hour ratio of at least 1.30 on the number of credit hours for which he was scheduled that Quarter shall be placed on probation.

The period of probation shall extend through one Quarter of residence. If a student has been twice placed on probation, he shall not be placed on probation again but instead shall be dismissed from the University.

The Dean or the Executive Committee of a College shall have power to place a student on probation at any time for a definite period when in their judgment his scholastic standing is unsatisfactory. In every case of probation the Dean of the College shall notify both the student and his parents or guardian.

These rules do not apply to students registered in the Colleges of Dentistry, Law, and Medicine. The faculties of these colleges are empowered to enact appropriate rules regulating this matter.

DISMISSAL OF STUDENTS ON PROBATION

At the end of any Quarter, any student who is on probation shall be dismissed from the University if he has failed to earn a point-hour ratio of at least 1.30 on the number of credit hours for which he was scheduled. Notice of such dismissal shall be sent by the Dean both to the student and to his parents or guardian.

DISMISSAL FOR DEFICIENCY IN POINTS

Any student who has been registered in this University for six Quarters and has not earned a cumulative point-hour ratio of at least 1.7 on the number of credit hours for which he has been scheduled shall be dismissed from the University. Moreover, a cumulative point-hour ratio of at least 1.7 on the student's entire record shall be maintained throughout subsequent Quarters unless there is a transfer to another college.

A student entering this University from another institution, as far as the applicability of this rule is concerned, will be considered as if his entire residence had been at this University, but his point-hour ratio will be computed upon the work done at this University. No such student, however, shall be dismissed under this rule until he has completed two Quarters of residence.

These rules shall not apply to students registered in the Colleges of Dentistry, Law, and Medicine. The faculties of these colleges are empowered to enact appropriate rules regulating this matter.

DISMISSAL BY SPECIAL ACTION

In cases not covered by the foregoing rules, if at any time the preparation, progress, or success of a student in his assigned work is deemed unsatisfactory, the Executive Committee of the College shall have power to dismiss him from the University.

REMOVAL OF FAILURES**FAILURE IN A REQUIRED COURSE**

At his first opportunity a student must repeat in class a required course in which he has failed, unless the Executive Committee of the College authorizes a substitute course.

GRADUATION**RESIDENCE REQUIREMENT FOR A DEGREE**

A candidate for a degree must secure credit by regular class enrollment for the full work of three Quarters. This work must be in courses offered by the College recommending the degree, and must be secured while in residence at this University.

Ordinarily the student must be enrolled in the college recommending the degree while completing the last two Quarters required of him, but the Executive Committee of that college may, for sufficient reason, waive compliance with this requirement to the extent of not more than one Quarter's work in favor of a student who has done six full Quarters of satisfactory residence work at this University, including forty-five Quarter credit hours completed during the junior and senior years.

APPLICATION FOR A DEGREE

A candidate for a degree must file an application for the degree with the Secretary of his College or the Dean of the Graduate School in accordance with the rules prescribed by his College or the Graduate School.

POINTS REQUIRED FOR GRADUATION

The number of credit points required for graduation shall amount to not less than 1.8 times the number of credit hours undertaken at this institution. (For Point System, see page 24.)

COMMENCEMENT—CONVOCATION

A special Convocation or Commencement shall be scheduled at the close of each Quarter for the conferring of degrees upon candidates who have fulfilled all the requirements of their respective courses.

ATTENDANCE AT CONVOCATION EXERCISES

All candidates for degrees are required to be present at their graduation convocation unless excused by the President.

CURRICULA OFFERED IN THE COLLEGE OF AGRICULTURE

CURRICULA

FOR STUDENTS FOLLOWING MAJORS IN AGRICULTURE

This curriculum shows the requirements that must be met by students who desire to major in the various fields of agriculture and do not wish to follow one of the specialized curricula.

The details of the curriculum are presented in the suggested programs for majors in the different lines of work. Students should follow these suggested programs in planning their work and in arranging their schedules. These programs include the following:

Suggested Program for a Major in Agricultural Education	See page 29
Suggested Program for a Major in Agricultural Engineering	See page 30
Suggested Program for a Major in Agricultural Extension	See page 31
Suggested Program for a Major in Agronomy	See page 32
Suggested Program for a Major in Animal Husbandry	See page 33
Suggested Program for a Major in Dairy Husbandry	See page 33
Suggested Program for a Major in Poultry Husbandry	See page 34
Suggested Program for a Major in Rural Economics, including	
Farm Management	See page 36
Marketing	See page 36
Rural Sociology	See page 36

In all of these suggested programs, 200 hours are required for graduation.

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Botany or Zoology (401) 5	Botany or Zoology (402) 5	*Zoology (403) 5
Elective 5	Elective 5	Elective 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Military Science (421) 1	Military Science (422) 1	Military Science (423) 1
Physical Education (401) 1	Physical Education (402) 1	Physical Education (403) 1
	Physical Education (400) 1	

Electives for the first year must be chosen from the following list:

Agricultural Engineering 401, 402	Mathematics 407, 408
Animal Husbandry 401, 404	Mathematics 421, 422, 423
Dairy Technology 401	Mathematics 431, 432, 433
Geology 401, 402	Poultry Husbandry 401
Horticulture 405	

SECOND YEAR

Economics (401) 5	Economics (402) 5	Rural Economics (501) 5
*Agronomy (501) 5	Elective 10	Elective 10
English (412) 3	Military Science (425) 1	Military Science (426) 1
Elective 5		
Military Science (424) 1		

* In some cases this course may be postponed until the junior year. See the suggested program.

NOTE: The schedule card of studies after the first year must be filled out in conference with the advisers. The adviser must sign the schedule card before it can be approved by the Secretary of the College.

NOTE: In case a required course cannot be taken as scheduled, it must be rescheduled in the following Quarter.

Electives for the second year in addition to those listed as open in the first year:

Agricultural Engineering 502, 503	Journalism 407
Agronomy 502, 503	Physics 411, 412, 413
Animal Husbandry 402, 405, 409, 503, 507	Physiology 416, 417
Civil Engineering 401	Poultry Husbandry 413, 502, 509
Education 501	Psychology 401
Entomology 551	Rural Economics 502, 505
Horticulture 503, 504, 522	Speech 401
Industrial Engineering 415, 419	Zoology 408, 504

THIRD YEAR

Elective	15	Elective	15	Elective	15
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These electives may be chosen with the approval of the student's adviser.

Care must be taken to be sure that the requirements listed under the heading "Major in Agriculture" as listed below are completed.

FOURTH YEAR

Elective	15	Elective	14	Elective	14
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Major in Agriculture: Students majoring in agricultural subjects must take in addition to the fixed subjects in the preceding outline:

(a) A minimum of 25 hours from the following courses:

- Mathematics 421 and 422 or Economics 522—10 hours
- Mathematics 407-408—6 hours
- Physics 411 and 412 or 413—10 hours
- Botany 605-606 (Plant Physiology)—10 hours
- Physiology 416-417 (Animal Physiology)—10 hours
- Entomology 551—5 hours
- Rural Economics 505 (Sociology)—5 hours
- Agricultural Engineering 402—3 hours
- Journalism 407—3 hours
- Bacteriology 509 or 607—5 hours
- Veterinary Anatomy 451—5 hours

(b) A minimum of 25 hours from the following courses which must be in at least four of the departments listed:

- Agricultural Engineering 401, 502
- Agronomy 502, 503
- Animal Husbandry 401, 402, 404
- Dairy Technology 401
- Forestry 410
- Horticulture 405, 503, 504, 522
- Poultry Husbandry 401, 412, 509, 603

FACULTY ADVISERS

Students may consult the Junior Dean or a Junior Faculty Adviser during the freshman year concerning the appointment of a Faculty Adviser in the field of their major interest. As soon as each student has decided upon the field in which he desires to major he will be assigned an Adviser in the department representing that interest. The Junior Dean or a Junior Faculty Adviser will serve until the Faculty Adviser in his major field has been appointed.

For each Quarter during the sophomore year, the program of studies must be approved by the Faculty Adviser in the major field, if appointed, otherwise by the Junior Dean or a Junior Faculty Adviser before it will be approved by the Secretary of the College. For each Quarter during the junior and senior years the program of studies must be approved and the schedule cards must be signed by the Faculty Adviser in the field of the major.

MAXIMUM CREDIT IN A DEPARTMENT

Not more than fifty Quarter-credit hours in any one department will be credited toward a degree, except by special permission of the Executive Committee, which must be obtained in advance.

WORK IN OTHER COLLEGES OF THE UNIVERSITY

A student may elect not to exceed thirty Quarter-credit hours from work offered in any other college of this University, except the Colleges of Dentistry, Law, and Medicine. This includes courses offered by departments not adminis-

tered by the Dean of the College of Agriculture and may be elected although they are not announced in this *Bulletin*.

FARM EXPERIENCE

As a requisite for graduation in all courses in the College of Agriculture, except Home Economics, students must have at least six months of farm experience, which must include the time of the Spring and Summer Quarters. This requirement must be met before the student is permitted to register for the third year.

NOTE: Students pursuing the more technical curricula may substitute experience in their particular fields for the farm experience, or may postpone the requirement for one year, upon the approval of the departments concerned and of the Executive Committee.

GRADUATE CREDIT FOR SENIORS

A Senior whose full time is not required for the completion of the work for his baccalaureate degree, may select certain courses for graduate credit, but to do this the permission of the Graduate Council (Room 106, University Hall), must be obtained before registering for the courses.

SUGGESTED PROGRAMS FOR MAJORS IN AGRICULTURE

AGRICULTURAL EDUCATION

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Botany or Zoology (401) 5	Botany or Zoology (402) 5	Zoology (403) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Elective in Agriculture 5	Elective in Agriculture 5	Zoology or Botany (401) 5
Military Science (421) 1	Military Science (422) 1	Military Science (423) 1
Physical Education (401) 1	Physical Education (402) 1	Physical Education (403) 1
	Physical Education (400) 1	

Electives for the first year should be chosen from the following list, giving preference to the starred courses, which are required at some time:

- | | |
|-------------------------------|----------------------|
| *Agricultural Engineering 401 | Animal Husbandry 401 |
| *Dairy Technology 401 | *Horticulture 405 |
| *Poultry Husbandry 401 | |

SECOND YEAR

Entomology (551) 5	Physics (411) 5	Physics (413) 5
Agronomy (501) 5	or	or
English (412) 3	Mathematics (407) 3	Mathematics (408) 3
Economics (401) 5	Economics (402) 5	Rural Economics (501) 5
Military Science (424) 1	Journalism (407) 3	Elective 5
	Agr. Engineering (402) 3	Military Science (426) 1
	Military Science (425) 1	

Electives for the second year include, in addition to the previous elective lists, these courses which are required at some time:

- | | |
|-----------------------|----------------------|
| *Animal Husbandry 402 | *Agronomy 502 or 503 |
|-----------------------|----------------------|

THIRD YEAR

Rural Economics (613) 5	Rural Economics (505) 5	Rural Economics (502) 5
Agronomy (505) 3	Agr. Education (400) 5	Agr. Engineering (504) 5
Psychology (401) 5	Elective 3	Agr. Education (401) 5

Care must be taken that the requirements listed under the heading "Majors in Agriculture" on page 27 are completed. Electives for the third year should be chosen so as to complete these requirements and all other required technical courses. Students majoring in the Department of Agricultural Education may substitute Psychology 401 for a five-hour requirement in Group A. Not later than the beginning of the third year, each student must submit to his adviser a program of courses covering the remaining period up to graduation.

FOURTH YEAR

Professional or elective 15	Professional or elective 15	Professional or elective 15
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In addition to Psychology 401 and Agricultural Education 400 and 401, which may be scheduled in the third year, the required professional courses include Agricultural Education 502, 503, and 601. The latter three courses

* These courses are strongly recommended for election.

must be scheduled concurrently during the fourth year without additional courses. In order to secure a somewhat uniform registration in these courses by Quarters, each student must secure from his adviser permission to schedule them in the Quarter desired.

Electives for the fourth year, in addition to the previous elective lists, include the following courses, none of which are required:

Animal Production (Animal Husbandry 503, 501, or 505)
 Prices of Farm Products (Rural Economics 612)
 Cooperation in Agriculture (Rural Economics 603)
 Farm Power (Agricultural Engineering 503)
 Drainage and Irrigation (Agricultural Engineering 507)
 Speech 401
 Poultry Feeding (Poultry Husbandry 509)
 General Plant Pathology (Botany 419)
 Veterinary Medicine 452
 Extension Methods (Agricultural Extension 501)
 Business Law : Contracts (Business Organization 621)
 Bacteriology 509

AGRICULTURAL ENGINEERING

(For the Professional Curriculum in Agricultural Engineering see page 36.)

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Ag. Chemistry (401) 5
Botany or Zoology (401) 5	Botany or Zoology (402) 5	Zoology (403) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Ag. Engineering (401) 5	Elective 5	Elective 5
or	Military Science (422) 1	Military Science (423) 1
Ag. Engineering (402) 3	Physical Education (402) 1	Physical Education (403) 1
Military Science (421) 1	Physical Education (400) 1	
Physical Education (401) 1		

Suggested electives:

Mathematics 407-408

*Mathematics 421 or 432

*Mathematics 422 or 431

Mathematics 423 or 433, provided the student contemplates work necessitating analytics

*Animal Husbandry 401

*Poultry Husbandry 401

*Horticulture 405

SECOND YEAR

Economics (401) 5	Economics (402) 5	Rural Economics (501) 5
English (412) 3	Electives 10-13	Electives 10-13
Electives 5-10	Military Science (425) 1	Military Science (426) 1
Military Science (424) 1		

Electives suggested in addition to previous elective list:

*Physics 411, 412, 413

*Agricultural Engineering 401

Animal Husbandry 402

Dairy Technology 401

Entomology 551

*Agricultural Engineering 502

*Agricultural Engineering 503

Agricultural Engineering 504

Agricultural Engineering 506

*Agricultural Engineering 507

THIRD YEAR

Agronomy (501) 5	Electives 15-20	Electives 15-20
Electives 10-15		

Electives suggested for the third year in addition to the previous elective lists:

*Agronomy 502 or 503

Agronomy 608

Rural Economics 502

*Rural Economics 505

Rural Economics 605

Business Organization

Mechanics 501, provided the student contemplates work involving statics

*Journalism 407

Education 501

Civil Engineering 401

Industrial Engineering 415 or 419

Geography 401

Care must be taken that the requirements listed under the heading, "Majors in Agriculture" on page 27 are completed.

* These courses are strongly recommended for election.

FOURTH YEAR

Electives 15-20 Electives 15-20 Electives 15-20

Electives suggested for the fourth year in addition to the previous elective lists:

Agronomy 603, 609

Agricultural Engineering 602, 603, 604, 605

AGRICULTURAL EXTENSION

Students interested in training for Agricultural Extension Service should consult the Director of Extension. He will designate a person to act as adviser who must give approval to the subjects selected by the student.

A major in Agricultural Extension shall consist of not less than 25 hours nor more than 50 hours in Education and Rural Economics.

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Botany or Zoology (401) 5	Botany or Zoology (402) 5	Zoology (403) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Elective 5	Elective 5	Zoology or Botany (401) 5
Military Science (421) 1	Military Science (422) 1	Military Science (423) 1
Physical Education (401) 1	Physical Education (402) 1	Physical Education (403) 1
	Physical Education (400) 1	

Electives for the first year should be chosen from the following list:

*Agricultural Engineering 401

*Dairy Technology 401

*Poultry Husbandry 401

*Horticulture 405

*Animal Husbandry 401

SECOND YEAR

Entomology (551) 5	Economics (402) 5	Rural Economics (501) 5
English (412) 3	Agr. Engineering (402) 3	Journalism (407) 3
Agronomy (501) 5	Mathematics (407) 3	Mathematics (408) 3
Economics (401) 5	Elective 5	Elective 5
Military Science (424) 1	Military Science (425) 1	Military Science (426) 1

Electives for the second year should be chosen from the following list:

*Agricultural Engineering 401

*Animal Husbandry 402

*Dairy Technology 401

*Poultry Husbandry 401

*Horticulture 405

*Agronomy 502, 503

THIRD YEAR

Rural Economics (613) 5	Rural Economics (505) 5	Rural Economics (502) 5
Psychology (401) 5	Agr. Education (400) 5	Elective 10
Elective 8	Elective 5	

Electives for the third year should be chosen from the following list:

Electives remaining from the second year (required) 15 hours

*Rural Economics 612

*Bacteriology 509

Animal Husbandry 404

*Speech 401

Care must be taken that the requirements listed under the heading, "Majors in Agriculture" on page 27 are completed.

FOURTH YEAR

Agr. Extension (501) 3	Agronomy (607) 5	Agr. Extension (600) 5
Electives 10	Elective 10	Electives 10

Electives for the fourth year should be selected from the following:

*General Plant Pathology (Botany 419)

*Sufficient additional electives to complete a major in a subject matter field

* These courses are strongly recommended for election.

AGRONOMY

FIRST YEAR

Chemistry	(401 or 411)	5	Chemistry	(402 or 412)	5	Agr. Chemistry	(401)	5
Botany	(401)	5	Botany	(402)	5	Zoology	(401)	5
Agr. Engineering	(401)	5	Geology	(401)	5	Geology	(402)	5
Survey of Agriculture	(401)	3	English	(410)	3	English	(411)	3
Military Science	(421)	1	Military Science	(422)	1	Military Science	(423)	1
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(403)	1
			Physical Education	(400)	1			

SECOND YEAR

Agronomy	(503)	5	Agronomy	(502)	5	Entomology	(551)	5
Physics	(411)	5	Physics	(412)	5	Agronomy	(501)	5
Horticulture	(401 or 405)	} 5	Animal Husbandry	(402)	5	Elective		5
or			Military Science	(425)	1	Military Science	(426)	1
Poultry Husbandry	(401)	} 3						
English	(412)		3					
Military Science	(424)	1						

Electives for the second year should be chosen from the following list:

*Agricultural Engineering 402	Animal Husbandry 404
*Physics 413	Journalism 407

THIRD YEAR

Economics	(401)	5	Economics	(402)	5	Rural Economics	(501)	5
Botany	(505)	5	Botany	(506)	5	Agronomy	(503)	5
Zoology	(403)	5	Elective		5	Elective		8

Electives for the third year should be chosen from the list following the curriculum for the fourth year.

Care must be taken that the requirements listed under the heading, "Majors in Agriculture" on page 27 are completed.

FOURTH YEAR

Agronomy	(601)	3	Agronomy	(607)	5	Elective		15
Rural Economics	(502)	5	Elective		10			
Elective		8						

Electives for the fourth year should be chosen from the following list giving preference to starred courses.

Group I. Electives in the College of Agriculture.

Animal Husbandry 404	Animal Husbandry 502, 503, 504 or 505
Horticulture 405	Horticulture 401, 522, 622
Horticulture 401, 503, 504	Poultry Husbandry 401
*Rural Economics 505	Rural Economics 612
Rural Economics 613	*Agricultural Engineering 402
Agricultural Chemistry 601	Agricultural Engineering 507
Botany 413	Agricultural Engineering 502 or 504
Botany 601 and 602	Dairy Technology 401
Agronomy 602	Agronomy 609
*Agronomy 603	*Bacteriology 509
*Agronomy 604	

Group II. Electives outside the College of Agriculture. (Not over 30 hours to be elected from this group.)

Speech 401	English 430
Political Science 401 or 402	Physiology 403, 404
Mathematics 421, 422, 423	Business Organization 621
Psychology 401 and 402	History 400, 401, 402
Survey 605 (Foundations of Contemporary Civilization)	*Physics 413
	Journalism 407 (Agricultural Journalism)

* These courses are strongly recommended for electives.

ANIMAL HUSBANDRY

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Zoology (401) 5	Zoology (402) 5	Botany (401) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Animal Husbandry (401) 5	Elective 5	Elective 5
Military Science (421) 1	Military Science (422) 1	Military Science (423) 1
Physical Education (401) 1	Physical Education (402) 1	Physical Education (403) 1
	Physical Education (400) 1	

Electives:

- *Agricultural Engineering 401
- *Dairy Technology 401
- Horticulture 405
- Poultry Husbandry 401

* These courses are strongly recommended for election.

SECOND YEAR

Economics (401) 5	Economics (402) 5	Rural Economics (501) 5
English (412) 3	Physiology (416) 5	Physiology (417) 5
Veterinary Anatomy (451) 5	Animal Husbandry (409) 5	Elective 7
Elective 5	Elective 3	Military Science (426) 1
Military Science (424) 1	Military Science (425) 1	

Electives:

- *Agronomy 502
- Horticulture 503, 504, 522
- *Botany 402
- Poultry Husbandry 509
- *Agricultural Engineering 402, 502
- *Bacteriology 509

THIRD YEAR

Agronomy (501) 5	Zoology (403) 5	Rural Economics (618) 5
Animal Husbandry (402) 5	Elective 11	Elective 10
Elective 5		

Electives:

- Agronomy 503
- *Journalism 407
- *Animal Husbandry *410, *501
- *Animal Husbandry *502, *503, *505 (10 hrs.)

Care must be taken that the requirements listed under the heading, "Majors in Agriculture" on page 27 are completed.

FOURTH YEAR

Elective 15	Rural Economics (505) 5	Rural Economics (502) 5
	Rural Economics (603) 5	Rural Economics (612) 3
	Elective 6	Elective 5

Electives:

- *Animal Husbandry *608, *506, *607, *611
- Speech 401
- *Economics 618
- Animal Husbandry 701
- Veterinary Medicine 452, 453
- Agricultural Chemistry 601, 608
- Agricultural Engineering 502
- Agronomy 601, 602, 603
- Rural Economics 602, 605
- Business Organization 621, 623

DAIRY HUSBANDRY

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Zoology (401) 5	Zoology (402) 5	Botany (401) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Animal Husbandry (404) 5	Elective 5	Elective 5
Military Science (421) 1	Military Science (422) 1	Military Science (423) 1
Physical Education (401) 1	Physical Education (402) 1	Physical Education (403) 1
	Physical Education (400) 1	

Electives for the first year must be chosen from the following list:

- Animal Husbandry 401
- *Dairy Technology 401
- *Agricultural Engineering 401
- Poultry Husbandry 401

* These courses are strongly recommended for election.

SECOND YEAR

Agronomy	(501) 5	Economics	(402) 5	Animal Husbandry	(405) 5
Economics	(401) 5	Physiology	(416) 5	Physiology	(417) 5
English	(412) 3	Elective	3	Animal Husbandry	(507) 3
Elective	5	Military Science	(425) 1	Rural Economics	(501) 5
Military Science	(424) 1			Military Science	(426) 1

Suggested electives for the second year in addition to those open in the first year:

*Animal Husbandry 402		*Bacteriology 509	
Horticulture 405		*Agricultural Engineering 402	
*Entomology 551		Journalism 407	

THIRD YEAR

Zoology	(403) 5	Animal Husbandry	(504) 5	Rural Economics	(613) 5
Elective	10	Rural Economics	(505) 5	Elective	10
		Elective	5		

Suggested electives for the third year:

*Animal Husbandry 409		Mathematics 421	
*Agronomy 502		Dairy Technology 403	
*Agronomy 503		Business Organization 504	
Agricultural Chemistry 406		Dairy Technology 405	
*Rural Economics 502		Dairy Technology 407	

Care must be taken that the requirements listed under the heading, "Majors in Agriculture" on page 27 are completed.

FOURTH YEAR

Animal Husbandry	(614) 5	Animal Husbandry	(626) 3	Elective	15
Elective	13	Animal Husbandry	(611) 3		
		Elective	10		

Suggested electives:

*Business Organization 621		Bacteriology 603	
Business Organization 700		Bacteriology 610	
Rural Economics 602		Poultry Husbandry 509	
*Rural Economics 603		Poultry Husbandry 603	
*Rural Economics 612		Agricultural Chemistry 601	
Zoology 601		Agricultural Chemistry 608	
*Agricultural Engineering 502			

POULTRY HUSBANDRY

FIRST YEAR

Chemistry	(401 or 411) 5	Chemistry	(402 or 412) 5	Agr. Chemistry	(401) 5
Zoology	(401) 5	Zoology	(402) 5	Zoology	(403) 5
Survey of Agriculture	3	English	(410) 3	English	(411) 3
Poultry Husbandry	(401) 5	Elective	5	Elective	5
Military Science	(421) 1	Military Science	(422) 1	Military Science	(423) 1
Physical Education	(401) 1	Physical Education	(402) 1	Physical Education	(403) 1
		Physical Education	(400) 1		

Electives for the first year should be taken from the following list:

*Animal Husbandry 401		Mathematics 421, 422	
Botany 401, 402		Physics 411, 418	
*Horticulture 405			

SECOND YEAR

Economics	(401) 5	Economics	(402) 5	Rural Economics	(501) 5
Agronomy	(501) 5	Poultry Husbandry	(509) 3	Physiology	(417) 5
English	(412) 3	or		Elective	3-5
Elective	5	Poultry Husbandry	(412) 5	Military Science	(426) 1
Military Science	(424) 1	Physiology	(416) 5		
		Elective	3 or 5		
		Military Science	(425) 1		

Electives for the second year should be chosen from the following list:

*Agricultural Engineering 402		Horticulture 405	
*Journalism 407		Animal Husbandry 402	
*Dairy Technology 401		*Agronomy 502 or 503	

* These courses are strongly recommended for election.

THIRD YEAR

Poultry Husbandry	(502) 5	Poultry Husb.	(412 or 509) 5	Poultry Husbandry	(418) 5
Rural Economics	(618) 5	Bacteriology	(509) 5	Elective	18-15
Elective	8-10	Elective	8-10		

Electives for the third year should be chosen from the following list:

Electives remaining from the second year (required) 25 hours

*Entomology 551	Animal Husbandry 404
*Rural Economics 505	Horticulture 503, 504, 522
*Agricultural Engineering 401	Speech 401

Care must be taken that the requirements listed under the heading, "Majors in Agriculture" on page 27 are completed.

FOURTH YEAR

Poultry Husbandry	(502) 5	Poultry Husbandry	(701) 8-5	Poultry Husbandry	(701) 8
Elective	18-15	Elective	10-15	Poultry Husb.	(418 or 509) 5
				Elective	10-15

Additional suggested electives:

Agricultural Chemistry 601, 608	Business Organization 504, 621, 700, 712, 716
Anatomy 613, 618	Rural Economics 502, 612, 614
Bacteriology 608, 609, 617, 618	Zoology 408, 504, 601, 609, 617, 618

RURAL ECONOMICS

The work of the department falls into three divisions, namely, Farm Management, Marketing, and Rural Sociology. The work in Farm Management is planned for those who expect to engage in practical farming, either as operators for themselves or for others. It also offers opportunity for training in more specialized fields, such as land appraisal or various types of field work with farmers. The Marketing work should be of interest not only to those who expect to farm, but also to those who intend to enter the field of marketing farm products. The Rural Sociology work deals more particularly with the problems of rural life.

Either one of the three outlined curricula in Rural Economics may be the choice of electives be adapted to a course of study giving more consideration to matters of public policy towards agriculture, such as government, credit, and taxation.

FIRST YEAR

Chemistry	(401 or 411) 5	Chemistry	(402 or 412) 5	Agr. Chemistry	(401) 5
Botany or Zoology	(401) 5	Botany or Zoology	(402) 5	Zoology	(408) 5
Survey of Agriculture	3	English	(410) 3	English	(411) 3
Animal Husbandry	(401) 5	Elective	5	Elective	5
Military Science	(421) 1	Military Science	(422) 1	Military Science	(423) 1
Physical Education	(401) 1	Physical Education	(402) 1	Physical Education	(403) 1
		Physical Education	(400) 1		

Electives for the first year must be chosen from the following list:

Agricultural Engineering 401	Dairy Technology 401
Animal Husbandry 402, 404	Poultry Husbandry 401
Horticulture 405	Botany 401

SECOND YEAR

Economics	(401) 5	Economics	(402) 5	Rural Economics	(501) 5
English	(412) 3	Agronomy	(501) 5	Elective	10
Elective	10	Elective	5	Military Science	(426) 1
Military Science	(424) 1	Military Science	(425) 1		

Electives for the second year must be chosen from Groups A and B on page 28.

At the end of the second year students must have 25 hours requirements out of Group B completed.

At the end of the third year students must have 25 hours requirements out of Group A completed which must include Rural Economics 505, five hours of mathematics, and Economics 522.

* These courses are strongly recommended for election.

FARM MANAGEMENT

THIRD YEAR

Animal Husbandry (402)	5	Animal Husbandry (404)	5	Agr. Engineering (402)	3
Rural Economics (502 or 613)	5	Accounting (405)	5	Rural Economics (502 or 613)	5
Elective	5	Elective	6	Rural Economics (612)	3
				Elective	5

NOTE: See statement at end of second year concerning completion of Groups A and B requirements.

FOURTH YEAR

Rural Economics (602)	3	Rural Economics (603)	5	Business Organization (621)	3
Economics (620)	5	Rural Economics (605)	3	Elective	10
Elective	8	Elective	5		

Additional suggested electives:

One course in those departments not included in covering Group B requirements

Agricultural Engineering 603, 605	History 403, 404
Animal Husbandry 501, 502, 503, 504, 505	Political Science 401, 402
Agronomy 502, 503, 601	Speech 401
Horticulture 503, 522	Journalism 407
Entomology 551	Business Organization 621
Agricultural Extension 501, 600	Accounting 401, 402

MARKETING

THIRD YEAR

Rural Economics (502 or 613)	5	Rural Economics (605)	3	Rural Economics (502 or 613)	5
Elective	10	Accounting (405)	5	Economics (520)	5
		Agr. Engineering (402)	3	Economics (625)	2
		Elective	5	Elective	3

NOTE: See statement at end of second year concerning completion of Groups A and B requirements.

FOURTH YEAR

Bus. Organization (650)	5	Rural Economics (603)	5	Bus. Organization (621)	3
Elective	10	Rural Economics (614)	3	Rural Economics (612)	3
		Elective	5	Elective	9

Additional suggested electives:

Animal Husbandry, Agronomy, Horticulture, Poultry Husbandry	Economics 613, 625
Agricultural Extension 501, 600	Journalism 407
Accounting 401, 402	Speech 401
Business Organization 504, 623-625, 650, 716	
Rural Economics 607	

RURAL SOCIOLOGY

THIRD YEAR

Sociology (401)	5	Sociology (402)	5	Sociology (601)	4
Rural Economics (502 or 613)	5	Rural Economics (605)	3	Elective	10
Psychology (401)	5	Psychology (402)	5		
		Elective	3		

NOTE: See statement at end of second year concerning completion of Groups A and B requirements.

FOURTH YEAR

Rural Economics (606)	5	Rural Economics (603)	5	Rural Economics (502 or 613)	5
Rural Economics (608)	3	Rural Economics (607)	4	Sociology (667)	3
Sociology (665)	3	Sociology (501)	5	Elective	8
History (403)	5	Elective	5		

Additional Suggested Electives:

Economics 656, 658, 659,	Political Science 401, 403
Agricultural Extension 501, 600	Journalism 407
Speech 401	History 404

CURRICULUM FOR STUDENTS FOLLOWING MAJORS IN HORTICULTURE

FIRST YEAR

Chemistry	(401 or 411)	5	Chemistry	(402 or 412)	5	Agr. Chemistry	(401)	5
Botany	(401)	5	Botany	(402)	5	Botany	(406)	5
Horticulture	(401)	5	Zoology	(401)	5	Zoology	(408)	5
Survey of Agriculture		3	English	(410)	3	English	(411)	3
Military Science	(421)	1	Military Science	(422)	1	Military Science	(423)	1
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(403)	1
			Physical Education	(400)	1			

SECOND YEAR

Economics	(401)	5	Economics	(402)	5	Botany	(419)	5
English	(412)	3	Agronomy	(501)	5	Elective		10
Elective		10	Elective		5	Military Science	(426)	1
Military Science	(424)	1	Military Science	(425)	1			

NOTE: The schedule cards of studies after the first year must be filled out in conference with an adviser. The adviser must sign the schedule card before it can be approved by the Secretary of the College.

Electives for the second year must be chosen from the following list:

*Horticulture 440	Fine Arts 570
Entomology 551	Speech 401
Bacteriology 509	Fine Arts 421
Agronomy 502, 503	Forestry 410
Accounting 405	

THIRD YEAR

Elective	15	Elective	15	Elective	15
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These electives are to be chosen with the approval of the student's adviser. Care must be taken to be sure that the requirements listed under the heading "Major in Horticulture," as listed below, are completed.

FOURTH YEAR

Elective	15	Elective	14	Elective	14
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These electives are to be chosen with the approval of the student's adviser.

Major in Horticulture: Students majoring in horticultural subjects must take in addition to the fixed subjects in the preceding outline, a minimum of 25 hours from the following courses:

Botany 605-606	10 hours	Agricultural Engineering 507	5 hours
Mathematics 421-422	10 hours	Entomology 551	5 hours
Physics 411-412 or 413	10 hours	Rural Economics 501	5 hours
Bacteriology 509 or 607	5 hours	Rural Economics 505	5 hours
Business Organization 700	5 hours	Rural Economics 613	5 hours
Agricultural Engineering 506	3 hours	Business Organization 712	4 hours

* Horticulture 440 is required for Pomology and Floriculture.

SPECIALIZED CURRICULA

Students electing any one of the specialized curricula and later changing to a different curriculum will be required to meet all of the requirements of the curriculum to which they change and will not be permitted to make substitutions.

The curricula in Animal Science, Applied Entomology, Dairy Technology, Plant Science, Rural Economics and Rural Sociology, are planned especially for students desiring specialized work and for those who are intending to continue in graduate study.

Students who plan to enroll in Animal Science, Applied Entomology, Dairy Technology, Plant Science, or Rural Economics and Rural Sociology should present one unit in algebra and one unit in geometry for entrance.

All of the curricula coming under the heading "Specialized Curricula" require 202 hours for graduation.

ANIMAL SCIENCE

This curriculum is designed for students who wish to prepare for research or teaching positions in the animal science fields. Provision has been made for a broad training in the fundamental biological and physical sciences to serve as a foundation for graduate study.

The departments in which major study may be carried on are: Agricultural Chemistry, Animal Husbandry, Poultry Husbandry, and Zoology. Some areas of specialization are animal nutrition, animal breeding, livestock production, poultry production, dairy production, and chemistry of food and nutrition.

FIRST YEAR

Chemistry	(401 or 411)	5	Chemistry	(402 or 412)	5	Chemistry	(403 or 413)	5
Mathematics	(421 or 432)	5	Mathematics	(422 or 431)	5	Mathematics	(423 or 435)	5
Zoology	(401)	5	Zoology	(402)	5	Animal Husbandry	(401)	} 5
Survey of Agriculture		3	English	(410)	3	or		
Military Science	(421)	1	Military Science	(422)	1	Poultry Husbandry	(401)	} 5
Physical Education	(401)	1	Physical Education	(402)	1	English	(411)	
			Physical Education	(400)	1	Military Science	(423)	1
						Physical Education	(403)	1

SECOND YEAR

Physics	(411)	5	Physics	(412 or 413)	5	Physiology	(417)	5
English	(412)	3	Physiology	(416)	5	Economics	(402)	5
Agr. Chemistry	(401)	5	Economics	(401)	5	Elective		5
Elective		5	Military Science	(425)	1	Military Science	(426)	1
Military Science	(424)	1						

One of the following must be elected during the second year: Animal Husbandry 402 or 404, Poultry Husbandry 502, or Chemistry 421.

THIRD YEAR

Zoology	(403)	5	Agr. Chemistry	(601)	5	Agr. Chemistry	(608)	5
French or German	(401)	5	French or German	(402)	5	Bacteriology	(607)	5
Elective		5	Elective		5	Elective		5

Electives in the fields of animal genetics, animal nutrition or animal production and marketing, or other courses subject to the approval of the adviser, may be taken during the third and fourth years.

FOURTH YEAR

Anatomy	(613)	5	Anatomy	(616)	5	Zoology	(609)	5
Elective		10	Elective		10	Elective		10

APPLIED ENTOMOLOGY

This curriculum is designed for students who wish to prepare for positions in teaching, extension, research, and regulatory work. It provides for a broad training in the basic sciences as a foundation for graduate study. The wide range of electives permits a high degree of specialization which is necessary in the field.

The various diversified fields of research concern insects affecting: field, garden, greenhouse and fruit crops, cotton, ornamentals, tobacco, stored products and household furnishings, man and animals directly or as disease vectors, forests and forest products, and taxonomic or museum work.

Students entering applied entomology should plan for at least one year of graduate work.

FIRST YEAR

Chemistry	(401 or 411)	5	Chemistry	(402 or 412)	5	Chemistry	(403 or 413)	5
Botany	(401)	5	Botany	(402)	5	Horticulture	(405)	5
Zoology	(401)	5	Zoology	(402)	5	Elective		5
Survey of Agriculture		3	English	(410)	3	English	(411)	3
Military Science	(421)	1	Military Science	(422)	1	Military Science	(423)	1
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(403)	1
			Physical Education	(400)	1			

CURRICULA

39

SECOND YEAR					
Physics	(411) 5	Physics	(412) 5	Mathematics	(485) 5
Mathematics	(421) 5	Elective	10	Elective	10
English	(412) 3	Military Science	(425) 1	Military Science	(426) 1
Elective	5				
Military Science	(424) 1				

RECOMMENDED ELECTIVES:

Agricultural Chemistry 401	Botany 405 and 406
Entomology 551	Botany 615
Geology 401 and 402	Chemistry 415
Horticulture 522	Zoology 408

THIRD YEAR					
Elective	15	Elective	15	Elective	15

RECOMMENDED ELECTIVES:

Economics 401 and 402	Agricultural Chemistry 601
Botany 419	Psychology 401 or Sociology 401
Zoology 403 and 605	Bacteriology 607
Photography 611	

FOURTH YEAR					
Elective	15	Elective	15	Elective	15

RECOMMENDED ELECTIVES:

Botany 605 and 606, or 601 and 602, 617, 633, 634	German 401, 402 and 403, or
Entomology 651 and 652, or 653 and 654, 655, 660	French 401, 402, and 403
Zoology 606	

DAIRY TECHNOLOGY

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Chemistry (403 or 413) 5
Mathematics (421) 5	Dairy Technology (403) 5	Mathematics (422) 5
Dairy Technology (401) 5	Botany or Zoology (401) 5	Botany or Zoology (402) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Military Science (421) 1	Military Science (422) 1	Military Science (423) 1
Physical Education (401) 1	Physical Education (402) 1	Physical Education (403) 1
	Physical Education (400) 1	

SECOND YEAR

Physics (411) 5	Physics (412 or 413) 5	Accounting (401) 5
English (412) 3	Dairy Technology (411) 3	Military Science (426) 1
Agr. Engineering (408) 3	Military Science (425) 1	
Military Science (424) 1		

In addition the following courses must be elected in the second year:

Economics (401) 5	Agr. Engineering (402) 3	Dairy Technology (407) 3
Dairy Technology (405) 5	Economics (402) 5	Agr. Chemistry (401) 5

THIRD YEAR

Agr. Chemistry (604) 5	Agr. Chemistry (605) 5	Agr. Chemistry (606) 5
Bacteriology (607) 5	Bacteriology (610) 3	Dairy Technology (615) 3
Accounting (402) 5	Bacteriology (611) 3	Elective 5
	Dairy Technology (415) 5	

FOURTH YEAR

Dairy Technology (607) 5	Dairy Technology (608) 5	Dairy Technology (515) 5
Dairy Technology (610) 5	Dairy Technology (605) 3	Elective 12
Dairy Technology (609) 3	Elective 6	

Recommended courses to be elected:

- Animal Husbandry 404 (Autumn Quarter, Junior Year)
- Poultry Husbandry 603 (Autumn Quarter, Junior or Senior Year)
- Speech 401 (Junior or Senior Year)
- Journalism 407 (Junior or Senior Year)
- Accounting 403 (Junior Year)
- Accounting 603
- Bus. Organization 504 (Business Communications and Adjustment Practice)
- Bus. Organization 621 (Business Law : Contracts)
- Bus. Organization 709 (Credit and Collections)
- Bus. Organization 712 (Salesmanship and Sales Management)
- Bus. Organization 716 (Principles of Advertising)
- Bus. Organization 700 (Marketing)

FORESTRY

A curriculum in forestry is offered covering the first two years of the four or five year curricula as given at some of the recognized forestry schools throughout the country. This curriculum is so arranged that full credit at The Ohio State University as outlined below is allowed upon transfer to nearly any regular forestry institution at the beginning of the junior year, thereby making it possible for Ohio men interested in forestry as a profession to obtain their first two years' instruction at home without paying non-resident fees and tuition in other states.

FIRST YEAR

Forestry	(410)	3	Chemistry	(402 or 412)	5	Mathematics	(421 or 432)	5
Chemistry	(401 or 411)	5	Botany	(402)	5	Botany	(406)	5
Botany	(401)	5	Engr. Drawing	(431)	4	Geology	(401)	5
Survey of Agriculture		3	English	(410)	3	English	(411)	3
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(403)	1
Military Science	(421)	1	Military Science	(422)	1	Military Science	(423)	1
Physical Education	(400)	1						

SECOND YEAR

Forestry	(508)	5	Forestry	(507)	5	Forestry	(509)	5
English	(412)	3	Botany	(605)	5	Botany	(606)	5
Mathematics	(431 or 422)	5	Civil Engineering	(401)	5	Civil Engineering	(402)	5
Economics	(403)	3	Economics	(404)	3	Agronomy	(506)	5
Military Science	(424)	1	Military Science	(425)	1	Military Science	(426)	1

PLANT SCIENCE

This curriculum is designed for students who wish to prepare for research and teaching positions in the plant science fields. The basic sciences (chemistry, botany, mathematics, physics, and geology) are included to serve as a foundation for graduate study and the courses in agriculture to give viewpoint and to provide some knowledge of the practical problems of agriculture.

The departments in which major study may be carried on are Agricultural Chemistry, Agronomy, Botany, and Horticulture and Forestry. Some areas of specialization are: plant chemistry, soil chemistry, soil physics, soil biology, plant breeding, plant pathology, pomology, vegetable gardening, floriculture, and field crop production.

FIRST YEAR

Chemistry	(401 or 411)	5	Chemistry	(402 or 412)	5	Chemistry	(403 or 413)	} 5
Botany	(401)	5	Botany	(402)	5	or		
Mathematics	(421)	5	Mathematics	(422)	5	Agr. Chemistry	(401)	} 5
Military Science	(421)	1	English	(410)	3	Mathematics	(423 or 435)	
Physical Education	(401)	1	Military Science	(422)	1	Zoology	(403)	5
Survey of Agriculture		3	Physical Education	(402)	1	English	(411)	3
			Physical Education	(400)	1	Military Science	(423)	3
						Physical Education	(403)	1

SECOND YEAR

Physics	(411)	5	Physics	(412 or 413)	5	Botany	(419)	} 5
Geology	(401)	5	Geology	(402)	5	or		
English	(412)	3	Economics	(401)	5	Agronomy	(501)	} 5
Elective		5	Military Science	(425)	1	Economics	(402)	
Military Science	(424)	1				Elective		5
						Military Science	(426)	1

One of the following must be elected in the second year: Agronomy 502 or 503, Horticulture 401, or Botany 406. Also, Agricultural Chemistry 401 must be elected if it was not taken during the first year.

THIRD YEAR

Botany	(605)	5	Botany	(606)	5	Bacteriology	(607)	5
Botany	(419)	} 5	Agr. Chemistry	(601)	5	Elective		10
or			Elective		5			
Agronomy	(601)	} 5						
Elective								

CURRICULA

41

FOURTH YEAR

German (401) 5	German (402) 5	Elective 15
Agronomy (601 or 602) 5	Elective 10	
Elective 5		

Either Botany 601 or Botany 602 must be elected in the fourth year.

RURAL ECONOMICS AND RURAL SOCIOLOGY

This curriculum is designed for students who plan to prepare for research or teaching in the field of rural economics or rural sociology. It is distinguished from the Rural Economics major in the general curriculum by the inclusion of more basic social science courses.

Some areas of specialization are farm management, marketing, rural credit, agricultural policy, and rural sociology.

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Zoology (401) 5	Zoology (402) 5	Zoology (403) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Mathematics (421) 5	Mathematics (422) 5	Dairy Technology (401) } 5
Military Science (421) 1	Military Science (422) 1	or
Physical Education (401) 1	Physical Education (402) 1	Agr. Engineering (401) } 5
	Physical Education (400) 1	or
		Poultry Husbandry (401) }
		Military Science (423) 1
		Physical Education (403) 1

SECOND YEAR

Economics (401) 5	Economics (402) 5	Rural Economics (501) 5
Sociology (401) 5	Sociology (402) 5	Agronomy (501) } 5
English (412) 3	Animal Husbandry (401, 402 or 404) 5	or
Agr. Engineering (402) 3	Military Science (425) 1	Agronomy (502 or 503) } 5
Military Science (424) 1		or
		Horticulture (405, 503, 504, or 522) }
		Elective 5
		Military Science (426) 1

THIRD YEAR

Accounting (401) } 5	Accounting (402) } 5	Rural Economics (502 or 613) 5
or	or	Political Science (403) } 5
Psychology (401) }	Psychology (402) }	or
Rural Economics (502 or 613) 5	Economics (520) }	History (404) }
Rural Economics (606) 5	or	Elective 5
Economics (522) 3	Sociology (667) }	
	Political Science (401) }	
	or	
	History (403) }	
	Elective 3-0	

FOURTH YEAR

Elective 15	Rural Economics (608) 5	Rural Economics (612) 3
	Rural Economics (605) 3	Elective 13
	Elective 6	

PROFESSIONAL CURRICULUM IN AGRICULTURAL ENGINEERING

LEADING TO THE DEGREES OF BACHELOR OF SCIENCE IN AGRICULTURE AND OF BACHELOR OF AGRICULTURAL ENGINEERING

This curriculum is intended for students who desire to prepare themselves for work in agricultural engineering, including research work, college teaching and extension activities in agricultural engineering, the more technical phases of agricultural engineering processes and applications in industry, and for those prospective farmers and engineering executors of land and farming

projects who desire a more fundamental training in the engineering practices in agriculture.

Because proficiency in the technical phases of agricultural engineering requires a broad fundamental training in both agriculture and engineering, the curriculum of the first three years is made up of fundamental and specific courses and thus makes possible a wide range of elective courses during the third and fourth years and of advanced electives in the fifth year. By the beginning of the third year, the student should decide whether he desires to continue his general training in agricultural engineering or to specialize in some subdivision, such as land maintenance and improvement, farm structures, machinery and equipment, farm power, or in rural electrification. A student who desires to pursue the five-year program should register his intentions with the Department of Agricultural Engineering at the beginning of the third year and be assigned an adviser to guide him in the selection of his desired electives before registering for the Winter Quarter.

PROFESSIONAL AGRICULTURAL ENGINEERING CURRICULUM

The requirements for admission to this curriculum are the same as for admission to the College of Engineering.

Students in this curriculum shall register in the College of Agriculture until after the degree of Bachelor of Science in Agriculture has been earned, thereafter they shall register in the College of Engineering.

At the end of the fifth year, the degree to be conferred by the College of Engineering is to be Bachelor of Agricultural Engineering.

FIRST YEAR

Mathematics	(482)	5	Mathematics	(481)	5	Mathematics	(483)	5
Engineering Drawing	(401)	4	Engineering Drawing	(402)	4	Engineering Drawing	(408)	4
Chemistry	(401 or 411)	5	Agr. Engineering	(401)	5	Chemistry	(402 or 412)	5
Survey of Agriculture		3	English	(410)	3	English	(411)	3
Survey of Engineering		1	Survey of Engineering		1	Survey of Engineering		1
Military Science	(421)	1	Military Science	(422)	1	Military Science	(423)	1
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(408)	1
Physical Education	(400)	1						

SECOND YEAR

Mathematics	(441)	5	Mathematics	(442)	5	Mechanics	(508)	5
Physics	(481)	5	Physics	(482)	5	Physics	(488)	5
English	(412)	3	Economics	(408)	3	Economics	(404)	3
Agr. Engineering	(502)	3	Agr. Engineering	(508)	5	Agr. Chemistry	(401)	5
Industrial Engr.	(419)	3	Military Science	(425)	1	Military Science	(426)	1
Military Science	(424)	1						

Farm experience requirement must be met before the Junior Year.

THIRD YEAR

Mechanics	(602)	5	Mechanics	(607)	3	Rural Economics	(501)	5
Botany	(401)	5	Botany	(402)	5	English	(419)	3
or			or			Agr. Engineering	(507)	5
Zoology	(401)	5	Zoology	(402)	5	Agronomy	(502 or 508)	5
Horticulture	(405)	5	Agronomy	(501)	5			
Civil Engr.	(411 or 401)	3-5	Animal Husb.	(401 or 402)	5			

FOURTH YEAR

(Leading to Bachelor of Science in Agriculture)

Agr. Engineering	(603)	5	Agr. Engineering	(602)	5	Agr. Engineering	(605)	5
Bacteriology	(609)	5	Agriculture Elective	0-5	Engr. Elective	5-10	5-10	
Agr. Engineering	(604)	5	Engr. Elective	5-10	Agriculture Elective	5-10	5-10	
Engr. Elective	10	Zoology	(408)	5				

Practical experience requirement, Agricultural Engineering 508, to be met prior to fifth year. For electives, see list following fifth year.

FIFTH YEAR

(Leading to Bachelor of Agricultural Engineering)

Agr. Engineering (701)	} 5-10	Agr. Engineering (701)	} 5-10	Agr. Engineering (701)	} 5-10
and		and		and	
Open Elective		Open Elective		Open Elective	
Engr. Elective	10	Engr. Elective	10	Engr. Elective	10

SUGGESTED ELECTIVES

The following courses are suggested as electives during the fourth and fifth years. Choice of electives must be approved by the chairman of the Department of Agricultural Engineering or the student's adviser, and should be selected according to the student's major interest, whether in Land Maintenance and Improvement, including irrigation, drainage and soil erosion; Farm Structures; Farm Power and Machinery; or Rural Electrification. Areas of activity also should be considered, whether a student expects to engage in teaching, extension, research, farming, industrial, or public service work.

Courses in the College of Agriculture:

Agronomy 502, 503, 603, 609
 Dairy Technology 401, 411
 Horticulture 503, 522, 523
 Forestry 502, 507
 Rural Economics 502, 505, 605
 Animal Husbandry 401, 402, 501, 502, 503, 504, 505
 Entomology 551
 Poultry Husbandry 401

Sequences in the College of Engineering:

For students specializing in Land Maintenance and Improvement:

Civil Engineering 402, 404, 602, 603, 606, 701 or 713, 703
 Electrical Engineering 642, 643
 Mechanical Engineering 507, 576, 577, 742
 Mechanics 610

For students specializing in Farm Structures:

Architecture 640, 642
 Civil Engineering 602, 603, 604, 606, 701, 704, 705, 712, 732
 Electrical Engineering 642, 643
 Mechanical Engineering 507, 551, 576, 577
 Mechanics 610

For students specializing in Farm Power and Machinery:

Industrial Engineering 405, 411, 418, 601, 602, 603, 653, 702, 752, 751
 Mechanical Engineering 507, 576, 577, 427 or 627, 514, 515

For students specializing in Rural Electrification:

Electrical Engineering 642, 643, 720, 741
 Industrial Engineering 421, 601
 Mechanical Engineering 427, 627, 514, 515

Courses in Colleges other than Agriculture and Engineering:

Business Organization 622, 650, 680, 700, 716
 Education 501
 Fine Arts 479, 500
 Geography 401
 Psychology 501
 Speech 401

HOME ECONOMICS

This curriculum shows the requirements that must be met by students desiring to major in the School of Home Economics. The details of the curriculum are presented in the various suggested programs in Home Economics. For suggested programs in Home Economics see the Bulletin of the School of Home Economics.

FIRST YEAR

Chemistry	(401 or 411)	5	Chemistry	(402 or 412)	5	Agr. Chemistry	(402)	5
Fine Arts	(481)	5	Fine Arts	(402)	2	English	(411)	3
*Botany or Zoology	(401)	5	English	(410)	3	Home Economics	(401)	3
or			*Botany or Zoology	(402)	5	Home Economics	(411)	5
Foreign Language			or				Physical Education	(423)
Home Economics	(400)	2	Foreign Language					
Physical Education	(421)	1	Physical Education	(400)	1			
			Physical Education	(422)	1			

* Students following the program in Home Economics Education may substitute a course recommended by an adviser.

SECOND YEAR

Physiology	(403)	5	Psychology	(401)	5	Sociology	(401)	5
Home Economics	(412)	5	Physiology	(404)	5	Home Economics (402 or 508)	5	
English	(412)	3	Engr. Drawing	(488)	3	Elective		5
Elective		3	Elective		3	Physical Education	(427)	1
Physical Education	(425)	1	Physical Education	(426)	1			

Students may follow suggested programs in planning their work.

THIRD YEAR

Bacteriology	(509 or 607)	5	Economics	(401)	5	Economics	(402)	5
Elective		10	Home Economics	(511)	3	Home Economics	(512)	5
			Home Economics	(611)	5	Home Economics	(506)	5
			or					
			Home Economics	(510)	3			
			Home Economics	(602)	3 or 5			

FOURTH YEAR

Home Economics	(621)	5	Home Economics	(627)	5	Elective		14
Home Economics	(626)	3	Elective		9			
Elective		6						

The electives in the third and fourth years may be chosen with the approval of the faculty adviser.

FACULTY ADVISERS

Students may consult the Junior Dean or a Junior Faculty Adviser during the freshman year concerning the appointment of a Faculty Adviser within the field of their major interest. As soon as each student has decided upon the field in which she desires to major she will be assigned an adviser in the field representing that interest. The Junior Dean or a Junior Faculty Adviser will serve until the Faculty Adviser in the major field has been appointed.

For each Quarter during the sophomore year the program of studies must be approved by the Faculty Adviser in the major field, if appointed, and if not, by the Junior Dean or Junior Faculty Adviser before it will be approved by the Secretary of the College. For each Quarter during the junior and senior years the program of studies must be approved and the schedule cards must be signed by the Faculty Adviser in the field of the major.

COMBINATION CURRICULA

Combination curricula have been adopted with other institutions. These curricula, continuing five years, are cooperative between the University and other colleges of the State and become effective when arrangements satisfactory to both schools can be made. Under the agreement the first three years are spent in the cooperating college and the last two years are spent in the College of Agriculture of the Ohio State University. At the end of the fourth year, the student returns to the former college, receives credit for the work of that year done *in absentia*, and is given the baccalaureate degree by that college. At the end of the fifth year, he receives the degree of Bachelor of Science from this University.

Combination curricula have been arranged with the following colleges of the State: University of Akron, Akron; Capital University, Columbus; Antioch College, Yellow Springs; Baldwin-Wallace College, Berea; Ashland College, Ashland; Bluffton College, Bluffton; Cedarville College, Cedarville; Defiance College, Defiance; Muskingum College, New Concord; and Wilmington College, Wilmington. It is the desire of the Ohio State University that the operation of the plan be extended to a large number of Ohio colleges.

RULES AND REGULATIONS OF THE JUNIOR PROGRAMS IN AGRICULTURE AND HOME ECONOMICS

Guidance. A student desiring a junior program in Agriculture or Home Economics will be directed in the choice of his courses by the office of the Junior Dean until such time as the student decides in which department he wishes to major. If a student plans to be in college for two years and decides to follow one of the suggested programs outlined, he will be assigned a faculty adviser as soon as he has reached this decision. If a student plans to be in college less than two years and does not find a suggested program of courses suitable to his needs, an advisory committee consisting of a representative of the department of his major interest, the Junior Dean, and the Secretary of the College will act in an advisory capacity in formulating a desirable program of courses.

Time of Preparing Program of Work. Those students who do not follow one of the suggested two-year programs of courses as outlined are asked to prepare as soon as possible in their first Quarter, in cooperation with their advisory committee, a proposed program of courses. Any changes in this program must be approved by the advisers.

Course Prerequisites. Students will find that college courses are built up in sequence, so that some serve as a foundation for others. These foundation courses are called prerequisites. In case the student cannot meet the prerequisites for certain desired courses, he may upon the approval of his advisers and the instructors in charge be permitted to take the courses in question without credit. Courses that are numbered in the "500" group are not open for election for credit in the first year and courses numbered in the "600" group cannot be taken for credit.

Transfers. A student shall be permitted (subject to the approval of his advisers) to change from the Junior School program to any of the existing curricula in Agriculture with the understanding that he must meet all the requirements of the curriculum which he enters.

A student shall be permitted to transfer from any one of the existing

curricula in the College of Agriculture to the Junior School of Agriculture upon the approval of his advisers.

Admission Requirements. The admission requirements for students enrolled in the Junior School of Agriculture are the same as for the existing four-year curricula in the College of Agriculture. See page 15.

Completion of Program in Junior School of Agriculture. At the completion of 100 hours of course work (including Military Science and Physical Education) the student shall be granted an appropriate certificate.

General Rules and Regulations. The regular rules and regulations of the College of Agriculture and of the University shall apply to students enrolled in the Junior School of Agriculture except for otherwise specifically stated changes or adaptations.

Students in the Junior School of Agriculture who are planning to complete two years of work and qualify for a certificate should select one of the following suggested Junior School Programs. If advice or suggestions are needed in making this selection consult the Junior Dean of the College of Agriculture.

Those who expect to be in attendance for only a limited time and desire a special program of courses, should also consult the Junior Dean about the procedure in planning for such a program.

SUGGESTED JUNIOR SCHOOL PROGRAMS

These programs are suggested for students who can devote only two years or less to a study of agricultural science and practice, and who, during that time, wish to give special attention to the fields covered by the following suggested programs.

For their educational value, and to broaden opportunity for other elective subjects in the second year, it is recommended that students take some of the science courses suggested in the first year schedule. However, if the student can attend classes during two or three Quarters only, he will be permitted to substitute other courses.

AGRICULTURAL ENGINEERING

FIRST YEAR

Agr. Engineering (401)	5	Agr. Engineering (402)	3	Agr. Chemistry (401)	5
Survey of Agriculture	3	English (410)	3	Botany (401)	5
Chemistry (401 or 411)	5	Chemistry (402 or 412)	5	English (411)	3
Animal Husbandry (401)	} 5	Mathematics (422)	} 5	Elective	5
or		or		Military Science (423)	1
Mathematics (421)	} 5	Physics (412)	} 5	Physical Education (408)	1
or		or			
Physics (411)	} 1	Elective	} 1		
Military Science (421)		Military Science (422)			
Physical Education (401)	1	Physical Education (402)	1		
		Physical Education (400)	1		

SECOND YEAR

Botany (402)	5	Agr. Engineering (508)	5	Agr. Engineering (506)	5
Horticulture (405)	5	Agronomy (502)	5	Agr. Engineering (507)	5
Industrial Engr. (415 or 418)	4	Agronomy (501)	5	Agronomy (503)	5
Agr. Engineering (502)	3	Animal Husbandry (402)	5	Rural Economics Spl. (504)	5
Military Science (424)	1	Military Science (425)	1	Military Science (426)	1

Some electives and possible substitutes:

Agricultural Engineering 504
Animal Husbandry 404
Dairy Technology 401, 403, 407

Agronomy 401
Poultry Husbandry 401, 502
Rural Economics 505

AGRONOMY

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Botany (401) 5	Botany (402) 5	Horticulture (405) 5
Agr. Engineering (401) 5	Animal Husbandry (401) 5	Zoology (401) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Military Science (421) 1	Military Science (422) 1	Military Science (423) 1
Physical Education (401) 1	Physical Education (402) 1	Physical Education (403) 1
	Physical Education (400) 1	

SECOND YEAR

Agronomy (501) 5	Agronomy (502) 5	Agr. Engineering (504) 5
Agronomy (503) 5	Animal Husbandry (402) 5	Rural Economics Spl. 5
Entomology (551) 5	Elective 8	Elective 7
Elective 3	Military Science (425) 1	Military Science (426) 1
Military Science (424) 1		

Suggested Electives:

Poultry Husbandry 401
 Animal Husbandry 404, 502, 503
 Horticulture 503, 522

Botany 419
 Agricultural Engineering 502, 503, 507
 Rural Sociology 505

ANIMAL HUSBANDRY

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Animal Husbandry (401) 5	Zoology (401) 5	Zoology (402) 5
Agr. Engineering (401) 5	Agronomy (401) 5	Dairy Technology (401) 5
Survey of Agriculture 3	English (410) 3	English (411) 3
Military Science (421) 1	Military Science (422) 1	Military Science (423) 1
Physical Education (401) 1	Physical Education (402) 1	Physical Education (403) 1
	Physical Education (400) 1	

SECOND YEAR

Animal Husbandry (402) 5	Animal Husbandry (409) 5	Animal Husbandry (502 or 503 or 505) 10
Agronomy (501) 5	Animal Husbandry (501) 5	Rural Economics Spl. 5
Poultry Husbandry (401) } 5	Agr. Engineering (502) 3	Vet. Medicine (453) 3
or }	Vet. Medicine (452) 3	Military Science (426) 1
Horticulture (405) }	Military Science (425) 1	
Military Science (424) 1		

DAIRY HUSBANDRY

FIRST YEAR

Chemistry (401 or 411) 5	Chemistry (402 or 412) 5	Agr. Chemistry (401) 5
Agr. Engineering (401) 5	Zoology (401) 5	Zoology (402) 5
Animal Husbandry (404) 5	Dairy Technology (401) 5	Poultry Husbandry (401) } 5
Survey of Agriculture 3	English (410) 3	or }
Military Science (421) 1	Military Science (422) 1	Horticulture (405) }
Physical Education (401) 1	Physical Education (402) 1	English (411) 3
	Physical Education (400) 1	Military Science (423) 1
		Physical Education (403) 1

SECOND YEAR

Animal Husbandry (402) 5	Animal Husbandry (409) 5	Animal Husbandry (405) 5
Zoology (403) 5	Animal Husbandry (504) 5	Rural Economics Spl. 5
Agronomy (501) 5	Agronomy (401) 5	Animal Husbandry (503) 5
Agr. Engineering (402) } 3	Agr. Engineering (502) 3	Animal Husbandry (507) 3
or }	Military Science (425) 1	Military Science (426) 1
Dairy Technology (407) }		
Military Science (424) 1		

HORTICULTURE

FIRST YEAR

Chemistry	(401 or 411)	5	Chemistry	(402 or 412)	5	Botany	(406)	5
Botany	(401)	5	Botany	(402)	5	Botany	(419)	5
Horticulture	(401)	5	Elective		5	Elective		5
Survey of Agriculture		3	English	(410)	3	English	(411)	3
Military Science	(421)	1	Military Science	(422)	1	Military Science	(423)	1
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(403)	1
			Physical Education	(400)	1			

FLORICULTURE

SECOND YEAR

Horticulture	(542)	5	Horticulture	(548)	5	Horticulture	(551)	5
Horticulture	(550)	5	Agronomy	(501)	5	Horticulture	(546)	5
Horticulture	(440)	3	Fine Arts	(540)	5	or		3-5
*Horticulture	(683)	3	Elective		3	Agr. Engineering	(507)	5
Military Science	(424)	1	Military Science	(425)	1	Horticulture	(526)	5
						or		3-5
						Entomology	(551)	5
						Military Science	(426)	1

POMOLOGY AND VEGETABLE GARDENING

SECOND YEAR

Horticulture	(503)	5	Horticulture	(522)	5	*Horticulture	(622)	5
Horticulture	(440)	5	Horticulture	(504)	5	*Horticulture	(628)	5
or			Agronomy	(501)	5	Agr. Engr.	(506 or 507)	5
Horticulture	(542)	5	Elective		3	Horticulture	(526)	3
or			Military Science	(425)	1	Elective		3
Horticulture	(683)	3-5				Military Science	(426)	1
or								
*Botany	(656)	5						
Horticulture	(523)	3						
Military Science	(424)	1						
Elective		5						

Electives for the first and second years:

Fine Arts 421
Poultry Husbandry 401
Agronomy 401

Agricultural Engineering 506
Horticulture 544
*Botany 656

* Taken without college credit.

POULTRY HUSBANDRY

FIRST YEAR

Chemistry	(401 or 411)	5	Chemistry	(402 or 412)	5	Agr. Chemistry	(401)	5
Zoology	(401)	5	Zoology	(402)	5	Zoology	(403)	5
Poultry Husbandry	(401)	5	Poultry Husb.	(412 or 509)	5	Poultry Husbandry	(418)	5
Survey of Agriculture		3	English	(410)	3	English	(411)	3
Military Science	(421)	1	Military Science	(422)	1	Military Science	(423)	1
Physical Education	(401)	1	Physical Education	(402)	1	Physical Education	(403)	1
			Physical Education	(400)	1			

SECOND YEAR

Poultry Husbandry	(502)	5	Poultry Husb.	(412 or 509)	5	Rural Economics Spl.		5
*Poultry Husbandry	(603)	3	Elective	10-15		Elective		10
Elective		5-8	Military Science	(425)	1	Military Science	(426)	1
Military Science	(424)	1						

Electives should be chosen from the following list:

Agricultural Engineering 401, 502, or 504
Animal Husbandry 401, 402, or 404
Botany 401
Dairy Technology 401
Economics 401, 402

Entomology 551
Agronomy 401, 502, or 503
Agronomy 501
Horticulture 405, 522, 503

* Taken without college credit.

GENERAL AGRICULTURE

FIRST YEAR

Chemistry (401 or 411)	5	Chemistry (402 or 412)	5	Agr. Chemistry	(401) 5
Elective	10	Botany or Zoology	(401) 5	Botany or Zoology	(402) 5
Survey of Agriculture	3	English	(410) 3	English	(411) 3
Military Science (421)	1	Elective	5	Elective	5
Physical Education (401)	1	Military Science (422)	1	Military Science (423)	1
		Physical Education (402)	1	Physical Education (403)	1
		Physical Education (400)	1		

Electives for the first year should be selected from the following list:

Animal Husbandry 401	Dairy Technology 401
Poultry Husbandry 401	Agronomy 401
Agricultural Engineering 401	Horticulture 405

SECOND YEAR

Electives	15-18	Electives	15-18	Electives	15-18
Military Science (424)	1	Military Science (425)	1	Military Science (426)	1

HOME ECONOMICS

FIRST YEAR

Chemistry (401 or 411)	5	Chemistry (402 or 412)	5	English	(411) 3
Home Economics (400)	2	Home Economics (401)	3	*Fine Arts (403)	1
Fine Arts (431)	5	English (410)	3	or	} 2
*Botany or Zoology (401)	} 5	*Botany or Zoology (402)	} 5	Elective	
or		or		Home Economics (411)	5
Foreign Language	} 1	Foreign Language	} 1	Agr. Chemistry (402)	5
Physical Education (421)		Physical Education (422)		Physical Education (400)	1
				Physical Education (423)	1

* This course is required for students expecting to elect Home Economics 402.

SECOND YEAR

Physiology (403)	5	Physiology (404)	5	Home Econ. (402 or 508)	5
Home Economics (412)	5	Home Economics (510)	3	Home Economics (518)	5
English (412)	3	*Fine Arts (437)	} 3	Elective	5
Elective	3	or		Physical Education (427)	1
Physical Education (425)	1	Elective	} 5		
		Elective		Physical Education (426)	1

* This course is required for students expecting to elect Home Economics 402.

Recommended electives for the second year:

Sociology 401	Physical Education 464
Economics 401, 402	Music 430, 431
Rural Economics 505	Education 521
Psychology 401	English 440, 450
Entomology 551	Philosophy 401
Speech, 401, 470	Political Science 401, 402, 403
Journalism 407	Home Economics 503, 506, 511, 512

SHORT COURSES

SHORT COURSES IN AGRICULTURE

The Short Courses in Agriculture are given during the months of November, December, January, February, and March. The short courses vary in length from a few days to eight weeks. For the most part each is given by one Department of the College only and deals with one subject. Short courses are offered by the following departments: Agricultural Engineering, Animal Husbandry, Dairy Technology, Horticulture, Poultry Husbandry, and Rural Economics.

The Short Courses have been established to meet the demands of Ohio farmers who are unable to avail themselves of the other courses in Agriculture offered by the University. There is a large number of young men living on farms in Ohio who desire some training in the principles of agriculture but who find it impossible to attend college during the regular academic year. There are also mature men, past the usual school age, who are ambitious to become familiar with the most recent agricultural thought and practices. Opportunity is thus given to such men to become familiar with the results of the latest investigations in research and their practical application to farm work.

FARMERS' WEEK

JANUARY 31 TO FEBRUARY 4, 1938

Farmers' Week is set aside as the round-up week for the College of Agriculture. Farmers from all parts of the State are invited to come and spend this week at the Ohio State University.

Special lectures and demonstrations are scheduled from eight o'clock in the morning until five o'clock in the afternoon, with evening lectures on popular subjects. The lectures will be given not only by the Faculty of the College of Agriculture but by many noted men and women from other states, who will lecture on special subjects. All lectures are open to the public.

A complete program of Farmers' Week will be ready for distribution approximately a month in advance and may be obtained by writing to the Dean of the College of Agriculture.

INSTRUCTION FOR BROADCASTING SERVICE

The University provides courses for students interested in securing training for service in broadcasting stations. Since these courses are given in a number of different departments, they are here listed together for convenience.

Prospective students wishing a combination of these courses with the expectation of preparing for professional work in broadcasting stations should consult the departments concerned and have their programs approved by the Committee on Radio Education.

The description of the courses will be found under the departments indicated, in the appropriate college bulletins.

Business Organization 799. Special Problems in Business Organization. One to three credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, senior or graduate standing, preliminary courses in the field of specialization, and permission of the instructor.

Radio advertising.

Education 600. Minor Problems. Two to four credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, junior standing in the College of Education and twenty credit hours in education and allied subjects of which ten approved by the instructor must be in education. Students may, with the approval of their advisers, register for more than one section of Education 600 or for the same section two or more times.

By permission of the Chairman of the Department and the Director of the Bureau of Educational Research, students enrolled in this course may obtain credit for research work done under members of the Bureau staff.

Education 601. Radio in Education. Two credit hours. Autumn Quarter. Mr. I. Keith Tyler.

A consideration of the place of radio in modern teaching with particular attention to the techniques employed in its use in the various subjects in elementary and secondary schools.

Opportunity for observation and individual experimentation. Students registering for three credit hours will make additional excursions and observations to the production and use of educational radio programs.

Education 950. Research in Education. Three to five credit hours. Autumn, Winter, and Spring Quarters. Students may, with the approval of their advisers, register for more than one section of 950 or for the same section two or more times.

By permission of the Chairman of the Department and the Director of the Bureau of Educational Research, students enrolled in this course may obtain credit for research work done under members of the Bureau staff.

Electrical Engineering 555. Radio Management and Program Direction. Two credit hours. Winter Quarter. Two class hours and four hours of preparation each week. Prerequisite, junior standing in any college of the University, and permission of the instructor. Mr. Higgy.

A course of lectures designed to acquaint the student with the organization and operating practices of the radio industry. The regulation, allocation, and organization of stations and the industry will be studied. Written reports will be required.

Electrical Engineering 655. Radio Broadcasting Problems. One to three credit hours. One Quarter. Autumn, Winter, Spring. Three laboratory hours each week for each credit hour. Prerequisite, junior standing in any college of the University and permission of the instructor. Mr. Higgy.

Each student will be required to make a comprehensive study of one or more of the following problems.

- (a) Planning and analysis of programs.
- (b) Program production.
- (c) Techniques used in presenting programs.
- (d) Publicity and information.

Electrical Engineering 760-761-762. Advanced Theoretical Study of Electrical Engineering Practice and Equipment. Three to five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, permission of the instructor in charge.

Broadcasting Problems.

Journalism 605. Writing for the Radio. Three credit hours. Spring Quarter. Prerequisite, Journalism 401 and 402, or by permission of the instructor. Mr. Smith.

The study of the problems of preparing and presenting material for the radio. Emphasis on the gathering, editing, and broadcasting of news from the radio viewpoint. Practice in writing of original manuscripts and the adaptation of material already written. Consideration of radio production problems as they affect the writer.

Music 655. Music in Radio Broadcasting. Three credit hours. Spring Quarter. Three lectures each week. Mr. Wilson.

A discussion of practical problems involved in broadcasting different types of instrumental and vocal solo and ensemble groups and of finding and coaching such groups. Practice in building programs with considerations of appropriate material and sequences.

Speech 510. Radio Speaking. Three credit hours. Spring Quarter. One lecture and two two-hour recitations each week. Prerequisite, English 401 or the equivalent, Speech 401 except in special cases, and the permission of the instructor. Mr. Riley.

Consideration of the special problems involved in adapting the principles of effective speaking to the radio audience in the composition and delivery of five basic program types: news, talks, interviews, sketches, and advertising. Special drill in voice control. Practice afforded in announcing and program arrangement.

DEPARTMENTS OF INSTRUCTION

ACCOUNTING

Office, 309 Commerce Building

PROFESSORS TAYLOR AND MILLER, ASSOCIATE PROFESSORS HECKERT AND DICKERSON, ASSISTANT PROFESSORS WILLCOX AND SHONTING, MR. BOLON, MR. WALL, MR. FLEIG, MR. BURNHAM, AND ASSISTANT

401-402. Elements of Accounting. Five credit hours. Two Quarters. Both 401 and 402 are given Autumn, Winter, Spring. Three class meetings and two two-hour laboratory periods each week. Prerequisite or concurrent, Economics 401-402 or 403-404. All instructors.

The work of the first Quarter consists of the theory of account construction together with the development of books of original entry.

The second Quarter is devoted to the application of accounting principles to the different forms of business organization and the preparation and interpretation of financial statements.

405. Outline of Accounting. Five credit hours. One Quarter. Autumn and Winter. Five class meetings each week. Mr. Dickerson, Mr. Willcox, Mr. Shonting.

A general survey of the principles of accounting and their application in modern business. Points emphasized are: use of accounting for information and control; the double-entry theory and the mechanics of bookkeeping; account classification; determination of profits; problems of valuation; presentation and analysis of financial and operating statements. The course is intended for students whose major interest is in fields other than accounting; it will serve, however, as preparation for a limited amount of specialized study in the problems of mercantile, manufacturing, and institutional accounting.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

624. Factory Costs. Five credit hours. Spring Quarter. Five class meetings each week. Prerequisite, Accounting 401-402 or 405. Not open to students taking Accounting 603-604. Mr. Willcox.

The course is intended primarily for students whose major interest is in fields other than accounting. Emphasis is placed upon the accumulation of material, labor and expense, cost of production and distribution and to the relationship between cost accounting work and that of other business departments.

AGRICULTURAL CHEMISTRY

Office, 211 Townshend Hall

PROFESSOR LYMAN, ASSOCIATE PROFESSORS ALMY AND BURRELL, AND ASSISTANTS

Students expecting to major in agricultural chemistry are requested to interview Professor Lyman concerning election of courses in this and related departments.

401. General Agricultural Chemistry. Five credit hours. One Quarter. Autumn, Winter, Spring. Three recitations and two three-hour laboratory periods each week. Required in standard curricula in Agriculture and Horticulture. Prerequisite, Chemistry 402 or 412. Mr. Almy, Mr. Burrell.

An introductory course in organic chemistry and its applications to plant and animal life. The laboratory includes both organic and quantitative work.

402. An Introduction to Organic and Biological Chemistry. Five credit hours. One Quarter. Autumn, Winter, Spring. Three lectures or recitations and two three-hour laboratory periods each week. Home Economics, first year. Prerequisite, Chemistry 402 or 412. Mr. Almy, Mr. Burrell.

The simpler organic compounds and their relation to the lipides, carbohydrates and proteins. Enzymes. Laboratory work consists in the quantitative analysis of biological materials.

403. An Introduction to Organic and Biological Chemistry. Five credit hours. One Quarter. Autumn, Winter, Spring. Three lectures or recitations and two three-hour laboratory periods each week. Prerequisite, Agricultural Chemistry 402. Mr. Lyman.

The chemistry and analysis of typical foodstuffs. The chemistry of digestion. Digestibility and efficiency of proteins. Fuel value determinations and gaseous metabolism. Metabolism of proteins. Carbohydrates and fats. Vitamins.

406. Animal Chemistry. Three credit hours. Winter Quarter. One lecture and two three-hour laboratory periods each week. Prerequisite, Chemistry 401-402-403 or 411-412-413, and Agricultural Chemistry 401. Mr. Lyman and assistants.

The chemical composition of feeds; the chemistry of digestion and the digestive fluids; the chemistry of metabolism and the excretions of the body.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. General Biological Chemistry. Five credit hours. One Quarter. Autumn and Winter. Three lectures and two three-hour laboratory periods each week. Animal Science and Plant Science, third year. Prerequisite, Agricultural Chemistry 401, or its equivalent in organic chemistry and quantitative analysis, together with five hours of biological science. Mr. Burrell.

A study of the chemistry of the fats, carbohydrates, proteins, and other compounds of biological importance, and the general chemistry of the metabolism of plants and animals. This course is intended for students majoring in biological subjects, and as a prerequisite to certain advanced courses in this department.

602. Food Inspection and Analysis. Five credit hours. Spring Quarter. One lecture and four three-hour laboratory periods each week. Prerequisite, Agricultural Chemistry 401 and Pharmacy 610. Mr. Almy.

Lectures and laboratory work on the composition, official methods of analysis, and methods of detection of adulteration of such foods as maple syrup, honey, cocoa, chocolate, spices, vinegar, flavoring extracts, and alcoholic foods.

604. Dairy Chemistry. Five credit hours. Autumn Quarter. Two lectures and three three-hour laboratory periods each week. Dairy Technology, third year. Prerequisite, Chemistry 403 or 413 and Agricultural Chemistry 401. Mr. Almy.

The constituents of milk are studied, using lectures, textbooks, and assigned readings. Laboratory work includes the separation and study of the constituents of milk.

605. Dairy Chemistry. Five credit hours. Winter Quarter. Three lectures and two three-hour laboratory periods each week. Dairy Technology, third year. Prerequisite, Chemistry 403 or 413 and Agricultural Chemistry 401. It is recommended that Agricultural Chemistry 604, 605, and 606 be taken in sequence. Mr. Almy.

A continuation of Agricultural Chemistry 604. A study is made of the application of some physico-chemical principles in the field of dairy technology.

606. Dairy Chemistry. Five credit hours. Spring Quarter. One lecture and four three-hour laboratory periods each week. Dairy Technology, third year. Prerequisite, Chemistry 403 or 413 and Agricultural Chemistry 401. Mr. Almy.

Laboratory and lectures on the analysis of dairy products, milk, condensed milk, dried milk, and butter. This course is designed to teach the methods of analysis used in the chemical control of manufacturing plants and the legal control of dairy products.

607. Chemistry of Nutrition. Five credit hours. Spring Quarter. Two lectures and three three-hour laboratory periods each week. Given in alternate years. Prerequisite, Agricultural Chemistry 601 or 403 and Physiology 403-404 or equivalent. Mr. Lyman.

Lectures on the chemistry of nutrition. Laboratory work includes experiments on digestion and utilization of food, determination of fuel value of food and the heat production of man

under various conditions, the analysis of blood for waste products of metabolism, the effects on small animals of diets consisting of purified food constituents, and the effects of selected diets on the formation of waste products in the body.

***608. Animal Nutrition.** Five credit hours. Spring Quarter. Two lectures and three three-hour laboratory periods each week. Given in alternate years. Prerequisite, Agricultural Chemistry 601 or 403 and acceptable courses in physiology. Mr. Lyman.

Lectures on the chemical problems involved in growth, maintenance and fattening of animals, and in the production of milk and work. The composition of feeds and farm rations is discussed from the standpoint of the more recent conceptions of animal nutrition. Laboratory work includes the determination of coefficients of digestibility, the determination of protein and mineral storage during growth, a study of the energy requirement and the effect of selected rations on animals.

701. Special Problems. Three to fifteen credit hours, taken in units of three or five hours each Quarter for one or more Quarters. Autumn, Winter, Spring. Prerequisite, Agricultural Chemistry 601 and consent of the instructor. All instructors.

Students electing this course must have had at least two five-hour courses in the department. Consent of the department must be secured.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AGRICULTURAL EDUCATION

Office, 323 Campbell Hall

PROFESSOR STEWART, ASSISTANT PROFESSORS KENESTRICK
AND McCLELLAND

400. Principles Applied to the Teaching of Vocational Agriculture in Secondary Schools. Five credit hours. One Quarter. Winter and Spring. Five recitations each week. Prerequisite, a course in psychology. Mr. Stewart.

The application of psychology to the teaching of agriculture, the development of the problem method of teaching in the field of vocational agriculture, and the place and technique of supplementary facilities such as laboratory and field teaching.

401. Teaching of Vocational Agriculture in Secondary Schools. Five credit hours. One Quarter. Autumn and Spring. Four recitations and one observation period each week. Prerequisite, Psychology 401 and Agricultural Education 400. Mr. Stewart.

The Smith-Hughes Law, state plans, the agricultural curriculum, courses of study, project organization and supervision, part-time courses, the teacher of agriculture as a factor in community life.

502. Observation of the Teaching of Vocational Agriculture. Five credit hours. One Quarter. Autumn, Winter, Spring. Daily observation in the training schools, based upon prepared assignments. One conference hour each week and two or more days of observation of project work and supervised farm practice, based upon prepared assignments. Prerequisite, Agricultural Education 401; concurrent, Agricultural Education 503 and 601. Mr. Kenestrick, Mr. McClelland.

Directed observation of the entire program of the duties of the teachers of vocational agriculture in five near-by rural high schools. Group and individual observation visits will be made.

Not open to students who have credit for Agricultural Education 402.

* Not given in 1937-1938.

503. Supervised Teaching of Vocational Agriculture. Five credit hours. One Quarter. Autumn, Winter, Spring. Five days for a period of at least three weeks as assigned, preceded by at least two weeks of supervised preparation. Conferences as arranged. Concurrent, Agricultural Education 502 and 601. Mr. Kenestrick, Mr. McClelland.

Teaching under supervision for a period of at least three weeks in a near-by rural high school as assigned. Classroom instruction, laboratory and field trips, and project supervision as conducted in these schools will receive emphasis.

Not open to students who have credit for Agricultural Education 403.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Special Methods of Teaching Vocational Agriculture in Secondary Schools. Five credit hours. One Quarter. Autumn, Winter, Spring. Three two-hour recitations each week. Mr. Kenestrick, Mr. McClelland.

An intensive application of the information and practices given in the preceding departmental courses to the preparation of material for specific agricultural courses. The organization of subject matter for effective presentation in the classroom, the planning of lessons, laboratory work, and field trips, the methods of teaching through project supervision, and the organization of part-time courses.

701. Special Problems. Three to fifteen credit hours, taken in units of three or five hours each Quarter. Autumn, Winter, Spring.

This course is intended for graduates who wish to work out problems in Agricultural Education including Agricultural Extension and Vocational Education in Agriculture.

705. Supervised Practice Program Building. Three credit hours. Winter Quarter. Three discussion periods each week. Prerequisite, teaching experience in vocational agriculture or permission of the instructor. Students expecting to enroll in this course should communicate with the instructor at least two weeks prior to the beginning of the Quarter in order to arrange for the collection of data on specific individual problems. Mr. Kenestrick.

A study based upon researches in project accounting and analysis promoted in Ohio in recent years. Conditions in the field are studied from the assembled material and the findings derived from it. A program of improvement is determined.

Not open to students who have credit for Agricultural Education 605.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AGRICULTURAL ENGINEERING

Office, 105 Ives Hall

PROFESSORS McCUEN, REED, MILLER, AND OVERHOLT

401. Field Machinery. Five credit hours. One Quarter. Autumn, Winter, Spring. Three one-hour recitations and two two-hour laboratory periods each week. Mr. Reed.

Viewpoint and scope of agricultural engineering in the business of farming and in farm living. Practice in identification and control of physical principles, and in systematic approach to and analysis of common practical problems as illustrated in the use, adjustment and management of common field machines, and in machinery programs.

402. Agricultural Drawing. Three credit hours. One Quarter. Autumn, Winter, Spring. Three two-hour recitations and laboratory periods each week. Dairy Technology, third year. Mr. Miller.

Principles and practices in graphical language, such as charts, graphs, pictorial drawings, working drawings, plats, etc. Designed especially for all students in agriculture, to develop skills in giving and in receiving communication through the graphic language. Includes practice in lettering and in the use of drafting instruments.

408. Dairy Engineering. Three credit hours. Autumn Quarter. Two recitations and one two-hour laboratory period each week. Dairy Technology, third year. Prerequisite, Mathematics 421 and 422 or equivalents, and Physics 411 and 412 or equivalents. Mr. McCuen.

Primarily for students in Dairy Technology. A study of the generation and use of steam and electricity for heat and power, and of the operation of steam engines, boilers, pumps, small steam turbines, electric motors, etc.

502. Farm Buildings. Three credit hours. One Quarter. Autumn and Winter. Three two-hour lecture and laboratory periods each week. Mr. Miller.

Agricultural engineering applications regarding functions, needs, safety, economy, durability, sanitation, materials, conveniences, and other pertinent factors in the arrangement, design, construction, and maintenance of farm buildings, fences, and accessories of the farmstead. For all students in Agriculture and in Home Economics. Affords opportunity for solution of individual problems.

Not open to students who have credit for Agricultural Engineering 602.

503. Farm Power. Five credit hours. One Quarter. Winter and Spring. Three one-hour recitations and two two-hour laboratory periods each week. Prerequisite, Agricultural Engineering 401. Mr. McCuen.

Fundamental principles of mechanical power on the farm. The internal combustion engine, the electric motor and the farm tractor are used as a basis for the work which leads to a broad conception of an efficient farm power program.

Not open to students who have credit for Agricultural Engineering 404.

504. Farm Shop. Five credit hours. One Quarter. Winter and Spring. Four three-hour periods each week.

Primarily for students majoring in Agricultural Education preparatory to teaching farm shop work in high schools. Principles and practices in uses of materials, care and use of tools, elementary carpentry, rope splicing and tying, soldering, pipe fitting, cold iron work, belt lacing and power transmission, etc.

Not open to students who have credit for Practical Arts and Vocational Education 510 or Industrial Arts Education 510.

506. Special Agricultural Engineering Application in Horticultural Practices. Five credit hours. Spring Quarter. Prerequisite, five credit hours in horticultural subjects. All instructors.

Primarily for students majoring in horticulture. Power generators and power requirements; machines for tillage, seed preparation, seeding, cultivating, harvesting, combating crop enemies, and for preparing horticultural products for market: irrigation, and steam and electrical sterilization of plats and beds; engineering applications in storage technique.

507. Drainage and Irrigation. Five credit hours. Spring Quarter. Three recitations and two two-hour laboratory periods each week. Mr. Overholt.

Principles of drainage and irrigation, and elementary concepts of the use, design, construction and maintenance of various types of farm drainage, soil erosion, and irrigation systems based on topographical, soil and plant requirements. Includes practice in the use of the level, chain, plane table, etc., and in elementary farm surveying.

Not open to students who have credit for Agricultural Engineering 604.

508. Practical Experience in Agricultural Engineering. Five credit hours if satisfactory report is offered. No credit without report. Ten weeks practical work, or its equivalent, prior to the fifth year. Open only to and required of all Agricultural Engineering students pursuing curricula leading to the baccalaureate degree in Agricultural Engineering.

The student shall present a satisfactory report upon the work done. This report shall include a discussion of the student's observations upon the human and professional aspects of the work with which he was connected and other observation data worthy of record. If a student has had twelve months or more of satisfactory practical experience he may be permitted to substitute a report upon the work so done for the above requirements. The occupation, the work done, and the report shall be subject to approval. For further information concerning the details of the work and of the report, application should be made at the office of the Department.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

602. Advanced Farm Structures. Five credit hours. Winter Quarter. Three recitations and two two-hour laboratory periods each week. Prerequisite, ten credit hours of mathematics or of physics, Agronomy 502 or 503, and Animal Husbandry 401 or 402. Mr. Miller.

Advanced study of farm building programs, coordinating engineering, biological, economic, and social factors. The general design and details of construction for units and entire farmsteads.

603. Advanced Farm Power Equipment. Five credit hours. Autumn Quarter. Three one-hour recitations and two three-hour laboratory periods each week. Prerequisite, Agricultural Engineering 503, Agronomy 501, 502, or 503. Mr. McCuen.

Trends in design and application of modern farm power equipment. The farm tractor and its complement of power equipment, such as combines, threshers, feed mills, corn harvesters, will be used as a basis in a study leading toward power programs for economical production.

604. Advanced Drainage and Irrigation. Five credit hours. Spring Quarter. Three one-hour recitations and four hours laboratory each week. Prerequisite, ten credit hours of mathematics or physics, five credit hours of soils, and five credit hours of farm crops. Mr. Overholt.

Advanced study of conservation of soil by agricultural engineering structures to control erosion, and of soil water regulation through drainage and irrigation systems. A coordination of the biological, engineering, and economic factors involved in individual systems; also, cooperation problems in state and community programs for economic land utilization.

605. Advanced Field Machinery. Five credit hours. Spring Quarter. Three one-hour recitations and two three-hour laboratory periods each week. Prerequisite, Agricultural Engineering 401, Agronomy 501 or equivalent, Agronomy 502 or 503. Mr. Reed.

An advanced study of soil working and crop processing units, coordinating biological, engineering and economic factors. Trend problems starting with present agronomic, engineering, and management concepts regarding use, design, and needs, and progressing toward the solution of major machinery problems in advanced agricultural practices and systems.

701. Special Problems. Three to fifteen credit hours, taken in units of three or five hours each Quarter for one or more Quarters. Autumn, Winter, Spring. All instructors.

Students selecting this course must have had at least two five-hour courses in the department, one of which must have been in line with the problem chosen. Consent of the department must be secured.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AGRICULTURAL EXTENSION
Office, 115 Townshend Hall

MR. RAMSOWER, DIRECTOR; MR. SPOHN, SUPERVISOR OF
PROJECTS AND PROGRAMS

501. Extension Methods. Three credit hours. Autumn Quarter. Three recitations each week. Mr. Spohn.

An introduction to extension methods and organization. A consideration of extension laws and extension programs.

Not open to students who have credit for Agricultural Extension 401.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

***600. Extension Education.** Five credit hours. Spring Quarter. Five recitations each week. Given in alternate years. Prerequisite, Agricultural Extension 501. Mr. Spohn.

The application of psychology and principles of education to the program and methods used in extension work.

701. Special Problems. Three to fifteen credit hours, taken in units of three or five hours each Quarter. Autumn, Winter, Spring.

This course is intended for graduates who wish to work out problems in Agricultural Education including Agricultural Extension and Vocational Education in Agriculture.

AGRONOMY

Offices, 203 Townshend Hall and 101 Horticulture Building

PROFESSORS R. M. SALTER, PARK, BRADFIELD, AND WILLARD, ASSOCIATE PROFESSORS CONREY AND LEWIS, ASSISTANT PROFESSORS McCLURE, BATCHELOR, AND F. J. SALTER

401. Field Crop Production. Five credit hours. Winter Quarter. Four two-hour lecture-laboratory periods each week. Open to students in the Junior School. Other students may take this course only with the permission of the Junior Dean. Mr. Park.

A study of the history, distribution, adaptation, culture, and uses of cereal, forage, and miscellaneous crops, with special reference to the practical culture of the more important Ohio crops. Laboratory study of the principal types and varieties.

Not open to students who have credit for Farm Crops 401.

402. Turf Problems of the Lawn and Golf Course. Three credit hours. Spring Quarter. Two two-hour lecture-laboratory periods each week. Given in alternate years. No prerequisites. Mr. McClure, Mr. Willard.

The establishment and maintenance of turf under varying conditions. Soils, fertilizers, suitable grasses and other plants, seeds and seeding, turf insects and diseases, maintenance operations.

501. Soils. Five credit hours. One Quarter. Autumn, Winter, Spring. Four two-hour lecture-laboratory periods each week. Prerequisite, two Quarters of general chemistry. Mr. F. J. Salter, Mr. McClure, Mr. Bradfield.

A consideration of the soil as a natural system and of the various practices which are intended to increase its productivity with special reference to cultivation, drainage, rotation, the growth of legumes, and the use of manure, fertilizers, and limestone.

Each student is required to obtain a sample of soil from his home farm which must be turned over to the department one week previous to enrollment in the course. Directions for selecting this sample will be supplied on request.

Not open to students who have credit for Soils 401.

502. Cereal Crops. Five credit hours. One Quarter. Autumn, Winter, Spring. Four two-hour lecture-laboratory periods each week. Prerequisite, five hours of botany and five additional hours of botany and zoology. Mr. Lewis, Mr. Willard.

A comprehensive study of cereal crops, their botanical relationships, geographic distribution, varieties, improvement, culture, rotations, seed selection, seed production and distribution, harvesting, market grading, and farm and commercial uses. Laboratory study of types, varieties, identification, grading, seed selection and comparative field studies of cultural practices and growth characteristics on the experimental plots of the department.

Not open to students who have credit for Farm Crops 402.

503. Forage Crops. Five credit hours. One Quarter. Autumn and Spring. Four two-hour lecture-laboratory periods each week. Prerequisite, five hours

* Not given in 1937-1938.

of botany and five additional hours of botany or zoology. Mr. Willard, Mr. Lewis.

The functions, characters, uses and production of the principal forage plants and the management of meadows and pastures, based on a study of literature and experimental data. Laboratory studies in classification and identification of forage crops, in seed identification and hay grading. Comparative studies of growth characteristics and cultural practices on the experimental plots of the department.

Not open to students who have credit for Farm Crops 403.

505. Soils for Agricultural Teachers. Three credit hours. Autumn Quarter. Two lectures and one laboratory period each week. Given in alternate years. Prerequisite, Agronomy 501. Mr. F. J. Salter.

This course is designed to acquaint the prospective agricultural instructor with the recent findings of experiment stations and other research workers which may be helpful to him in teaching the subject and also to present methods of teaching soils both in the field and class room. The course includes the formulating of a complete outline for teaching this subject in the high school.

Not open to students who have credit for Soils 405.

506. Forest Soils. Five credit hours. Spring Quarter. Four two-hour lecture-laboratory periods each week. Prerequisite, two Quarters of general chemistry. Mr. Conrey.

A consideration of the soil as a natural system, the origin and classification of soils with special reference to forest ecology and to soil problems involved in the establishment and management of forests.

Each student is required to obtain a sample of soil which must be turned over to the department one week previous to enrollment in the course. Directions for selecting the sample will be supplied on request.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Soil Fertility. Three credit hours. Autumn Quarter. Three lectures each week. Prerequisite, Agricultural Chemistry 401, ten hours of biological science and Agronomy 501. Mr. R. M. Salter.

A study of soil fertility practices in the production of both general and specialized crops. Consideration is given to recent developments in fertilizer manufacture, and in the usage of fertilizers, liming materials, green manures, etc. Both theoretical and practical aspects are emphasized.

Not open to students who have credit for Soils 601.

***602. Chemical Methods Used in Soils Investigations.** Five credit hours. Autumn Quarter. Two lectures and nine laboratory hours each week. Given in alternate years. Prerequisite, Agricultural Chemistry 401, ten hours of biological science, and Agronomy 501. Mr. McClure.

The fundamentals of inorganic quantitative analysis as applied to soils, fertilizers, and liming materials.

Not open to students who have credit for Soils 602.

603. Origin and Classification of Soils. Five credit hours. Spring Quarter. Four lectures and one three-hour laboratory period each week. Prerequisite, Agricultural Chemistry 401, ten hours of biological science, and Agronomy 501. Mr. Conrey.

The characteristics of soils as developed under various climatic conditions and their application in soil classification with special reference to Ohio conditions. Laboratory study of soil characteristics, field trips to several of the important soil areas in Ohio.

Not open to students who have credit for Soils 603.

604. Soil Erosion and Its Control. Five credit hours. Spring Quarter. Four lectures and one three-hour laboratory period each week. Prerequisite, Agricultural Chemistry 401, ten hours of biological science, and Agronomy 501. Mr. Conrey.

A study of the nature, causes, occurrences, and economic importance of soil erosion, and of the methods and agencies for its control. Field trips for study of erosion in different regions of the state with visits to erosion experiment station and demonstration control areas.

* Not given in 1937-1938.

605. Soil Microbiology. Five credit hours. Winter Quarter. Two lectures and three three-hour laboratory periods each week. Given in alternate years. Prerequisite, Agricultural Chemistry 401, ten hours of biological science and Agronomy 501. Mr. Batchelor.

A study of the more important groups of soil micro-organisms and of such biological soil processes as nitrogen accumulation and transformations, oxidation, reduction and carbonation. Applications of the principles of soil micro-biology to practical soil management are emphasized.

***607. Field Crop Breeding.** Five credit hours. Spring Quarter. Four two-hour lecture-laboratory periods each week. Given in alternate years. Prerequisite, Agricultural Chemistry 401, five hours of botany, Zoology 403, and five hours of agronomy. Mr. Park.

Application of genetics to the improvement of field crops. Study of the theory and special techniques of breeding each type of crop plant. Detailed study of corn breeding, of hybrid seed corn production and of the production of registered and certified seed of other crops.

Not open to students who have credit for Farm Crops 602.

608. Soil Physics. Five credit hours. Winter Quarter. Two lectures and three three-hour laboratory periods each week. Prerequisite, Agricultural Chemistry 401, ten hours of biological science, Agronomy 501, and five hours of physics. A course in physical chemistry is recommended. Mr. Bradfield, Mr. McClure.

A study of the structure and physical properties of soils, including size distribution of particles, plasticity constants, soil-water, soil-air, and temperature relationships. Special emphasis is placed on the behavior of soils under field conditions and upon the soil as a physical medium for plant growth.

Not open to students who have credit for Soils 604 or 608.

609. Physical Chemistry of Soils. Five credit hours. Spring Quarter. Two lectures and three three-hour laboratory periods each week. Prerequisite, Agronomy 608. Mr. Bradfield, Mr. McClure.

A study of the soil as a dynamic physico-chemical system with especial emphasis upon the properties of colloidal clay and organic matter and their role in natural soil development and improvement. The development and correction of soil acidity, base exchange phenomena, reactions of soils with fertilizers, factors affecting the composition of the soil solution and the growth of plants are among the subjects treated.

Not open to students who have credit for Soils 604 or 609.

701. Special Problems. Three to fifteen credit hours. May be taken in units of three or five credit hours for one or more Quarters. Autumn, Winter, Spring. Prerequisite, ten hours of biological science, ten hours of agronomy, and the consent of the instructor. All instructors.

Problems involving library, laboratory or field study in plant breeding, weed control, field experimentation, special crops or soils problems may be selected.

702. Agronomy Seminary. One to five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, ten hours of biological science and ten hours of agronomy and consent of the instructor.

Topics for 1937-1938: Autumn Quarter: The Design of Field Experiments. Mr. R. M. Salter, Mr. Willard.

Winter Quarter: Soil Humus, Its Origin and Physiochemical Behavior. Mr. Bradfield, Mr. Batchelor.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

AMERICAN HISTORY

(See History)

* Not given in 1937-1938.

ANIMAL HUSBANDRY

Office, 203D Animal Husbandry Building

PROFESSORS GAY, PLUMB (EMERITUS), KAYS, COFFEY, AND SALISBURY,
ASSISTANT PROFESSORS HEIZER AND SUTTON, AND ASSISTANT

GENERAL LIVESTOCK PRODUCTION

401. Market Types and Classes of Live Stock. Five credit hours. One Quarter. Autumn, Winter, Spring. Three lectures and two two-hour laboratory periods each week. Mr. Coffey, Mr. Kays.

Designed to give the student an insight into the field of animal husbandry and an appreciation of the value and use of domestic animals and animal products. The points of individuality and quality which contribute to market value are given special emphasis. Such study is applied to beef and dairy cattle, swine, sheep, and horses.

The relationship existing between carcass meat and good meat, as it appears in the live animal, is established through a liberal use of the Meats Laboratory.

402. Feeding Live Stock. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Prerequisite, Agricultural Chemistry 401. Open to students who have completed three Quarters. Mr. Salisbury, Mr. Heizer, Mr. Sutton.

Elementary physiology as concerned with digestion, assimilation, metabolism, and production; classification, composition and use of farm-grown and by-product feeds; feeding standards, making up rations, and general practice of feeding livestock.

Specialized feeding is covered in the production courses 501, 502, 503, 504, and 505.

407. Meat Selection and Identification. Three credit hours. One Quarter. Autumn and Winter. Three two-hour laboratory periods each week. For Home Economics students. Mr. Gay, Mr. Kunkle.

A general course in meats in which the nutritive value and place of meat in the diet are considered. The physical properties of meat as determined by the structure of muscle, connective tissue, and fat composing the various carcasses are studied as well as the factors that determine grade. Also instruction and practice in identification of grades, wholesale and retail cuts, specialties, and sausage products.

409. Breeding Live Stock. Five credit hours. One Quarter. Winter and Spring. Five one-hour lecture-laboratory periods each week. Prerequisite, Zoology 402 and Animal Husbandry 401. Mr. Gay.

The evolution of domestication; relative importance of breeding and feeding; personal attributes essential to success; more specifically, the subjects of reproduction, sterility, and pedigree registration; variation, heredity, and environment in their relation to livestock improvement; prepotency, grading, close breeding, cross breeding and selection; reports and discussions of assignments covering current events and research in the field of livestock breeding.

Not open to students who have credit for Animal Husbandry 609.

410. Farm Meats. Three credit hours. Winter Quarter. One lecture and two three-hour laboratory periods each week. Prerequisite, Animal Husbandry 401 and 402. Mr. Kunkle.

A general course in farm meats including the selection and handling of slaughter animals. Emphasis is given to the relationship of judging, breeding, and feeding to carcass yield, cost, and cutout value of the various classes and grades. Also laboratory practice in dressing, cutting, curing, and processing these carcasses.

501. Horse Production and Management. Five credit hours. Winter Quarter. Three lectures and two laboratory periods each week. Prerequisite, Animal Husbandry 401 and 402, and ten hours of biological science. Mr. Kays.

Text, supplemented by lectures and special assignments. Classroom and laboratory sessions given to discussion of problems in breeding, feeding and miscellaneous management of horses at work and in the stud. The aim is to furnish needful information with reference to launching the horse enterprise, the purchase of foundation stock, commercial and pure bred, common management problems, also cost of developing horses from foalhood to maturity. Inspection trips to pure bred herds.

Not open to students who have credit for Animal Husbandry 601.

***502. Beef Cattle Production and Management.** Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each week.

* Not given in 1937-1938.

Prerequisite, Animal Husbandry 401 and 402, and ten hours of biological science. Mr. Gay.

The relation of beef cattle to general farming, the management of beef breeding herds, both pure bred and commercial, and feeding for beef production; the selection and sources of breeding stock and feeder cattle; equipment and layout of feeding plants; systems of feeding and rations; fitting for show and sale. Inspection trips to pure bred herds and feed lots.

Not open to students who have credit for Animal Husbandry 602.

503. Swine Production and Management. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Animal Husbandry 401 and 402, and ten hours of biological science. Mr. Coffey.

Deals with the swine production phase of livestock farming. Application of scientific economic principle prevails in its administration. More specifically the course deals with plant site selection and arrangement, seed stock selection, and with problems connected with reproduction, feeding, management, and marketing of commercial and breeding swine. One field trip or its equivalent in library investigation is required.

Not open to students who have credit for Animal Husbandry 603.

505. Sheep Production and Management. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Animal Husbandry 401 and 402, and ten hours of biological science. Mr. Kays.

Text, supplemented by lectures and special assignments. The problems and practices in breeding, feeding and management of sheep. The place of sheep on the farm, their advantages as a source of livestock income; flock establishment, selection and purchase of foundation stock, commercial and pure bred; the wool crop, market classes and grades; sheep parasites and their control; sources and selection of feeder lambs; rations, equipment. Inspection trips—breeding flocks, feed yards, Ohio Experiment Station, Ohio Wool Warehouse.

Not open to students who have credit for Animal Husbandry 605.

506. Advanced Live Stock Judging. Five credit hours. Autumn Quarter. Five two-hour laboratory periods each week. Prerequisite, Animal Husbandry 401, fifteen hours of biological science and at least two of the following: Animal Husbandry 501, 502, 503, and 505. Mr. Kays.

An advanced class for seniors who have had elementary work in judging and who desire additional judging experience. Much more inclusive and intensive than is the elementary course in judging. Training of basic importance to the prospective livestock man. The training stresses the importance of method in making rapid and accurate observations, and helps to set up new standards of animal excellence.

Not open to students who have credit for Animal Husbandry 606.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

607. Meats and Meat Products. Three credit hours. Spring Quarter. Three lecture-laboratory periods each week. Prerequisite, Animal Husbandry 410 and two courses selected from Animal Husbandry 502, 503, and 505, and a course in physiology or bacteriology. Mr. Kunkle.

For students interested in commercial meats and the allied fields. A more technical study is afforded of composition and nutritive value of meat combined with a survey of the problems of the packing industry. These include processing, handling, and merchandising animal products. Laboratory time will be spent studying shrinkage, pricing cuts, and retailing.

608. Live Stock Marketing. Five credit hours. Winter Quarter. Five lectures each week. Prerequisite, Animal Husbandry 402 and Rural Economics 613. Mr. Henning.

The various agencies and organizations involved in the marketing of livestock will be studied. Methods of selling, basis of sale, choice of markets, grade price differentials will be reviewed. The problems of transportation and financing will be considered. Emphasis will be placed on recent developments, concentration, direct to packer marketing, costs of marketing, management, public relations and other problems in livestock marketing.

Not open to students who have credit for Rural Economics 625.

611. Improved Methods of Breeding Livestock. Three credit hours. Winter Quarter. One two-hour seminar and one conference hour each week. Prerequisite, Zoology 403, and Animal Husbandry 409. Mr. Heizer.

Offered for advanced students wishing to become familiar with the latest methods in the scientific breeding of livestock. The function of the progeny test as a tool for measuring the genetic potentialities of sires and dams is emphasized.

Seminar periods utilized for discussion of recent contributions to the science of animal husbandry.

DAIRY PRODUCTION

404. Dairy Cattle and Milk Secretion. Five credit hours. One Quarter. Autumn and Winter. Three lectures and two two-hour laboratory periods each week. Mr. Salisbury.

A general survey of the dairy industry from the production standpoint. The place of dairy farming in agriculture. A study of milk secretion and factors influencing the efficiency of production.

405. Dairy Cattle Breeds. Five credit hours. Spring Quarter. Five one-hour lecture-laboratory periods each week. Given in alternate years. Prerequisite, Animal Husbandry 404. Mr. Heizer.

A study of the leading breeds, discussing their historical background and characteristics; a detailed study of the leading families and strains within the breed, together with pedigree studies of each; a discussion of the leading breeders in this country and abroad and the results they have obtained in the show ring and test barn.

504. Dairy Cattle Production and Management. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Animal Husbandry 402 and 404, and at least ten hours of biological science. Mr. Salisbury.

A course dealing with the selection, breeding, and developing of dairy cattle, involving studies in the selection of the herd sire and herd matrons together with problems encountered in the proper development of the growing animal. A study of the management of both commercial and pure bred herds from the standpoint of efficiency and health.

Not open to students who have credit for Animal Husbandry 604.

507. Dairy Cattle Selection and Judging. Three credit hours. Spring Quarter. One two-hour and one four-hour laboratory period each week. Prerequisite, Animal Husbandry 404 and one year of biological training. Mr. Heizer.

Designed to give a wide experience in the selection of breeding cattle of the various dairy breeds. Breed type studies and comparative judging and selection occupy the major portion of the time. Insofar as possible, emphasis is placed upon the features of conformation known to be correlated with production in the dairy cow.

Not open to students who have credit for Animal Husbandry 615.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

612. Milk Production. Three credit hours. Winter Quarter. Three two-hour laboratory periods each week. Prerequisite, Bacteriology 509 or 607. Mr. Sutton.

A course dealing with the problems involved in the production of quality milk; methods of keeping a low bacterial count and the handling of the product to insure proper condition at delivery to the distributor.

614. Dairy Husbandry Investigation. Five credit hours. Autumn Quarter. Three lectures and one four-hour laboratory period each week. Prerequisite, at least twenty hours in Dairy Production courses and permission of instructor in charge. Mr. Sutton.

A course designed to cover the experimental work being pursued at the leading experiment stations. Experimental procedures of nutrition, milk secretion, and reproduction studies.

616. Dairy Inspection Trip. No credit hours. An inspection trip of approximately two weeks, without credit, will be required of all students specializing in Dairy Production, to be taken immediately following the Spring Quarter

of the junior year. Prerequisite, Animal Husbandry 404, 405, 504, 507, Bacteriology 509 or 607 and Zoology 403. Mr. Salisbury, Mr. Heizer.

The purpose of this inspection trip is to study at first hand the leading breeding herds, commercial dairies and research programs in operation in the Eastern part of the country.

626. Marketing of Dairy Products. Three credit hours. Winter Quarter. Two lectures each week. Prerequisite, Rural Economics 613. Mr. McBride.

A study of assembling, transportation and marketing of dairy products, with special reference to Ohio. Attention will be given to changing market areas, producers' cooperative movements and manufacturers' consolidation activities. One or two inspection trips of two or three days will be made.

Not open to students who have credit for Rural Economics 626.

SPECIAL PROBLEMS

GENERAL LIVESTOCK PRODUCTION AND DAIRY PRODUCTION

701. Special Problems. Three to fifteen credit hours. Given in units of three or five hours a Quarter for one or more Quarters. Autumn, Winter, Spring. Prerequisite, senior standing in the College of Agriculture. Mr. Gay, Mr. Plumb, Mr. Kays, Mr. Coffey, Mr. Salisbury, Mr. Heizer, Mr. Sutton, Mr. Kunkle.

Special assignments in the advanced phases of any of the lines of animal and dairy production and meats. Students will elect work in desired subjects after conference with the instructor in charge.

NOTE: Students desiring work in animal nutrition, see Agricultural Chemistry 601, 607, 608.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ART

(See Fine Arts)

BACTERIOLOGY

Office, 210 Pharmacy and Bacteriology Building

PROFESSORS HUDSON, MORREY (EMERITUS), AND STARIN, ASSISTANT PROFESSORS BIRKELAND, MARKHAM, STAHLY, AND WOOLPERT, MR. WEISER, MR. HOLTMAN, AND ASSISTANTS

These courses in bacteriology are open to advanced undergraduates and graduate students only. Prerequisite, one year of chemistry and two Quarters of a biological science. Students majoring in bacteriology are advised to begin the subject in the Summer Quarter following the Sophomore year. Such students should also take at least two Quarters of quantitative chemistry in their second year and are advised to take one Quarter of college algebra.

509. Micro-Biology in Relation to Man. Five credit hours. Autumn, Winter, Spring. Five class periods each week. Prerequisite, ten hours of chemistry and ten hours of botany or zoology. Limited to thirty students. Mr. Birkeland and assistant.

A general course designed to acquaint the student with and give him a better understanding of the various activities of micro-organisms which have a bearing on the physical and economic well-being of man. It deals with the nature of bacteria and their relationship to food preparation and preservation, soil fertility, sanitation, public health, and diseases of man, animals, and plants.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

607. General Bacteriology. Five credit hours. One Quarter. Autumn, Winter, Spring. Two lectures, one recitation, and three two-hour laboratory periods each week. Dairy Technology, second year; Home Economics, Horti-

culture, and Plant Science, third year. Mr. Stahly, Mr. Birkeland, Mr. Weiser, Mr. Holtman, and assistant.

This course is a prerequisite to all elective courses in the department and is designed to prepare for special work. The lectures consider the botanical relationships of bacteria, their morphology, classification, effect of physical and chemical environment, action on food material, etc. The laboratory work includes preparation of the ordinary culture media and making of cultures on these media, staining methods, and some typical biochemical actions.

Not open for graduate credit to students majoring in bacteriology.

608. Pathogenic Bacteriology. Three credit hours. Winter Quarter. Three class periods each week. Dairy Technology, fourth year. Prerequisite, Bacteriology 607. Mr. Starin.

A study of some of the important bacteria producing disease in man. Modes of transmission and methods of protection against infectious diseases. Sanitation and the theories of immunity.

609. Pathogenic Bacteriology. Three credit hours. Winter Quarter. Three three-hour laboratory periods each week. Prerequisite, Bacteriology 607. Mr. Starin, Mr. Stahly, and assistant.

Laboratory work on some of the important bacteria producing disease in man, including cultural and staining properties, methods of diagnosis, animal inoculation.

610. Dairy Bacteriology. Three credit hours. Winter Quarter. Three class periods each week. Dairy Technology, third year. Prerequisite, Bacteriology 607. Mr. Weiser.

Sources and kinds of bacteria in milk and in normal milk fermentation. Uses of bacteria in butter making, and of bacteria and fungi in cheese making. Bacteria involved in unnatural milk fermentation and methods of control.

611. Dairy Bacteriology. Three credit hours. Winter Quarter. Three three-hour laboratory periods each week. Dairy Technology, third year. Prerequisite, Bacteriology 607; prerequisite or concurrent, Bacteriology 610. Mr. Weiser.

Laboratory work on the organisms discussed in Bacteriology 610.

621. Advanced Dairy Bacteriology. Three credit hours. Spring Quarter. One lecture and two three-hour laboratory periods each week. Prerequisite, Bacteriology 607, 610, and 611. Mr. Weiser.

Research in any of the lines discussed in Bacteriology 610.

BOTANY

Office, 102 Botany and Zoology Building

PROFESSORS TRANSEAU, SCHAFFNER (RESEARCH), STOVER, SAMPSON, AND TIFFANY, ASSOCIATE PROFESSORS WALLER AND MEYER, ASSISTANT PROFESSOR BLAYDES, MISS LAMPE, MR. GORDON, MR. DAVIS, MR. HUMPHREY, MR. TAFT, MR. FREELAND, MR. LIMING, MR. WAREHAM, AND ASSISTANTS

401. General Botany. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitation periods each week. Required in standard curricula in Agriculture, Horticulture, and Home Economics. Mr. Sampson, Mr. Tiffany, Mr. Waller, Mr. Blaydes, instructors and assistants.

A study of the structure of leaves, stems, and roots; growth and nutritive processes of plants, and the relation of plants to their environments. Demonstrations of plant processes and of the effects of climate and soil on growth and distribution of plants. Field trips on classification of trees and observation of plant behavior.

402. General Botany. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitation periods each week. Required in standard curricula in Agriculture, Horticulture, and Home Economics. Prerequisite, Botany 401. Mr. Sampson, Mr. Tiffany, Mr. Waller, Mr. Blaydes, instructors and assistants.

A study of reproduction, variations, heredity and evolution in plants, followed by a general survey of the natural vegetation of North America. The nutrition and reproduction of bacteria and fungi in relation to decay, nitrate formation, diseases, and sanitation. A survey of the great plant groups, and the classification of some of the common plants of Ohio.

405. Local Flora. Five credit hours. Spring Quarter. Four two-hour laboratory periods each week. Prerequisite, Botany 401-402. Mr. Tiffany.

The aim of the course is to become familiar with the plants, other than ferns and seed plants, common in Ohio. Laboratory work devoted to identification, by keys and manuals, of common forms of algae, fungi, liverworts, and mosses. Lectures on methods of collection and preservation, chief characteristics, and economic importance of the groups. Several Saturday field trips.

Not open to students who have credit for Botany 455.

406. Local Flora. Five credit hours. One Quarter. Autumn and Spring. Two lectures and six laboratory hours and field work each week. Elective in Plant Science, second year. Prerequisite, Botany 401-402. Mr. Blaydes, Mr. Gordon, Mr. Liming, Mr. Humphrey, Mr. Waller.

A laboratory, field and lecture course devoted to classifying the ferns and seed plants common in Ohio. Field characteristics and identification in the field will be emphasized as well as use of manuals and keys. Several Saturday field trips.

Not open to students who have credit for Botany 456.

419. General Plant Pathology. Five credit hours. One Quarter. Autumn and Spring. Three lectures and two two-hour laboratory periods each week. Horticulture and Plant Science, second or third year. Prerequisite, Botany 401-402. Mr. Stover, Mr. Davis.

An introduction to the study of the diseases of cultivated plants. The nature, importance, causes, symptoms, spread, classification, and control of plant disease; the life history of pathogenic organisms; the course of a plant disease; and the effects of environmental conditions, cultural practices, and the history of the host species upon the occurrence and severity of diseases. A number of representative plant diseases of economic importance are studied in the field and in the laboratory.

422. Diseases of Ornamental Plants. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. For students of Floriculture. Prerequisite, Botany 401-402. Mr. Davis.

An introductory course on the principles of plant pathology, with special reference to the diseases of ornamental plants, emphasizing their nature, cause, and control.

490. General Botany (Special). Five credit hours. Spring Quarter. Five recitation-laboratory periods each week. A course for exceptional students in lieu of Botany 401-402. Open only to students with a point-hour ratio of 3.5 or better in Zoology 401-402, and to exceptional students with prerequisites acceptable to the instructor. Desirable antecedent, Elementary Chemistry. Class limited to 35 students. Permission of Junior Dean or Secretary of the College required. Mr. Sampson.

This course includes the major features described for Botany 401-402.

Not open to students who have credit for Botany 401-402.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Plant Ecology. Five credit hours. Autumn Quarter. Three lectures and one three-hour laboratory period each week. Elective in Plant Science, fourth year. Prerequisite, Botany 401-402 and two Quarters of biological work. Mr. Transeau, Mr. Gordon.

Lectures on the vegetation of the Eastern United States with special reference to the plant associations and formations of Ohio. Field work on the associations of the vicinity of Columbus and their successions. Readings of important literature. Several Saturday field trips.

602. Plant Ecology. Five credit hours. Spring Quarter. Three lectures and one three-hour laboratory period each week. Elective in Plant Science, fourth year. Prerequisite, Botany 601. Mr. Transeau, Mr. Gordon.

General principles of ecological plant geography. A discussion of associations and successions of the major divisions of the vegetation of North America. Assigned readings of the more important literature. Several Saturday field trips.

605. Plant Physiology. Five credit hours. One Quarter. Autumn and Winter. Three lectures and two two-hour laboratory periods each week. Horticulture, third year; Plant Science, third year. Prerequisite, Botany 401-402 and two additional Quarters of biology. Mr. Transeau, Mr. Meyer, Mr. Freeland.

The physiology of absorption and movement of water, salts, and gases in plants. The properties of water, solutions, and colloids; permeability, diffusion, absorption, and transpiration. Not open to students who have credit for Botany 415.

606. Plant Physiology. Five credit hours. One Quarter. Winter and Spring. Three lectures and two two-hour laboratory periods each week. Horticulture, third year; Plant Science, third year. Prerequisite, Botany 605 or 415. Mr. Transeau, Mr. Meyer, Mr. Freeland.

The physiology of nutrition, growth and movement; photosynthesis, other syntheses, enzymes, digestion, translocation, accumulation, assimilation, respiration, fermentation, growth. Not open to students who have credit for Botany 416.

611. Evolution of Plants. Three credit hours. Spring Quarter. Lectures and assigned readings. Prerequisite, Botany 401-402 and two additional Quarters of botany. Mr. Schaffner.

The progress of evolution in the plant kingdom with a general discussion of the problems and factors involved, including both the scientific and philosophical aspects of the subject.

613. General Morphology of Thallophytes and Bryophytes. Five credit hours. Autumn Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Botany 401-402. Mr. Blaydes.

A study of the classification and life histories of the algae, fungi, liverworts, and mosses. The laboratory work will consist of a study of the vegetative and reproductive structures of the several groups.

Not open to students who have credit for Botany 409.

614. General Morphology of the Pteridophytes and Spermatophytes. Five credit hours. Winter Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Botany 401-402. Miss Lampe.

A study of the comparative structures and life histories of the ferns, gymnosperms, and angiosperms, giving particular attention to the structure and development of seed plants.

Not open to students who have credit for Botany 410.

615. Plant Microtechnic. Five credit hours. Winter Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Botany 401-402 and two additional Quarters of biology. Mr. Blaydes.

Principles and methods of killing, fixing, imbedding, sectioning, staining, and mounting plant materials for microscopic study.

Not open to students who have credit for Botany 421.

617. Plant Microchemistry. Five credit hours. Autumn Quarter. One lecture and three two-hour laboratory periods each week. Prerequisite, Botany 605-606. Desirable antecedents, general inorganic and organic chemistry. Mr. Sampson.

The identification *in situ* of organic and inorganic substances found in plant tissues by microchemical methods. These methods are of special value in determining plant substances within the cells and in the study of physical and chemical changes accompanying plant processes and plant responses. This applies particularly to the numerous local regions in plants too small to be attacked by the test-tube method of tissue analysis.

619. Economic Botany. Five credit hours. Autumn Quarter. Four lectures and one two-hour laboratory period each week. Prerequisite, Botany 401-402 and one additional year of biological work. Desirable, concurrently or as prerequisite, ecology or advanced geography. Consult instructor before registering. Mr. Waller.

The world's sources of food, fibers, oils, rubber and other products examined from the standpoint of their ecology. In the laboratory the study of raw materials and products will illustrate ways plants are used by man.

632. Physiological Methods. Three credit hours. Spring Quarter. Six laboratory hours each week. Prerequisite or concurrent, Botany 605-606, except by special permission of the instructor. Mr. Meyer.

Methods of measuring physical factors of the environment that influence plant growth and development, both under laboratory and field conditions. Methods of growing plants under controlled conditions for experimental work. Conferences, readings, and laboratory work.

633. Physiological Methods. Three credit hours. Winter Quarter. Six laboratory hours each week. Prerequisite or concurrent, Botany 605-606, except by special permission of the instructor. Mr. Meyer.

A laboratory course in the methods of plant physiology such as measurements of H-ion concentration, osmotic values, permeability, enzyme activity, and the processes of transpiration, respiration and photosynthesis. Conferences, readings and laboratory work.

634. Plant Growth. Three credit hours. Spring Quarter. Three lectures each week. Consult instructor before registering. Mr. Sampson.

A study of the physiology of growth. Special attention is given to the interrelated effects of internal and external factors upon growth, movement, and reproduction in plants. Bibliographies and reviews of literature.

***635. Plant Genetics.** Five credit hours. Spring Quarter. Five recitations each week. Prerequisite, Botany 401, 402, a course in genetics, and one additional Quarter of biological science. Mr. Waller.

The study of heredity in plants. Theories of the transmission of heritable characteristics. Research methods in the study of inheritance.

637. Plant Cytology. Three credit hours. Spring Quarter. Three two-hour laboratory periods each week. Prerequisite, four Quarters of biology. Given biennially, alternating with Botany 640. Miss Lampe.

The structure, ontogeny, divisions and fusion of plant cells.

NOTE: Either Botany 637 or 640 will be given in 1937-1938, depending on the relative number of applications. Students planning to take either course should consult Mr. Blaydes.

***640. Plant Anatomy.** Three credit hours. Spring Quarter. Three two-hour laboratory periods each week. Prerequisite, Botany 401-402 and two additional Quarters of biology. Given biennially, alternating with Botany 637. Mr. Blaydes.

The origin and development of the organs and tissue systems of vascular plants, and comparative study of the structures of roots, stems, leaves, flowers, and fruits. This course is a desirable antecedent to advanced work in physiology and pathology.

NOTE: Either Botany 637 or 640 will be given in 1937-1938, depending on the relative number of applications. Students planning to take either course should consult Mr. Blaydes.

653. Mycology. Three credit hours. Autumn Quarter. Three two-hour laboratory periods each week. Prerequisite, Botany 401-402, and two additional Quarters of biology. Mr. Stover.

The identification of the fungi of woods and fields, including a number of edible and poisonous mushrooms, wood destroying fungi, and other important forms. The characteristic structures and life histories within each of the great groups are emphasized.

656. Advanced Plant Pathology. Three credit hours. Winter Quarter. Three two-hour laboratory periods each week. Prerequisite, Botany 419. Mr. Stover, Mr. Davis.

Designed for students in botany, entomology, horticulture, and agronomy. Each student may select for study the diseases of those plants in which he is primarily interested.

†**665. Freshwater Algae.** Three credit hours. Three two-hour laboratory periods each week. Prerequisite, six Quarters of biological work and consent of the instructor. Mr. Tiffany.

Conference, laboratory, and library course on the classification, morphology, and ecological relations of the freshwater algae.

701. Special Problems: Taxonomy, Morphology, Physiology, Cytology, and Anatomy. Two to five credit hours. Autumn, Winter, and Spring Quarters. Prerequisite, Botany 401-402 and two additional Quarters of some biological subject. The staff.

* Not given in 1937-1938.

† Not given during the academic year. 1937-1938.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

BUSINESS ORGANIZATION

Office, 107 Commerce Building

PROFESSORS MAYNARD, HELD, DUFFUS, AND BECKMAN, ASSOCIATE PROFESSORS REEDER, CORDELL, DAMERON, AND POWER, ASSISTANT PROFESSORS RIDDLE, C. W. BOWERS, DONALDSON, AND KIMBALL, MR. BURLEY, MR. NOLEN, MR. HAROLD, AND ASSISTANTS

504. Business Communications and Adjustment Practice. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Economics 401-402 and junior standing. Mr. Held, Mr. Kimball.

Selling, adjusting, collecting, credit extending, etc. by mail. The application of business principles to letters. An historical treatment of claims and complaints.

Not open to students who have credit for Business Organization 604.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

621. Business Law: Contracts. Three credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, Economics 401-402. Mr. Power, Mr. C. W. Bowers.

A course in the law of contracts for the student of business, including the study of the fundamentals of legally binding agreements between persons, and their enforcement.

650. Corporation Finance. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Prerequisite, Economics 402. Mr. Duffus, Mr. Donaldson, Mr. Riddle, Mr. Harold.

Financial structure and problems of modern business corporations.

Not open to students who are taking Economics 616.

700. Marketing. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Horticulture, third year. Elective in Dairy Technology. Prerequisite, Economics 401-402. Mr. Beckman, Mr. Reeder, Mr. Cordell, Mr. Maynard, Mr. Burley, Mr. Nolen.

A general but critical survey of the field of marketing. Consumer demand in relation to the marketing machinery. Functions, methods, policies, marketing costs, and problems of the farmer, manufacturer, wholesaler, commission merchant, broker, retailer and other middlemen. Emphasis on principles, trends and policies in relation to marketing efficiency.

716. Principles of Advertising. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Horticulture, third year. Elective in Dairy Technology. Prerequisite, Business Organization 700 or senior standing in Journalism. Mr. Maynard, Mr. Dameron.

Advertising in relation to marketing and general business. Advertising organization. Science of advertising. Copy, layout, typography, engraving. Advertising strategy. Advertising media. Economics of advertising. The viewpoint of the enterpriser emphasized.

CHEMISTRY

Office, 115 Chemistry Building
General Chemistry Office, 112 Chemistry Building

PROFESSOR EVANS, ASSOCIATE PROFESSOR FERNELIUS, ASSISTANT PROFESSOR QUILL, MR. GARRETT, MR. HOWE, MR. NEWMAN, MR. VERHOEK, AND ASSISTANTS

401. Elementary Chemistry. Five credit hours. One Quarter. Autumn and Winter. One lecture, two recitations, and two two-hour laboratory periods each week. Required in the College of Agriculture for students who do not present chemistry as an entrance credit. Mr. Evans, Mr. Fernelius, Mr. Quill, Mr. Garrett, Mr. Howe, Mr. Newman, Mr. Verhoek, and assistants.

A general course in the chemistry of the non-metals. To be followed by Chemistry 402.

402. Elementary Chemistry. Five credit hours. One Quarter. Winter and Spring. One lecture, two recitations, and two two-hour laboratory periods each week. Required in the College of Agriculture for students who do not present chemistry as an entrance credit. Prerequisite, Chemistry 401. Mr. Evans, Mr. Fernelius, Mr. Quill, Mr. Garrett, Mr. Howe, Mr. Newman, Mr. Verhoek, and assistants.

A continuation of Chemistry 401, including the chemistry of the metals. To be followed by Chemistry 403.

403. Qualitative Analysis. Five credit hours. One Quarter. Autumn and Spring. One lecture, one recitation, and two three-hour laboratory periods each week. For students who do not present chemistry as an entrance unit. Prerequisite, Chemistry 402. Mr. Evans, Mr. Fernelius, Mr. Quill, Mr. Garrett, Mr. Howe, Mr. Newman, Mr. Verhoek, and assistants.

A brief course in the systematic separation and identification of cations and anions.

411. General Chemistry. Five credit hours. One Quarter. Autumn and Winter. One lecture, two recitations and two two-hour laboratory periods each week. Required in the College of Agriculture. Prerequisite, an acceptable course in high-school chemistry. Mr. Evans, Mr. Fernelius, Mr. Quill, Mr. Garrett, Mr. Howe, Mr. Newman, Mr. Verhoek, and assistants.

A general course in the chemistry of the non-metals, more advanced than Chemistry 401. To be followed by Chemistry 412.

412. General Chemistry. Five credit hours. One Quarter. Autumn, Winter, Spring. One lecture, two recitations, and two two-hour laboratory periods each week. Required in the College of Agriculture. Prerequisite, Chemistry 411. Mr. Evans, Mr. Fernelius, Mr. Quill, Mr. Garrett, Mr. Howe, Mr. Newman, Mr. Verhoek, and assistants.

A continuation of Chemistry 411, including the chemistry of the metals. To be followed by Chemistry 413.

413. Qualitative Analysis. Five credit hours. One Quarter. Autumn, Winter, Spring. One lecture, one recitation, and two three-hour laboratory periods each week. Prerequisite, Chemistry 412. Mr. Evans, Mr. Fernelius, Mr. Quill, Mr. Garrett, Mr. Howe, Mr. Newman, Mr. Verhoek, and assistants.

A general course in qualitative analysis, dealing with the systematic separation and identification of the cations and anions. It also includes the application of the ionization theory, mass action law, and the principles of chemical equilibrium to qualitative analysis.

CIVIL ENGINEERING

Office, 107 Brown Hall

PROFESSORS SHERMAN AND SLOANE, ASSOCIATE PROFESSORS MONTZ AND WALL,
ASSISTANT PROFESSOR MARSHALL AND ASSISTANT

401. Land Surveying. Five credit hours. One Quarter. Autumn and Winter. Four recitations and one laboratory period each week. Prerequisite, Mathematics 432. Mr. Sloane, Mr. Montz, Mr. Wall, Mr. Marshall.

Care and use of instruments; land surveying; computation of areas, sub-division, etc.; leveling and profiles.

404. Topographic Drawing. Four credit hours. One Quarter. Autumn and Winter. One lecture, three laboratory periods, and two hours of preparation each week. Prerequisite, Engineering Drawing 402. Mr. Sloane, Mr. Montz, Mr. Wall, and assistant.

Topographic symbols in black and colors. Contour lines. Map projections.

DAIRY TECHNOLOGY

Office, 111 Townshend Hall

PROFESSOR STOLTZ, ASSOCIATE PROFESSOR BURGWARD, ASSISTANT PROFESSOR
ERB, AND ASSISTANT

(For curriculum in Dairy Technology, see page 39.)

401. Principles of Dairy Technology. Five credit hours. One Quarter. Autumn, Winter, Spring. Four discussion periods and one two-hour laboratory period each week. Required of all students in standard curriculum in Agriculture. Prerequisite to all courses in Dairy Technology. Mr. Stoltz, Mr. Erb.

This course is a general survey of the dairy manufacturing industry designed to give students a picture of what is involved in the production and distribution of market milk, ice cream, butter, cheese, and other dairy products. A definite study of the composition and properties of milk; the use and operation of the Babcock test; and the separation of milk are included in the course. Principles involved in the common dairy manufacturing processes are also studied.

403. Testing of Milk Products. Five credit hours. One Quarter. Autumn, Winter, Spring. Two discussion periods and three three-hour laboratory periods each week. Dairy Technology, first year. Prerequisite, Dairy Technology 401. Mr. Burgwald.

Lecture and laboratory work will be given on the testing of milk and its products which are ordinarily used in a dairy plant. This will include the various tests for butterfat, determination of moisture, salt and dry matter in dairy products, testing of milk and its products for acidity, the use and care of composite samples, detection of adulteration and preservatives in milk.

405. Butter Industry. Five credit hours. One Quarter. Autumn, Winter, Spring. Two lectures, one recitation, and two three-hour laboratory periods each week. Dairy Technology, second year. Prerequisite, Dairy Technology 401 and 403. Mr. Stoltz.

This course covers the history and development of the butter industry; treats of the neutralization, pasteurization and churning of cream; cream ripening; and the salting, washing, working, packing, marketing, and storing of butter. Butter defects will be discussed in the lecture room.

In the laboratory students will be required to take charge of the work from the time cream is received until the butter is sold. They will also be required to visit creameries in Columbus and neighboring cities.

Not open to students who have credit for Dairy Technology 425 and 426.

407. Soft Cheese Manufacturing. Three credit hours. One Quarter. Autumn and Spring. One discussion period and two three-hour laboratory periods each week. Dairy Technology, second year. Prerequisite, Dairy Technology 401. Mr. Burgwald.

Lectures and laboratory work will be given in the manufacturing of cottage, Neufchatel, buttermilk, cream, and pimento cheese.

411. Dairy Engineering. Three credit hours. Winter Quarter. Two discussion periods and one three-hour laboratory period each week. Dairy Technology, second year. Prerequisite, Dairy Technology 401 and Agricultural Engineering 402; prerequisite or concurrent, Agricultural Engineering 408. Mr. Erb.

Lecture and laboratory work will be given on the theory and operation of the compression system of mechanical refrigeration. The course includes work with mechanical ice cream cabinets.

415. Dairy Plant Experience. Five credit hours. Summer Quarter. Ten weeks practical experience or its equivalent, including written reports, in an improved factory manufacturing dairy products. Dairy Technology, first or second year.

515. Dairy Plant Experience. Five credit hours. Summer Quarter. Ten weeks practical experience or its equivalent, including written report, in an improved factory manufacturing dairy products. Dairy Technology, third year.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

605. Management of Dairy Plants. Three credit hours. Winter Quarter. Three discussion periods each week. Dairy Technology, fourth year. Prerequisite, Dairy Technology 607 and 610; prerequisite or concurrent, Dairy Technology 608. Mr. Stoltz.

Lectures will be given on the organization, construction, and operation of milk plants, creameries, cheese factories, condenseries, and ice cream plants. The purchasing of milk and milk products by various methods, the importance of sanitation, employing of help, and the purchasing of supplies will be discussed. A trip to visit small and large plants is required.

607. Market Milk. Five credit hours. Autumn Quarter. Three discussion periods and one two-hour and one four-hour laboratory period each week. Dairy Technology, fourth year. Prerequisite, Dairy Technology 401, 403, Bacteriology 607, 610, 611, and Agricultural Chemistry 605. It is also desirable that students taking this course should have credit for dairy chemistry. Mr. Burgwald.

Lectures and assigned readings will be given on the handling and distribution of milk for city trade including cooling, clarifying, standardizing, pasteurizing, and bottling milk and cream and methods of determining the bacterial and leucocyte count in milk in order to comply with the regulations laid down by the various city ordinances. Laboratory will consist of practical work in handling and processing milk and the operation of the milk plant. Training and practice will be given in milk inspection from the standpoint of the Board of Health and the city milk plant.

Not open to students who have credit for Dairying 404.

608. Hard Cheese Manufacturing. Five credit hours. Winter Quarter. Two discussion periods and two four-hour laboratory periods each week. Dairy Technology, fourth year. Prerequisite, Dairy Technology 401, 403, and 407; and Bacteriology 607, 610, and 611. Mr. Burgwald.

Lectures will take up the methods of manufacturing cheddar, Swiss, brick, and Limburger cheese, the method of paying for milk at cooperative cheese factories and the scoring of American cheese. Laboratory work will consist of the making of cheddar cheese from both raw and pasteurized milk, Swiss cheese by the use of the eye-forming culture, brick, Limburger, and farm cheese.

Not open to students who have credit for Dairying 408.

609. Condensed Milk and Milk Powders. Three credit hours. Autumn Quarter. Two discussion periods and one three-hour laboratory period each week. Dairy Technology, fourth year. Prerequisite, Dairy Technology 401 and 403, Bacteriology 607 and Agricultural Chemistry 605. Mr. Erb.

Lectures will be given on the theory and practice of milk condensation and milk drying. Special emphasis will be given to the questions of heat stability of milk, the salt balance, and lactose crystallization. Laboratory work will consist of practical work in the operation of vacuum pans, sterilization of milk, and visits to milk condenseries and powder plants in the vicinity of Columbus.

Not open to students who have credit for Dairying 409.

610. Ice Cream Manufacturing. Five credit hours. Autumn Quarter. Three discussion periods and two three-hour laboratory periods each week. Dairy Technology, fourth year. Prerequisite, Dairy Technology 401 and 403, Bacteriology 607, and Agricultural Chemistry 605; concurrent, Dairy Technology 609. Mr. Erb.

The course deals with the modern ice cream industry and has to do with manufacturing operations, distribution methods and sales activities. Considerable attention is given to the physico-chemical aspects of ice cream and how these enter into modern processing procedure.

Laboratory work consists of processing ice cream and visiting manufacturing plants.

615. Dairy Products Scoring. Three credit hours. Spring Quarter. One lecture and two two-hour laboratory periods each week. Open to Juniors and Seniors who are majoring in Dairy Technology. Mr. Erb.

An advanced class for Juniors who are majoring in dairy technology and who desire to take up judging of milk, butter, ice cream, and cheese in the commercial field.

701. Special Problems. Three to fifteen credit hours, taken in units of three or five hours each Quarter, for one or more Quarters. Autumn, Winter, Spring. One hour conference each week. Prerequisite, Dairy Technology 401, 403 and permission of the instructor. Mr. Stoltz, Mr. Burgwald, Mr. Erb.

This course is designed for students majoring in Dairy Technology and consists in working out special problems along the lines in which they are specializing.

702. Dairy Seminar. One credit hour. Autumn, Winter, and Spring Quarters. One hour conference each week. Open to Seniors and graduate students who are majoring in dairy technology and to those who have permission of the instructor. During this seminar seniors will report on problems or special references. Graduate students will make a report of their problems. Instructors in allied departments of the University will be requested to take part in this seminar.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate work in this department see the Bulletin of the Graduate School.

DRAWING

(See Engineering Drawing)

ECONOMICS

Office, 116 Commerce Building

PROFESSORS WOLFE, HAYES, WALRADT, DICE, HELD, AND KIBLER, ASSOCIATE PROFESSORS ZORBAUGH, SMART, BOWERS, AND JAMES, ASSISTANT PROFESSORS PATTON, WILLIT, HERBST, BITTERMANN, KIMBALL, ROWNTREE, AND EGLE, MR. CAPLAN, MR. FREEMAN, MR. HARRISON, MR. SHAFFER, MR. STEVENS, MR. STOCKDALE, MR. SUFRIN, MR. WELSH, MR. WHITSETT, AND ASSISTANTS

401-402. Principles of Economics. Five credit hours. Two Quarters. Both 401 and 402 are given Autumn, Winter, Spring. One lecture and four class meetings each week. Not open to Freshmen. Rural Economics and Rural Sociology, second year; Dairy Technology, second year. Mr. Willit and others.

A general survey of the economic relationships and processes in modern society; prices, money and banking, international trade, public utilities, trade unionism, taxation.

NOTE: Freshmen with a cumulative point-hour ratio of 3.0 or above on their first two Quarters of work may enroll for this course in their third Quarter in residence.

520. Money and Banking. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Prerequisite, Economics 401-402. Mr. Bowers, Mr. Willit.

This course is intended as an introductory study to the more technical courses in banking and finance and also to give a comprehensive view of the field for those who are primarily interested in other subjects. The organization, operation, and economic significance of our monetary and banking institutions are discussed, with special reference to current conditions and problems.

Not open to students who have credit for Economics 610.

522. Elementary Economic Statistics. Three credit hours. One Quarter. Autumn, Winter, Spring. Two lectures and one two-hour laboratory period each week. Rural Economics and Rural Sociology, third year. Prerequisite, Economics 401-402 or 403-404, one unit of high school algebra, and one unit of high school geometry. Mr. Smart.

Emphasizes collection, presentation, analysis, and interpretation of economic and business data. Includes tabulation, graphic representation and application of averages, ratios and the like to economic and business problems.

Not open to students who have credit for Economics 422 or 622.

ENGINEERING DRAWING

Office, 218 Brown Hall

PROFESSORS FRENCH, MEIKLEJOHN, WILLIAMS, FIELD, AND PAFFENBARGER, ASSOCIATE PROFESSORS JONES AND McMANIGAL, ASSISTANT PROFESSORS BRITTINGHAM, COOPER, EDMONDSON, AND VIERCK, MR. CODDINGTON, MR. SCHRUBEN, MR. SMALL, MR. STIMSON, AND ASSISTANT

401. Principles of Engineering Drawing. Four credit hours. One Quarter. Autumn and Winter. One lecture and four two-hour laboratory periods each week. All instructors.

The use of instruments, applied geometry, orthographic projection, sections, revolution, lettering, auxiliary projection, dimensioning, use of the slide rule.

402. Principles of Engineering Drawing. Four credit hours. One Quarter. Winter and Spring. One lecture and four two-hour laboratory periods each week. Prerequisite, Engineering Drawing 401. All instructors.

Working drawing, developments and intersections, lettering, isometric and other forms of pictorial representation, charts and graphs, architectural drawing, structural drawing, and perspective.

431. Principles of Graphic Representation. Four credit hours. Winter Quarter. One lecture, four two-hour laboratory periods, and three hours of preparation each week. Forestry, first year. Mr. Jones.

Applied geometry, shape and size description, lettering, pictorial drawing, sketching, maps, charts, and diagrams.

438. House Planning. Three credit hours. One Quarter. Autumn, Winter, Spring. Six laboratory and conference hours each week. Home Economics, second year. Mr. Field.

A study of the underlying principles governing the successful planning of houses. Reading architect's plans and specifications, judging complete buildings, designing and sketching plans. Limited to thirty-two students.

ENGLISH

Office, 120 Derby Hall

ASSOCIATE PROFESSORS FULLINGTON, HARBARGER, WILSON, AND SNOW, ASSISTANT PROFESSOR NEWDICK, INSTRUCTORS AND ASSISTANTS

English 401 and 430 are open to Freshmen. English 440 or 450 may be taken by Freshmen who have been in residence two Quarters or by those who have credit for English 401 and 430.

(a) Courses in writing should be chosen in the following order: 401, 507, 643, 657, 658.

(b) Courses in literature should be chosen in the following order: 430, 440, 450.

(c) One course in language is open to Sophomores: 528.

REVIEW COURSE IN ENGLISH COMPOSITION

During or preceding the first two class sessions in English 410, writing tests will be given to determine the ability of students to use the English language effectively. Students found with less than expected ability will be dropped from the regular classes and assigned to review sections in English fundamentals, without credit, for one Quarter. A fee of \$5.00 will be charged to cover the cost of tutorial instruction.

410. English Composition. Three credit hours. One Quarter. Autumn and Winter. Three hours of reading and practice in composition each week. Required in all curricula in the College of Agriculture, first year. No prerequisite. Director, Miss Harbarger.

Stress is laid upon organization and craftsmanship of writing. One long paper during the Quarter—informal exposition. Frequent short papers. Outside reading—selected short stories. Personal conferences.

Not open to students who have credit for English 401.

411. English Composition. Three credit hours. One Quarter. Winter and Spring. Three hours of reading and practice in composition each week. Required in all curricula in the College of Agriculture, first year. Prerequisite, English 410. Director, Miss Harbarger.

A continuation of English 410. Emphasis is placed upon the forms of technical writing. One long technical paper during the Quarter. Frequent short papers. Outside reading—selected biography or autobiography. Personal conferences.

Not open to students who have credit for English 401.

412. English Composition. Three credit hours. One Quarter. Autumn and Spring. Three hours of reading and practice in composition each week. Required in all curricula in the College of Agriculture, second year. Prerequisite, English 410 and 411. Director, Miss Harbarger.

A continuation of English 411. Emphasis is placed upon the use of the library and the research paper. One long paper, frequent short papers. Outside reading—selected essays and plays. Personal conferences.

Not open to students who have credit for English 405, 407, or 507.

419. Advanced English for Engineers. Three credit hours. One Quarter. Autumn, Winter, Spring. Two hours lecture and one hour conference each week. Required in Professional Agricultural Engineering curriculum, third year. Prerequisite, English 410, 411, 412. Miss Harbarger.

Training in English for practical and professional writing. Emphasis is put upon the business letter and the general engineering report.

430. Introduction to Literature. Five credit hours. One Quarter. Autumn, Winter, Spring. No prerequisite. Not open to Juniors or Seniors. Director, Mr. Fullington.

A course primarily for first-year students, designed to develop intelligent appreciation and enjoyment of literature and to encourage the growth of good taste and judgment through intimate contact with the best contemporary verse and prose. Special attention will be given to developing a basic knowledge of literary technique, as displayed in prose fiction, drama, and poetry.

440. Masters of Modern Literature. Five credit hours. One Quarter. Autumn, Winter, Spring. Required as a prerequisite for all "600" courses in English. Prerequisite, English 401 and 430. Mr. Beck, Mr. Wilson, Mr. Fullington, Mr. Snow, Mr. Newdick, Mr. Brittain, Mr. Edwards, Mr. Estrich, Mr. Logan, Mr. Parker, Mr. Schaupp, Mr. Utley.

An intensive study of the work of four or five authors who have made distinctive contributions to the literature or thought of modern times, to be selected from these authors: Frost, Dreiser, O'Neill, Elliot, Chekov, MacLeish, Ibsen, Shaw, Pirandello, Mann, Galsworthy, Bennett, Wells, Woolf, Masfeld, Conrad.

This course is intended to acquaint the student with the means of a more thorough appraisal of a man and his writing than is possible by cursory unrelated reading.

PREREQUISITE FOR "500" AND "600" COURSES

Unless otherwise indicated the prerequisites for "500" and "600" courses are English 401, 430, and 440.

529. **The English Bible.** Five credit hours. Winter Quarter. Mr. Fullington.

A study of the King James version of the Bible as a masterpiece of World Literature and an English classic. A brief survey of the English translations and their place and influence in English literature; a careful consideration of the narrative, prophetic, and poetic books of the Old Testament and of the Gospels viewed purely from the point of view of literature.

Not open to students who have credit for English 429 or 629.

PUBLIC SPEAKING

(See Speech)

ENTOMOLOGY

(See Zoology and Entomology)

FARM CROPS

(See Agronomy)

FINE ARTS

Office, 104 Hayes Hall

PROFESSORS HOPKINS, FANNING, AND LYNCH, ASSISTANT PROFESSORS ATHERTON, RANNELLS, BRADLEY, SHERMAN, SUTTON, GRIMES, BATCHELDER, AND GATRELL, MR. MITTS, MR. ANDERLA

FREEHAND DRAWING

401-402-403. **Freehand Drawing.** Two credit hours. Autumn, Winter, and Spring Quarters. Two three-hour laboratory periods each week. Mr. Mitts, Mr. Sherman, Mr. Rannells, Mr. Grimes, Mr. Gatrell.

An elementary course in the principles and practice of expression by freehand drawing. Emphasis upon proportion, perspective, and values in monochrome.

Not open to students who have credit for Fine Arts 421 or 423.

421. **Elementary Freehand Drawing.** Five credit hours. One Quarter. Autumn, Winter, Spring. Five two-hour laboratory periods each week. Mr. Mitts, Mr. Anderla.

A technical course in the principles of drawing, with special regard for directness and facility. Practice in freehand perspective and values in monochrome. Clay modelling.

Not open to students who have credit for Fine Arts 401-402-403.

DESIGN

431. **Elementary Design.** Five credit hours. One Quarter. Autumn, Winter, Spring. Five two-hour laboratory periods each week. Mr. Atherton, Miss Batchelder.

The principles of pure design, with practice in the presentation of organic design problems. Lectures, conferences, and technical work.

437. **Costume Design.** Three credit hours. One Quarter. Autumn, Winter, Spring. Three two-hour laboratory periods each week. Prerequisite, Fine Arts 426 or 431. Miss Bradley.

Special problems utilizing the principles of art in the designing of costumes. The use of textile materials as elements in creative design.

HISTORY AND APPRECIATION

456. History of Costume Design. Three credit hours. Winter Quarter. Three periods each week with outside problems. Miss Bradley.

A study of the development of costume from the standpoint of design with its social and historical background and its connection with the prevailing interior decorations of each period.

479. Appreciation of Fine Arts. Three credit hours. One Quarter. Autumn, Winter, Spring. Mr. Fanning and others.

A course of study planned to give the layman an intelligent appreciation of the visual arts by designating ways of approach, the basis of analysis and criticisms of the plastic, pictorial, and related arts. Illustrated lectures, technical demonstrations, quizzes, and reports.

Not open to students who have credit for Fine Arts 476-477-478.

500. Appreciation of Landscape Design. Two credit hours. Spring Quarter. Two lectures each week. Open to any student not majoring in Landscape Architecture. No prerequisite. Mr. Lynch.

An historical presentation of the principles and practices of Landscape Architecture. Illustrated lectures, class discussions, reports, and collateral reading.

LANDSCAPE ARCHITECTURE

540. Arrangement and Planting of Gardens and Small Properties. Five credit hours. Winter Quarter. Two lectures and three three-hour laboratory periods each week. Prerequisite, Horticulture 550. Mr. Lynch, Mr. Sutton.

A course dealing with the elements of landscape design as applied to small properties. Training in design and the preparation of plans.

FORESTRY

(See Horticulture and Forestry)

FRENCH

(See Romance Languages and Literatures)

GEOGRAPHY

Office, 213 Commerce Building

PROFESSORS HUNTINGTON AND CARLSON, ASSOCIATE PROFESSOR SMITH,
ASSISTANT PROFESSOR WRIGHT, MR. GARLAND, AND ASSISTANTS

401. Principles of Geography. Five credit hours. One Quarter. Autumn, Winter, Spring. Five class meetings each week. Mr. Carlson, Mr. Huntington, Mr. Garland, Mr. Wright.

The elements of the natural environment in relation to human activities. Geographic factors in society. The relation of geography to the physical and social sciences.

Not open to students who have credit for Geography 402.

505. Geography of the United States and Canada. Three credit hours. One Quarter. Autumn, Winter, Spring. Three class meetings each week. Prerequisite, Geography 403. Mr. Huntington, Mr. Smith, Mr. Wright.

A geographic analysis of the United States and Canada; the correlation of their natural resources and other environmental factors with their economic and social structure and development.

Not open to students who have credit for Geography 422 or 405.

GEOLOGY

Office, 103, 104 Orton Hall

PROFESSORS CARMAN AND SPIEKER, ASSOCIATE PROFESSOR STOCKDALE, ASSISTANT PROFESSOR STEWART, MR. STOUT, MR. COLE, MR. FREEMAN, MR. LAMEY, MR. ROUSE

401. **General Geology.** Five credit hours. One Quarter. Autumn, Winter, Spring. Four recitations and one hour laboratory each week. One half-day field trip at an optional time is required except in the Winter Quarter. Plant Science, second year. All instructors.

A study of the materials of the earth's crust; of the structural features of the earth's crust and how they were formed; and of the surface features of the earth and their origin. In the laboratory, the common minerals and rocks and topographic maps are studied.

402. **General Geology.** Five credit hours. One Quarter. Autumn, Winter, Spring. Four recitations and one hour laboratory each week. One half-day field trip at an optional time is required except in the Winter Quarter, unless credit for field trips was received in Geology 401. Plant Science, second year. Prerequisite, Geology 401. All instructors.

An elementary study of the geological history of the earth. In the laboratory the common types of fossils and geological maps are studied.

GERMAN

Office, 213 Derby Hall

PROFESSORS M. B. EVANS, MAHR, AND SPERBER, ASSISTANT PROFESSORS GAUSEWITZ, KRAMER, AND NORDSIECK, MR. EPP, MR. WEINBERGER

401. **Elementary German.** Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. All instructors.

The elements of German grammar; reading of easy prose; oral practice.

402. **Elementary German.** Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Prerequisite, German 401 or equivalent. All instructors.

The elements of German grammar; reading of easy prose; oral practice.

HOME ECONOMICS

Office, 220 Campbell Hall

PROFESSORS GORRELL AND McKAY, ASSISTANT PROFESSORS KENNEDY, PRESSEY, TURNBULL, BANCROFT, MORGAN, DAVIS, GRIFFITH, HEINER, HUGHES, AND RYAN, MISS KING, MISS BLANSHAN, MRS. JOHNSTON, AND ASSISTANTS

(For curriculum in Home Economics, see page 44. For description of courses in Home Economics, see the Bulletin of the School of Home Economics.)

400. **An Introduction to Home Economics.**

401. **Textiles.**

402. **Clothing.**

411. **Foods.**

412. **Foods.**

503. **Clothing.**

506. **Household Equipment.**

508. **Clothing.**

510. **Elements of Nutrition.**

511. **Home Hygiene.**

512. **Home Furnishing.**

518. **Elements of Homemaking.**

526. Diet in Disease.
 540. The Teaching of Home Economics.
 541. Principles and Methods of Teaching Applied to Home Economics.
 542. Supervised Home Economics Teaching.
 †543. Teaching of Vocational Home Economics in the Secondary Schools.
 601. Clothing.
 602. Textiles.
 †604. Clothing.
 611. Nutrition.
 612. Nutrition.
 614. Foods.
 *615. Experimental Work in Food Preparation.
 †616. Nutrition of Infants and Children.
 619. Household Equipment.
 620. Household Equipment.
 621. Child Development.
 626. Principles of Home Management.
 627. Laboratory in Home Management.
 628. Selection of Furnishings for the Home.
 630. The Purchase of Foods for Institutions.
 631. Institutional Cookery and Equipment.
 632. Institution Organization and Administration.
 633. School Lunchroom Management.
 †635. Foods.
 †644. The Teaching of Home Economics.
 701. Special Problems in Home Economics.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

HORTICULTURE AND FORESTRY

Office, 118 Horticulture and Forestry Building

PROFESSORS GOURLEY, PADDOCK, BROWN, AND LAURIE, ASSISTANT PROFESSORS
 CHADWICK, HOWLETT, AND BEYER, MR. HOLSOE, AND ASSISTANT

(For curriculum in Horticulture, see page 37.)

POMOLOGY AND GENERAL HORTICULTURE

401. Principles of Horticulture. Five credit hours. Autumn Quarter. Five recitations each week. Horticulture, first year; elective in Plant Science and standard curriculum in Agriculture. A prerequisite for all horticultural courses except 405 and 523. Mr. Gourley and assistants.

Designed to familiarize the student with the plant material commonly used in the horticultural industry. The relation of the simpler plant structures and responses to cultural practices in the orchard, garden, green house and nursery are emphasized. Some of the principles of horticultural plant production are also discussed.

* Not given in 1937-1938.

† Not given during the academic year, 1937-1938.

405. General Horticulture. Five credit hours. One Quarter. Autumn and Spring. Four recitations and one two-hour laboratory period each week. Required in standard curriculum in Agriculture. Mr. Brown, Mr. Paddock.

A study of the principles and practices underlying production of tree fruits, small fruits, and vegetables. Varieties, soils, sites, fertilizers, culture, pest control, harvesting and storage are considered, but due to the fields covered the time spent on each phase is limited. Designed for those who wish a short résumé of fruit and vegetable culture.

Not open to students who have credit for Horticulture 401.

503. Principles and Practices of Pomology. Five credit hours. Autumn Quarter. Four recitations and one three-hour laboratory period each week. Horticulture, third year. Prerequisite, Horticulture 401 or 405, Botany 401 and 402. Mr. Howlett.

A study of the principles and practices involved in the culture of apples and pears in Ohio. Status of the industry, establishment of the orchard, fruiting habits, soil management, pruning, pollination, fruit setting, propagation, spraying and dusting, harvesting, storing and marketing are among the subjects considered.

Not open to students who have credit for Horticulture 403.

504. Principles and Practices of Pomology. Five credit hours. Winter Quarter. Four recitations and one three-hour laboratory period each week. Horticulture, third year. Prerequisite, Horticulture 401 or 405 and 503, Botany 401 and 402. Mr. Gourley.

Consideration of fundamentals and practices with respect to the culture of the peach, cherry, plum, grape, strawberry, raspberry, blackberry, currant, and gooseberry.

Not open to students who have credit for Horticulture 404.

VEGETABLE GARDENING

522. Potato Culture and Commercial Vegetable Gardening. Five credit hours. Winter Quarter. Four recitations and one two-hour laboratory period each week. Horticulture, third year. Prerequisite, Horticulture 401 or 405, Botany 401 and 402. Mr. Brown.

A study of the practices and principles involved in the production and utilization of potatoes and vegetable crops, including the location of garden enterprises; habitat and distribution of vegetables; garden planning, seed sources, and planting; transplanting; construction and uses of hotbeds and cold-frames; garden soils, their fertility, preparation and management; irrigation; garden tools and equipment; pest control; potatoes, including their history, varietal description, classification and principles of culture.

523. Horticultural Products. Three credit hours. Autumn Quarter. One lecture and two two-hour laboratory periods each week. Horticulture, fourth year. Home Economics, third or fourth year. Prerequisite, Chemistry 401-402 or 411-412. Mr. Brown.

This course includes the study and practice of the various methods suitable for the commercial preservation of fruit and vegetable materials; such as canning, dehydrating, pickling, preserving, and refrigeration. It also includes the manufacture of cider, vinegar, fruit juices, butters, jams, and jellies.

526. Vegetable Forcing. Three credit hours. Spring Quarter. Two recitations and one two-hour laboratory period each week. Horticulture (Floriculture), third year; Horticulture (Vegetable Gardening), third or fourth year. Prerequisite, Horticulture 401 or 405. Given in alternate years. Mr. Brown.

Includes a study of the origin and development of greenhouse vegetable production and present-day cultural practices with reference to the more important greenhouse vegetable crops. A trip to the chief vegetable forcing centers of the State is required.

Not open to students who have credit for Horticulture 426.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

440. Elementary Plant Propagation. Three credit hours. Autumn Quarter. Two recitations and one two-hour laboratory period each week. Horticulture, second year. Prerequisite, Horticulture 401 and Botany 401 and 402. Mr. Poesch.

A study of the principles and practices of plant propagation. The course is designed to acquaint the student with the commercial methods followed in the propagation of florists' crops.

woody ornamentals and fruits. The reproduction of these plants by seeds, cuttings, grafting, layers, runners, separation and division is considered.

542. Principles and Practices of Floriculture. Five credit hours. Autumn Quarter. Four recitations and one three-hour greenhouse period each week. Horticulture, third year. Prerequisite, Horticulture 401 or 405, 440, and Botany 401 and 402. Mr. Laurie.

This course is designed to acquaint the student with the fundamentals and practices involved in modern greenhouse management and construction. It includes the study of commercial cut-flower crops. One or two trips will be required.

Not open to students who have credit for Horticulture 442.

543. Principles and Practices of Floriculture. Five credit hours. Winter Quarter. Four recitations and one three-hour greenhouse period each week. Horticulture, third year. Prerequisite, Horticulture 401 or 405, 440, and Botany 401 and 402. Mr. Laurie.

A continuation of Horticulture 542 dealing with the pot plants grown for commercial purposes as well as tropical plants of economic importance.

Not open to students who have credit for Horticulture 443.

544. Garden Management. Five credit hours. Spring Quarter. Three recitations and two two-hour laboratory periods each week. Horticulture, third year. Prerequisite, Horticulture 401 and 440, and the required courses of the freshman and sophomore years of the Horticulture curriculum. Mr. Laurie.

A course designed to study the identification, culture and uses of outdoor herbaceous ornamental crops and garden roses. The study is considered from the standpoint of commercial methods of production and their value in landscape development.

Not open to students who have credit for Horticulture 444.

546. Flower Store Management. Three credit hours. Spring Quarter. One recitation and two two-hour laboratory periods each week. Horticulture, third year. Prerequisite, Horticulture 542 and 543, and Economics 401. Mr. Poesch.

Management of the retail shop together with the principles and practice of flower designing are the essential parts of this course.

Not open to students who have credit for Horticulture 446.

550. Ornamental Plants. Five credit hours. Autumn Quarter. Three recitations and two three-hour laboratory periods each week. Horticulture, fourth year. Prerequisite, Horticulture 401 and 440. No prerequisite for students in Landscape Architecture. Mr. Chadwick.

This course is devoted to a detailed study of trees, shrubs, and vines; their identification, culture, adaptation to environmental conditions, combinations, uses and management in landscape plantings. Major consideration will be given in this course to the opposite-leaf deciduous plants and the narrow-leaf evergreens. Special reports are devoted to a study of fruiting habits, autumn foliage, and time of leaf fall.

Not open to students who have credit for Horticulture 450.

551. Ornamental Plants. Five credit hours. Spring Quarter. Three recitations and two three-hour laboratory periods each week. Prerequisite, Horticulture 550, and the required courses of the freshman and sophomore years of the horticulture curriculum. Mr. Chadwick.

A continuation of Horticulture 550. Major consideration is given to broad-leaf evergreens and alternate-leaf deciduous plants. Special reports are devoted to a study of flowering dates and time of leaf appearance.

LANDSCAPE ARCHITECTURE

(See Fine Arts)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

***601. Horticulture Plant Breeding.** Three credit hours. Winter Quarter. Three recitations each week. Horticulture, fourth year. Given in alternate years. Prerequisite, Horticulture 401 or 405, 503, 504, 521 or 542, Botany 401 and 402. Mr. Laurie, Mr. Brown.

A study of the methods of breeding of horticultural crops; the modification and improvement of plants under cultivation, together with a discussion of the theories of heredity.

602. Experimental Horticulture. Three credit hours. Autumn Quarter. One discussion period and six hours of laboratory work each week of which three hours have the time scheduled. Prerequisite, Horticulture 401 or 405, 503, 504, 521, 522, or 542, Chemistry 402 or 412, Botany 401 or 402; prerequisite or concurrent, Botany 605. For those specializing in pomology, vegetable gardening, floriculture, and ornamental horticulture. Mr. Howlett.

The course is designed to study primarily the physiological responses of horticultural plants that have been grown under varying environmental conditions. The emphasis will be placed upon the observation and examination of the plants themselves. Some of the subjects considered are: nitrogen deficiency, nitrate assimilation in horticultural plants, synthesis and reutilization of proteins, photoperiodism, carbohydrate deficiency, nitrogen-carbohydrate relationships, potassium, phosphorus, and calcium deficiency. In this connection the student will become acquainted with some current research methods in horticulture.

603. Experimental Horticulture. Three credit hours. Winter Quarter. Two lectures and one recitation each week. Prerequisite, Horticulture 401 or 405 or equivalent in agriculture, Agronomy 501, Horticulture 503, 504, 521 or 542, Botany 401, 402 and 605. Mr. Gourley.

This course is designed to study methods of study and interpretation of results in the field of research and experimental horticulture. Particular attention is given to planning of experimental work, a review of outstanding contributions, a critical discussion of recent articles on horticultural investigations, a summary of the work in progress at various institutions, statistical methods, and preparation of subject matter for publication.

***604. Systematic Pomology.** Three credit hours. Autumn Quarter. Three two-hour conference periods each week. Horticulture, fourth year. Given in alternate years. Prerequisite, Horticulture 403-404. Mr. Gourley.

Nomenclature, classification, and identification of fruits; detailed descriptions, botanical relationships, adaptations, and commercial value of the commercial orchard fruits of the region.

***605. The Literature of Horticulture.** Three credit hours. Winter Quarter. Two recitations and one two-hour laboratory period each week. Horticulture, fourth year. Given in alternate years. Prerequisite, Horticulture 401 or 405, Horticulture 503, 504 and 542, Economics 401 and 402, and Agronomy 501. Mr. Paddock.

A study of the literature of horticulture.

621. Systematic Study of Vegetables. Three credit hours. Autumn Quarter. One recitation and two two-hour laboratory periods each week. Horticulture and Home Economics, third or fourth year. Given in alternate years. Prerequisite, Botany 401 and 402. Mr. Brown.

A systematic study of the botany and origin of the principal vegetable forms and varieties including their description, identification, and special table and storage qualities; adaptation to soils and resistance to disease.

622. Advanced Vegetable Gardening. Five credit hours. Spring Quarter. Four recitations and one two-hour laboratory period each week. Horticulture, third year. Prerequisite, Horticulture 401 or 405, and 521, Botany 401 and 402. Mr. Brown.

A continuation of Horticulture 522. Devoted to the study of the history, anatomy, physiology, and culture of the principal vegetable crops including propagation, choice of varieties, soil adaptation, soil preparation, planting, fertilizing, cultivation, pest control, harvesting, storage methods, marketing and cost of production, and income.

Not open to students who have credit for Horticulture 422.

* Not given in 1937-1938.

628. The Marketing of Fruits and Vegetables. Five credit hours. Spring Quarter. Five lecture periods each week. Horticulture, fourth year. Prerequisite, Economics 401 and 402, Rural Economics 501 and 613. Mr. Hauck.

The principles involved in marketing fruits and vegetables will be considered. Attention will be given to various phases of preparation for market, distribution, transportation, terminal facilities, auctions, inspection, market news, etc. Emphasis will be placed upon the market outlets and methods which are most suited to Ohio producers. One or two inspection trips of two or three days each will be made.

Not open to students who have credit for Rural Economics 628.

649. Advanced Plant Propagation. Five credit hours. Winter Quarter. Four recitations and one three-hour laboratory period each week. Horticulture, fourth year. Prerequisite, Horticulture 550 and Botany 605. Mr. Chadwick.

This course is devoted to an intensive and detailed physiological, anatomical, and practical study of the principles and practices of propagation.

Not open to students who have credit for Horticulture 449.

652. Structure of Vegetables and Ornamental Plants. Three credit hours. Autumn Quarter. One recitation and two two-hour laboratory periods each week. Time to be arranged. Prerequisite, Botany 401 and 402, Horticulture 503 and 504, and 521 or 542 or equivalent in agriculture, Agronomy 501, and Agricultural Chemistry 401. For undergraduate students, permission of the instructor is required. Mr. Gourley and assistant.

A study of the structure of vegetables and ornamental plants as they relate to the economic production of these crops. The course is designed for advanced students who desire to make a critical study of horticultural plant material.

653. Structure of Economic Fruits. Three credit hours. Winter Quarter. One recitation and two two-hour laboratory periods each week. Time to be arranged. Prerequisite, Botany 401 and 402, Horticulture 503 and 504, and 521 or 542 or equivalent in agriculture, Agronomy 501, and Agricultural Chemistry 401. Mr. Gourley and assistant.

A study of the structure and vascular arrangement of horticultural fruits. The viewpoint and emphasis of this course are designed to familiarize students with the structures that play a part in the development of various types of fruits and the relation of these structures in cultural development, spraying, storage, and culinary use.

683. Arboriculture. Three credit hours. Autumn Quarter. Two recitations and one three-hour laboratory period each week. Horticulture, fourth year. Prerequisite, Horticulture 401 or 405 and 440, and Botany 605 and 606. Mr. Chadwick.

A study of the care of ornamental trees and shrubs. Fertilization, spraying, pruning, and tree surgery. A suitable course for those interested in city forestry, park maintenance, and cemetery development.

Not open to students who have credit for Horticulture 483.

701. Minor Investigations. Three to fifteen credit hours, taken in units of three or five hours each Quarter for one or more Quarters. Autumn, Winter, Spring. Horticulture, fourth year. All instructors.

This course is for students who desire to work out special problems in the fields of pomology, vegetable gardening, or floriculture. Students will elect work in their desired subjects after a conference with the instructor in charge.

704. Horticultural Seminary. One credit hour. Autumn, Winter, and Spring Quarters. Required of all graduate students majoring in Horticulture. All instructors.

FORESTRY

410. Principles of Forestry. Three credit hours. One Quarter. Autumn and Winter. Two recitations and one quiz each week. No prerequisites. Mr. Beyer.

Relation of forestry to agriculture; need for forestry as demonstrated by economic and social aspects; history of forestry; character, distribution, and utilization of our timber resources. forest influences on climate, streamflow and erosion. Forestry as a profession. This course is

designed for students in the general arts and sciences and in agriculture to acquaint them with the forestry movement in the United States.

Not open to students who have credit for Forestry 501 or 505.

502. Farm Woodlot Management. Five credit hours. Spring Quarter. Three recitations and two three-hour laboratory periods each week. Forestry, second year. Elective in Horticulture. Mr. Beyer.

Designed primarily for the instruction of agricultural students who may become county agents, teachers, or farm managers. The cultural treatment, harvesting and regeneration of important natural or planted trees on Ohio farms. Nursery practice. Characteristics, structural and botanical. Utilization in the form of lumber, cordwood, bolts, ties, poles and other products, and methods of measuring the same both cut and uncut. Preservative treatment and durability of locally grown materials for the farm. Harvesting the crop with portable mills and other machinery operated by farm owners. Investment and expected financial return, value and specifications of products, taxes, protection from fire, grazing, and other enemies. Actual practice in handling woodlands during the laboratory periods. A series of lectures on forestry extension work is given by the State Extension Forester, F. W. Dean.

507. Wood Technology. Five credit hours. Winter Quarter. Three recitations and two three-hour laboratory periods each week. Forestry, second year. Prerequisite, Forestry 508 or Botany 406. Mr. Beyer.

Structure and identification of our commercially important native woods, their durability, physical and mechanical properties and the application of these properties to industrial utilization.

508. Dendrology. Five credit hours. Autumn Quarter. Three recitations and two three-hour laboratory periods each week. Three all-day Saturday field trips. Prerequisite, Botany 401 and 402. Forestry, second year. Mr. Beyer.

The taxonomic characteristics, identification and distribution of the commercially important tree species of North America. The development and growth of trees and their share in the formation of forest types in the United States.

509. Artificial Forest Reproduction. Five credit hours. Spring Quarter. Three recitations and two three-hour laboratory periods each week. Two all-day Saturday field trips. Prerequisite, Forestry 508. Forestry, second year. Mr. Beyer.

Lectures on Ohio forest nursery problems by State Forester Edmund Secrest.

The place and need of artificial reproduction in forestry, restocking of denuded lands, choice of species, nursery plans, collection, extraction, testing and storage of tree seeds; practical field experience in reforestation and nursery practice.

701. Minor Investigations in Forestry. Three to five credit hours for one or more Quarters. Autumn, Winter, Spring. Mr. Beyer.

An opportunity is given the student to make a special study of any phase of forestry.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

JOURNALISM

Office, Journalism Building

ASSOCIATE PROFESSOR POLLARD, ASSISTANT PROFESSORS GETZLOE
AND LUXON, AND ASSISTANT

401. The Modern Newspaper. Five credit hours. One Quarter. Autumn, Winter, Spring. Five lecture and discussion hours each week. Open to students who have not less than sixty Quarter hours of credit. Mr. Getzloe, Mr. Luxon, and assistant.

The first half of the Quarter is given to a survey: Journalism as a profession and as a business; opportunities in the field; the press today; modern methods of newspaper production. The second half deals with the work of the beginner in journalism, with special emphasis on the theory and practice of newspaper reporting.

407. Agricultural Journalism. Three credit hours. One Quarter. Autumn, Winter, Spring. Rural Economics and Rural Sociology, second year. Mr. O'Brien.

A course in journalistic writing, applied to agricultural subjects. Presuming no prior experience on the part of the student, it starts at fundamentals and gives training in the gathering and preparation of farm news and technical articles for the press.

MATHEMATICS

Office, 307 University Hall

PROFESSORS KUHN, RASOR, MORRIS, BLUMBERG, WEAVER, AND RADO, ASSOCIATE PROFESSORS BAMFORTH AND LAPAZ, ASSISTANT PROFESSORS BAREIS, BEATTY, CARIS, AND RICKARD, MISS JONES, MR. SOUTHARD, MR. WYLIE, AND ASSISTANTS

407. Mathematics for Students of Agriculture. Three credit hours. Winter Quarter. Three recitations each week. Prerequisite, two units of entrance mathematics or the equivalent.

Numerical computation, algebraic processes, curve plotting, trigonometry, diary problems, fertilizer formulas, cement mixtures, simple machines, work and horse-power, applications related to agriculture, and other topics.

408. Mathematics for Students of Agriculture. Three credit hours. Spring Quarter. Three recitations each week. Prerequisite, Mathematics 407, or the equivalent.

This is a continuation of Mathematics 407.

421. College Algebra. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, one unit of entrance algebra and one unit of entrance geometry. All instructors.

Fundamental ideas and topics of college algebra. Designed, along with the allied courses, Mathematics 422, 429, 435, to give students in the arts and sciences a conception of the character and possibilities of modern mathematics, especially in relation to its uses in other subjects.

422. Plane Trigonometry. Five credit hours. One Quarter. Autumn, Winter, Spring. Prerequisite, one unit of entrance algebra and one unit of entrance geometry. All instructors.

Solution of right and oblique triangles, theory and use of logarithms, solution of trigonometric equations and identities, various applications to the arts and sciences.

423. Analytic Geometry. Five credit hours. Spring Quarter. Prerequisite, Mathematics 421 and 422 or 431 and 432. All instructors.

431. Plane Trigonometry. Five credit hours. One Quarter. Winter and Spring. Prerequisite, one and one-half units of entrance algebra and one unit of entrance geometry. All instructors.

432. College Algebra. Five credit hours. One Quarter. Autumn and Winter. Prerequisite, one and one-half units of entrance algebra and one unit of entrance geometry. All instructors.

433. Analytic Geometry. Five credit hours. One Quarter. Autumn and Spring. Prerequisite, Mathematics 431 and 432 or 421 and 422. All instructors.

441-442-443. Calculus. Five credit hours. Three Quarters. 441, Autumn and Winter; 442, Winter and Spring; 443, Autumn and Spring. Prerequisite, Mathematics 423 or 433. All instructors.

MILITARY SCIENCE AND TACTICS

Office, The Armory

COLONEL TOWNSEND; LIEUTENANT COLONELS DIXON, SPENCER, AND FALK; MAJORS PAGE, CAMP, THOMAS, AND HAMILTON; CAPTAINS BARRY, HINTON, WILLIAMSON, ADAMSON, COWLES, PALMER, BLAKENEY, BURCKES, BERTSCH, AND CLYBURN; FIRST LIEUTENANTS KURSTEDT, SEEMAN AND BROOKE, NON-COMMISSIONED OFFICERS OF FIELD ARTILLERY, SIGNAL CORPS AND ENGINEER CORPS

In accordance with the Morrill Act, passed in 1862, under which the University was established, military instruction must be included in the curricula. The Board of Trustees therefore requires all male students, both special and regular, unless excused by the Department of Military Science and Tactics, to receive military instruction during the first two years of Engineer Corps, Field Artillery, or Signal Corps.

The Reserve Officers' Training Corps was established under the National Defense Act of June 3, 1916, and June 4, 1920, the required two years' work being included in its four-year course, the third and fourth years being elective. Instruction is given in Engineer Corps, Field Artillery, and Signal Corps.

Uniform is furnished Freshmen upon deposit of approximately \$25.00 being made with the Contractor. The University has adopted its own style of uniform, which is required to last two years. Last year the Basic Course students were paid commutation of uniform amounting to \$9.00 each for the academic year. This allowance is prorated monthly to students who did not remain in attendance during the entire academic year, but is paid by the Bursar in whole or in part only at the close of the Spring Quarter of each academic year.

Students taking Advanced Courses in Military Science receive commutation of rations which last year amounted to twenty-five cents a day and is payable quarterly, and commutation of uniform which last year amounted to \$29.00 for the First Year Advanced men (Juniors), and to \$7.00 for the Second Year Advanced men (Seniors).

The total credit in this department allowed toward a degree is eighteen Quarter-hours, exclusive of Field Artillery 421-422-423, 424-425-426, Signal Corps 441-442-443, 444-445-446, or Engineer Corps 407-408-409, 410-411-412, required of all male students in the first and second years, for which six credit hours are granted.

Enrollment in the Engineer Unit will be confined to students in the Engineering College. Engineering students who intend to take Electrical Engineering or Engineering Physics are eligible for the Signal Corps Unit. All other students required to take military science will be assigned to the Field Artillery Unit.

SUMMER CAMPS

As a part of the instruction of the Reserve Officers' Training Corps, summer camps are conducted for the Advanced Course students at the end of their junior year. These camps are of six weeks' duration and the work is entirely practical. The Government furnishes transportation to and from the camps. While in camp, clothing, subsistence, medical attention, and entertainment are provided. The students attending advanced course camp receive a salary of seventy cents a day.

INFANTRY

510-511-512. Advanced Infantry. Three credit hours each Quarter. Autumn, Winter, Spring. Elective. Not given after 1938-1939. Prerequisite, Military Science 507-508-509.

Leadership. Military law. Military history. Company administration and supply. Combat training.

FIELD ARTILLERY

421-422-423. Basic Field Artillery. One credit hour each Quarter. Autumn, Winter, Spring.

National Defense Act and R.O.T.C. Obligations of citizenship. Military history and policies. Current international situation. Military courtesy and customs of the service. Military sanitation and first aid. Military organization and organization of the Field Artillery. Leadership. Elementary gunnery. Duties of cannoneers and the firing battery. Field Artillery ammunition and materiel.

424-425-426. Basic Field Artillery. One credit hour each Quarter. Autumn, Winter, Spring. Prerequisite, Military Science 421-422-423.

Fire control instruments. Map and aerial photograph reading. Battery communications. Duties of the Battery Commander's Detail. Leadership. Care of animals and stable management. Equitation. Driving and draft.

527-528-529. Advanced Field Artillery. Three credit hours each Quarter. Autumn, Winter, Spring. Elective. Prerequisite, six Quarters of basic military science.

Reconnaissance, selection, occupation of position. Duties of Battery Officers. Use of Battery Commander's Detail. Field Artillery signal communications. Liaison with Infantry. Leadership. Elementary ballistics and dispersion. Preparation of fire. Conduct of fire. Equitation. Driving and draft.

530-531-532. Advanced Field Artillery. Three credit hours each Quarter. Autumn, Winter, Spring. Elective. Prerequisite, Military Science 527-528-529.

Leadership. Command and instruction of student organizations. Transport. Tactics. Military history and policy. Military law and administration. The law of military offenses. Courts-martial. Administration.

MUSIC

Offices, 1, 2, 3, 4, Page Hall

PROFESSORS HUGHES, WEIGEL, AND DIERCKS, ASSISTANT PROFESSOR GILLILAND, MR. WHITCOMB, MR. MADDEN, AND ASSISTANTS

CAMPUS MUSIC GROUPS

Participation in University music activities is open to all students in the University. No student will be allowed credit in excess of six hours in Music A, B, C, and D toward graduation. No student will be permitted to enroll for credit in more than one of the courses Music A, B, C, or D during any particular Quarter.

Students wishing to enroll in any instrumental group should observe the following:

Tryouts for Orchestras and Bands

All upperclassmen attending the University for the first time and all Freshmen will report for examination to Professor Weigel, Director of instrumental groups and secure his permission before scheduling Music B, C, or D. (See Freshman Week Bulletin for schedule of tryouts.)

Regimental Bands

Freshmen and Sophomores who are assigned by Professor Weigel to Regimental Bands following tryouts, should schedule Regimental Bands as Military Science 421, 422, 423 in the three Quarters of the Freshman year and as Military Science 424, 425, 426 in the three Quarters of the Sophomore year.

Only Juniors and Seniors may schedule Music C. This course represents volunteer military service and may only be taken for credit after six Quarter-hour credits have been earned in military science.

Music A. University Chorus. One credit hour. Autumn, Winter, and Spring Quarters. Three rehearsals each week. Mr. Diercks, Mr. Gilliland.

Open to students in any department of the University. Acceptance for the course is subject to the written approval of the director after individual conference. Advanced students and those with special interests and talents through rehearsals of smaller groups will be given opportunity to study the madrigal and other choral literature suitable to small ensembles.

Music B. University Orchestra. One credit hour. Autumn, Winter, and Spring Quarters. One sectional rehearsal and three full rehearsals each week. Mr. Weigel, Mr. Whitcomb, Mr. Madden, Mr. Duncan.

Open to students in any department of the University. Acceptance for the course is subject to the written approval of the director after individual conference.

Music C. The University Marching Bands. One credit hour. Autumn, Winter, and Spring Quarters. Three or more rehearsals and drill periods each week. Open only to Juniors and Seniors who have earned six hours credit in Military Science (Band). Membership by permission of the director. Mr. Weigel, Mr. Whitcomb, Mr. Madden, Mr. Bruder.

The University Band operates as two or more military units. A combination of these units, or selected men from each, serves as a massed band for athletic events and military revues.

Music D. The University Band. One credit hour. Autumn, Winter, and Spring Quarters. One sectional rehearsal and three full rehearsals each week. Prerequisite, consent of the director. Mr. Weigel, Mr. Whitcomb, Mr. Madden.

The University Band is a selected group of limited membership devoted to the preparation and performance of the best band literature. The group gives public concerts and supplies music for University functions. Membership is open to students of any year or department but is limited to performers of superior ability.

Music E. Women's Glee Club. No credit. Autumn, Winter, and Spring Quarters. Mr. Gilliland.

Membership in this group is open to all women students in the University. Examinations are held at stated periods and vacancies in the club filled with the best available voices. The majority of elections take place in the Autumn Quarter.

Music G. Men's Glee Club. No credit. Autumn, Winter, and Spring Quarters. Mr. Diercks, Mr. Gilliland.

Membership in this group is open to all men students in the University. Examinations are held at stated periods and vacancies in the club filled with the best available voices. The majority of elections take place in the Autumn Quarter.

PHOTOGRAPHY

Office, 4 Brown Hall

PROFESSOR HASKETT, ASSISTANT PROFESSOR DAVIS

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

611. Photography. Three credit hours. One Quarter. Autumn and Spring. Two lectures and six laboratory hours each week. Mr. Haskett, Mr. Davis.

Lectures and practice on the fundamentals of photographic processes.

PHYSICAL EDUCATION

MEN'S DIVISION

Office, Physical Education Building

PROFESSORS ST. JOHN, CASTLEMAN, D. OBERTEUFFER, AND SCHMIDT, ASSOCIATE PROFESSORS WOOD, AND ASHBROOK, ASSISTANT PROFESSORS COBB, OLSEN, DUFFEE, GODFREY, SNYDER, STALEY, MOONEY, AND HOWARD. MR. PEPPE, MR. STAHL, MR. RIEBEL, MR. H. WIRTHWEIN, MR. MACKEY, MR. C. WIRTHWEIN

WOMEN'S DIVISION

Office, Pomerene Hall

PROFESSORS PALMER, ARMSTRONG, AND K. OBERTEUFFER, ASSOCIATE PROFESSOR SUMPTION, ASSISTANT PROFESSORS GILMAN, WINNEMORE, STEIN, AND WATSON, MISS SCHUTZ, MISS HAYS, MISS JACOBS, MISS CHERRINGTON, MISS DILLON, AND ASSISTANTS

400. Hygiene (Men and Women). One credit hour. One Quarter. Autumn, Winter, Spring. One lecture each week. Required of every Freshman during one of his first three Quarters of residence in the University. Sections for men, all instructors; sections for women, Miss Armstrong, Miss Winnemore.

This course deals with the various factors and conditions which affect the health and efficiency of the student.

NOTE: Hygiene 400 for women is sectioned on the basis of a placement test which is given during Freshman Week of the Autumn Quarter and at the first class period of other Quarters.

401. Physical Education (Men). One credit hour. Autumn Quarter. Two hours each week. Required of every Freshman. All instructors.

The work in this course is based on a thorough physical examination given at the beginning of the entering Quarter.

This course includes general body-building exercises, gymnastic and athletic games, antagonistic sports, and swimming, with advanced elective activities for the physically superior groups.

402. Physical Education (Men). One credit hour. Winter Quarter. Two hours each week. Required of every Freshman. All instructors.

A continuation of Physical Education 401.

403. Physical Education (Men). One credit hour. Spring Quarter. Two hours each week. Required of every Freshman. All instructors.

A continuation of Physical Education 402.

421. Physical Education (Women). One credit hour. Autumn Quarter. Two hours each week. Required of every Freshman. All instructors.

The work includes hockey, soccer, volley ball, swimming, interpretative dancing, golf, horseback riding, and individual gymnastics.

422. Physical Education (Women). One credit hour. Winter Quarter. Two hours each week. Required of every Freshman. All instructors.

This work includes indoor baseball, basketball, golf, interpretative dancing, folk dancing, swimming, and individual work.

423. Physical Education (Women). One credit hour. Spring Quarter. Two hours each week. Required of every Freshman. All instructors.

This work includes horseback riding, golf, baseball, tennis, archery, swimming, and interpretative dancing.

425. Physical Education (Women). One credit hour. Autumn Quarter. Three hours each week. Required of all Sophomores. All instructors.

A continuation of Physical Education 421, 422, and 423.

426. Physical Education (Women). One credit hour. Winter Quarter. Three hours each week. Required of all Sophomores. All instructors.

A continuation of Physical Education 425.

427. Physical Education. One credit hour. Spring Quarter. Three hours each week. Required of all Sophomores. All instructors.

A continuation of Physical Education 426.

ELECTIVE COURSES FOR MEN DISQUALIFIED FOR MILITARY SCIENCE

525. Physical Education. One credit hour. Autumn Quarter. Three hours each week. Open to Freshmen disqualified for elementary courses in Military Science. All instructors.

This course is similar in content to Physical Education 401.

526. Physical Education. One credit hour. Winter Quarter. Three hours each week. Open to Freshmen disqualified for elementary courses in Military Science. All instructors.

This course is similar in content to Physical Education 402.

527. Physical Education. One credit hour. Spring Quarter. Three hours each week. Open to Freshmen disqualified for elementary courses in Military Science. All instructors.

This course is similar in content to Physical Education 403.

528. Physical Education. One credit hour. Autumn Quarter. Three hours each week. Open to Sophomores disqualified for elementary courses in Military Science. All instructors.

This course offers advanced training and instruction in various athletic sports.

529. Physical Education. One credit hour. Winter Quarter. Three hours each week. Open to Sophomores disqualified for elementary courses in Military Science. All instructors.

This course offers advanced training and instruction in various athletic sports.

530. Physical Education. One credit hour. Spring Quarter. Three hours each week. Open to Sophomores disqualified for elementary courses in Military Science. All instructors.

This course offers advanced training and instruction in various athletic sports.

PHYSICS AND ASTRONOMY**PHYSICS**

Office, 107 Mendenhall Laboratory

PROFESSOR ALPHEUS W. SMITH, ASSOCIATE PROFESSORS ALVA W. SMITH,
AND GREEN, ASSISTANT PROFESSOR KNAUSS

411. **General Physics: Mechanics, Wave Motion, Sound.** Five credit hours. One Quarter. Autumn and Winter. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, two entrance units in mathematics. Mr. Alpheus Smith, Mr. Alva Smith, Mr. Green, Mr. Knauss.

412. **General Physics: Heat, Light, Spectroscopy.** Five credit hours. Winter Quarter. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, Physics 411. Mr. Alpheus Smith, Mr. Alva Smith, Mr. Green, Mr. Knauss.

413. **General Physics: Magnetism, Electricity, and Electronics.** Five credit hours. Spring Quarter. Four lectures and recitations and one two-hour laboratory period each week. Prerequisite, Physics 411. Mr. Alpheus Smith, Mr. Alva Smith, Mr. Green, Mr. Knauss.

PHYSIOLOGY

Office, 204 Hamilton Hall

PROFESSORS HARTMAN AND SEYMOUR, ASSOCIATE PROFESSOR HITCHCOCK, AS-
SISTANT PROFESSORS HATERIUS AND R. R. DURANT, AND ASSISTANT

403. **Elementary Physiology.** Five credit hours. One Quarter. Autumn and Spring. Four lectures or recitations and three laboratory hours each week. Prerequisite, two Quarters of chemistry. Not open to Freshmen. Mr. Seymour and staff.

The fundamental principles governing the activity of living organisms, including the chemical and physical structure of animate matter; tissues; muscle-nerve physiology; blood and lymph; fundamental structure and functions of the nervous system, including reflex actions; cardio-vascular system.

Not open to students who have credit for any course in physiology.

404. **Elementary Physiology.** Five credit hours. One Quarter. Autumn and Winter. Four lectures or recitations and three laboratory hours each week. Prerequisite, Physiology 403 or 407. Not open to Freshmen. Mr. Seymour and staff.

An elementary survey of respiration, foods, digestion, metabolism, excretion, endocrines, brain, and special senses.

Not open to students who have credit for Physiology 408 or 409.

416. **Comparative Physiology.** Five credit hours. Winter Quarter. Four lectures and one laboratory period each week. For agricultural students only. Prerequisite, Zoology 401, Chemistry 401-402 or 411-412. Mr. Haterius and staff.

A study of the functions of living animals. This course deals with the blood, circulation, respiration, and digestion.

417. **Comparative Physiology.** Five credit hours. Spring Quarter. Four lectures and one laboratory period each week. For agricultural students only. Prerequisite, Physiology 414. Mr. Haterius and staff.

This course deals with excretion, animal heat, metabolism, endocrinology, reproduction, contractile tissues, central nervous system, and special senses.

420. **Physiology of the Endocrine System.** Three credit hours. Winter Quarter. Three lectures or recitations each week. Prerequisite, one Quarter of biological science. Not open to freshmen. Mr. Haterius.

A survey of the glands of internal secretion including the relations of endocrine secretions to metabolism, growth, development, sex and disease.

POULTRY HUSBANDRY
Office, Poultry Husbandry Building

PROFESSOR DAKAN, ASSOCIATE PROFESSOR WINTER

401. Principles of Poultry Production. Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitation-laboratory periods each week. Mr. Dakan, Mr. Winter.

The principles and practices underlying reproduction and growth of the domestic fowl. It is suggested that this course precede other courses in the department or be taken concurrently with them.

412. Commercial Poultry Production and Management. Five credit hours. Winter Quarter. Five lecture-laboratory conference periods each week. Mr. Dakan.

The economic factors involved in commercial chicken and turkey farming, and in commercial hatcheries.

413. Poultry Farm Sanitation. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, five hours of Poultry Husbandry. Given in alternate years. Mr. Winter.

The principles underlying sanitation and disease prevention as applied to the poultry farm. Not open to students who can enroll in Veterinary Medicine 581.

415. Poultry Production for Students in Veterinary Medicine. Three credit hours. Spring Quarter. Three lecture-laboratory periods each week. Veterinary Medicine, third year. Mr. Dakan, Mr. Winter.

A general survey of the poultry industry and its relation to agriculture. A study of poultry farm practices of special interest to the student of Veterinary Medicine.

502. Poultry Judging and Breeding. Five credit hours. Autumn Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 403. Mr. Dakan.

Judging poultry for production. A brief study of the classification of the breeds of poultry, breeding practices, and a study of breed records. The application of genetic principles to poultry breeding.

Not open to students who have credit for Poultry Husbandry 402 or 606.

509. Poultry Feeding. Five credit hours. Winter Quarter. Five recitation-laboratory periods each week. Prerequisite, Agricultural Chemistry 401. Mr. Winter.

A study of feedstuffs, compounding of rations, and feeding practices for chickens, turkeys, and other avian species.

Not open to students who have credit for Poultry Husbandry 409 or 607.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

603. Marketing and Processing Poultry Products. Three credit hours. Autumn Quarter. Three recitations each week. Prerequisite, Business Organization 700 or Rural Economics 613. Mr. Dakan.

Processing frozen, dried, and shell eggs. Marketing live and dressed poultry, eggs, and egg products.

***609. Principles and Practices of Incubation and Brooding.** Three credit hours. Spring Quarter. Two lectures and one two-hour laboratory period each week. Prerequisite, ten hours of biological science and ten hours of chemistry. Mr. Winter.

The environmental factors affecting incubation, embryo development, operation of incubators, and systems of brooding.

* Not given in 1937-1938.

701. Special Problems in Poultry Husbandry. Three to fifteen credit hours taken in units of three to five hours each Quarter for one or more Quarters. Autumn, Winter, Spring. Mr. Dakan, Mr. Winter.

This course is limited to advanced students and must be arranged with the professor in charge. Each student will be required to make an exhaustive study of some particular phase of poultry husbandry and write a thesis of his study and research. The work must comprise in part some original investigation by the student.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate work in this department, see the Bulletin of the Graduate School.

PSYCHOLOGY

Office, 325 Education Building

PROFESSORS ARPS, BURTT, GODDARD, MAXFIELD, PRESSEY, TOOPS, DOCKERAY, RENSHAW, ENGLISH, WILLIAMS, AND BERRY, ASSOCIATE PROFESSORS VALENTINE AND ROGERS, ASSISTANT PROFESSORS DUREA, EDGERTON, AND STOGDILL, INSTRUCTORS, AND ASSISTANTS

401. Elementary Psychology. Five credit hours. One Quarter. Autumn, Winter, Spring. Five meetings each week. Lectures, discussions, laboratory exercises, and reports. Home Economics, first year. Elective in Rural Economics and Rural Sociology, second year. All instructors.

An introductory course and fundamental to all subsequent courses in the department. This course, together with Psychology 402, undertakes to present a survey of the whole field of human psychology. This includes a study of the experimental findings in infant behavior and the subsequent development of adult modes of response, such as emotion, attention, habit, thinking, and the nature and development of personality. The facts and principles of human behavior pertinent to everyday life are stressed. The student is required to develop skill in the practical applications of experimental findings in the fields of infant behavior, motivation, attention and emotion.

402. Elementary Psychology. Five credit hours. One Quarter. Autumn, Winter, Spring. Five meetings each week. Lectures, discussions, laboratory exercises, and reports. All instructors.

A continuation of Psychology 401. Further emphasis on the development of a scientific attitude toward personal psychological problems in the fields of learning, thinking, intelligence and personality.

407. Educational Psychology. Five credit hours. One Quarter. Autumn, Winter, Spring. Five lecture hours each week. Lectures, discussions, laboratory exercises, and reports. Prerequisite, Psychology 401. All instructors.

The course begins with a brief study of the innate capacities and interests of children and individual differences in these capacities. The major part of the course is devoted to a study of the general laws and conditions of learning and the results of investigations regarding the progress of learning in various school subjects. Throughout the course experimental data and test results are stressed and practical problems emphasized. There will also be some classroom observation.

RHETORIC AND ENGLISH LANGUAGE

(See English)

ROMANCE LANGUAGES AND LITERATURE

Office, 111 Derby Hall

PROFESSORS HENDRIX, MOORE, HAVENS, ROCKWOOD, MONROE, ANIBAL, AND DEMOREST, ASSOCIATE PROFESSOR SCHUTZ, ASSISTANT PROFESSORS HAMILTON, GUTIERREZ, AND FOURE, MRS. FOURE, MISS WALSH, MR. PRICE, MR. PALOMO, MR. BIEGHLER, MR. FITCH, MR. ROGERS, MR. HOWELL, MR. CABARGA, MR. JOHNSON, MR. MEIDEN

FRENCH

401. **Elementary French.** Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Sections in this course are limited to twenty-five students. All instructors.

This course may not be taken simultaneously with Spanish 401-402 or Italian 401-402.

402. **Elementary French (Continued).** Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Prerequisite, French 401. Sections in this course are limited to twenty-five students. All instructors.

This course may not be taken simultaneously with Spanish 401-402 or Italian 401-402.

SPANISH

401. **Elementary Spanish.** Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Sections in this course are limited to twenty-five students. All instructors.

The elements of Spanish grammar with abundant oral and written exercises. Especial attention to ear training and oral practice.

This course may not be taken simultaneously with French 401-402 or Italian 401-402.

402. **Elementary Spanish (Continued).** Five credit hours. One Quarter. Autumn, Winter, Spring. Five recitations each week. Sections in this course are limited to twenty-five students. All instructors.

The elements of Spanish grammar with abundant oral and written exercises. Especial attention to active vocabulary. Elementary reading based on Spanish geography, history, customs, and manners.

This course may not be taken simultaneously with French 401-402 or Italian 401-402.

RURAL ECONOMICS

Office, 113 Townshend Hall

PROFESSOR FALCONER, ASSOCIATE PROFESSORS LIVELY, McBRIDE, WERTZ, AND HENNING, ASSISTANT PROFESSORS HAUCK, MORISON, MOORE, AND SITTERLEY, MR. SHERMAN, AND ASSISTANTS

(For curriculum in Rural Economics and Rural Sociology, see page 41.)

NOTE: For Marketing courses given in cooperation with other departments, see the following courses:

Animal Husbandry 608. Live Stock Marketing. (See page 62.)

Animal Husbandry 626. Marketing of Dairy Products. (See page 64.)

Horticulture 628. The Marketing of Fruits and Vegetables. (See page 83.)

Poultry Husbandry 603. Marketing and Processing Poultry Products. (See page 91.)

501. **Agricultural Economics.** Five credit hours. One Quarter. Autumn and Spring. Five lectures each week. Required of all students in the standard curriculum in Agriculture. Rural Economics and Rural Sociology, second year. Prerequisite, Economics 402. Mr. Henning, Mr. McBride, Mr. Wertz.

The economics of agriculture, the economics of the production and marketing of farm products, the state and the farmer, the relations of agriculture to other industries, and the social relations of agricultural communities are considered.

Not open to students who have credit for Rural Economics 401.

502. Farm Management. Five credit hours. One Quarter. Autumn and Spring. Four lectures and one three-hour laboratory period each week. Horticulture, third year. Rural Economics and Rural Sociology, third year. Prerequisite, Rural Economics 501. Mr. Falconer, Mr. Sitterley.

Lectures, recitations, and laboratory work upon the problems of farm management with special reference to the economic principles involved in agricultural production, the organization and administration of the farm. The business of farming from the standpoint of the individual is studied.

Not open to students who have credit for Rural Economics 402.

505. Rural Life. Five credit hours. Winter Quarter. Prerequisite, Rural Economics 501 or Sociology 401. Mr. Lively.

A study of the organization, development, and current problems of rural life. Present conditions and factors involved in rural life improvement.

Not open to students who have credit for Rural Economics 405.

506. Rural Recreation Leadership. Three credit hours. Spring Quarter. Two lectures and one laboratory period each week. Given in alternate years. Prerequisite, junior standing. Mr. Tom.

The principles, the practices, and the planning of recreation and leisure programs for rural communities.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

602. Advanced Farm Organization. Three credit hours. Autumn Quarter. Three lectures each week. Prerequisite, Rural Economics 501. Mr. Falconer.

A more detailed and advanced consideration of the economic principles involved in farm organization. The application of these principles to current agricultural production problems.

603. Cooperation in Agriculture. Five credit hours. Winter Quarter. Five lectures each week. Rural Economics and Rural Sociology, fourth year. Prerequisite, Rural Economics 501. Mr. Henning.

A study of agricultural cooperation, mainly as found in the United States. The types of cooperative marketing, manufacturing and purchasing organizations, collective bargaining, cooperative credit and insurance.

605. The Agricultural Industry. Three credit hours. Winter Quarter. Three lectures each week. Rural Economics and Rural Sociology, fourth year. Prerequisite, Rural Economics 501. Mr. Falconer.

The importance of the agricultural industry to the welfare of the nation. Some characteristics of the farming industry. Foreign competition, present and prospective. State and federal regulation, encouragement and aid to agriculture in the United States and foreign countries.

606. Rural Sociology. Five credit hours. Autumn Quarter. Prerequisite, twenty hours in economics, sociology, or rural economics. Mr. Lively.

A general course in the sociology of rural life. Emphasizes the fundamental and conditioning factors in rural social development, rural social institutions and the nature of rural social organization.

Not open to students who have credit for Rural Economics 405.

607. Rural Social Organization. Four credit hours. Winter Quarter. Prerequisite, twenty hours in economics, sociology, or rural economics. Mr. Lively.

An intensive course in the theory and technique of rural organization. The characteristics of rural group life, the processes of group organization, and the conditions and factors affecting the nature, permanence and success of groups organized on a local, state, and national basis are given consideration.

608. Rural Social Environment. Three credit hours. Autumn Quarter. Prerequisite, twenty hours in sociology or its social science equivalent. Mr. Lively.

A detailed study of the environmental factors surrounding rural people and the relation of these factors to their behavior. Particular consideration is given to the mental and social characteristics commonly attributed to country people.

612. Prices of Farm Products. Three credit hours. Spring Quarter. Three lectures each week. Rural Economics and Rural Sociology, fourth year. Prerequisite, Rural Economics 501. Mr. Wertz.

A study of the prices of farm land and of farm products. Adjusting the farm business to meet price fluctuations.

613. Marketing Farm Products. Five credit hours. One Quarter. Autumn and Spring. Five lectures each week. Horticulture, fourth year. Rural Economics and Rural Sociology, third year. Prerequisite, Rural Economics 501. Mr. Henning, Mr. McBride.

A study of local and terminal marketing services and agencies involved in the marketing of farm products.

614. Business Management in Agricultural Marketing. Three credit hours. Winter Quarter. Two lectures and one laboratory period each week. Prerequisite, Rural Economics 501. Given in alternate years. Mr. Henning.

A detailed study of representative agricultural marketing agencies, including their problems of administration, finance, selling, transportation, and warehousing.

701. Special Problems. Three to fifteen credit hours, given in units of three or five hours a Quarter for one or more Quarters. Autumn, Winter, Spring. Prerequisite, at least eight hours of work in the department and the consent of the instructor. Mr. Falconer, Mr. Lively, Mr. McBride, Mr. Henning, Mr. Wertz, Mr. Sitterley.

This course is for students who desire to work out special problems in the field of rural economics and rural sociology.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate work in this department see the Bulletin of the Graduate School.

SOCIOLOGY

Office, 111 Commerce Building

PROFESSORS LUMLEY AND NORTH, ASSOCIATE PROFESSOR DENUNE,
MISS SPAETH, AND ASSISTANTS

401-402. Principles of Sociology. Five credit hours. Two Quarters. Both 401 and 402 are given Autumn, Winter, Spring. Not open to Freshmen. Elective in Rural Economics and Rural Sociology, second year. 401 required in Home Economics, third year. Mr. Lumley, Mr. North, Mr. Denune, instructors, and assistants.

A study of the fundamental ideas and principles of sociology. Textbook, assigned readings, lectures, discussions, reports.

SOILS

(See Agronomy)

SPANISH

(See Romance Languages and Literatures)

SPEECH

Office, 113 Derby Hall

PROFESSORS KETCHAM AND WILEY, ASSISTANT PROFESSOR CARRELL, MR. RILEY, MISS JONES, MR. EMSLEY, AND ASSISTANTS

401. Principles and Practice of Effective Speaking I. Five credit hours. One Quarter. Autumn, Winter, Spring. No prerequisites. Mr. Ketcham, Mr. Wiley, Mr. Carrell, Mr. Riley, Miss Jones, Mr. Emsley, and assistants.

The principles of speech composition and delivery. Practice in preparing and presenting short informative, entertaining, and persuasive speeches. Audience analysis and control. Emphasis is placed upon speaking as a thinking process. The methods in which the student is trained are applicable to social and business conversation as well as to public address.

402. Principles and Practice of Effective Speaking II. Five credit hours. Winter Quarter. Prerequisite, Speech 401. Mr. Ketcham.

A continuation of Speech 401. Group discussion and conference speaking. Cooperative conversation directed toward the forming of decisions by committees, small groups, and limited assemblages. Special attention to the speaking problems which arise in business and professional relationships. The class is divided into small groups for practice under the supervision of the instructor.

SURVEY OF AGRICULTURE

JUNIOR DEAN JACKSON

Survey of Agriculture. Three credit hours. Autumn Quarter. Required in all curricula in the College of Agriculture except Home Economics.

A problem course dealing with problems of adjustment to college life; college aims; nature of thinking; how to study; nature and importance of agriculture as an industry; significant historical developments in agriculture; present day economic and social problems and how they are being solved; vocational opportunities in agriculture; nature and purposes of the agricultural curricula; and how to choose courses of study.

For Survey of Home Economics see Department of Home Economics, Course 400.

VETERINARY ANATOMY

Office, 204 Veterinary Laboratory

PROFESSOR GROSSMAN, MR. BILLS, AND ASSISTANT

451. Veterinary Anatomy for Students in Animal Husbandry. Five credit hours. Autumn Quarter. Five recitations each week. Mr. Grossman, Mr. Fitzgerald, Mr. Bills.

Structures of the animal body as related to form and function. Lectures and demonstrations on specimens and lantern slides of the skeleton, joints, muscles, digestive, respiratory, and genito-urinary organs of the horse, ox, pig, and chicken.

Not open to students who have credit for Veterinary Medicine 451.

VETERINARY MEDICINE

Office, 103 Veterinary Laboratory

PROFESSOR BRUMLEY, ASSISTANT PROFESSOR KRILL

452. Agricultural Veterinary Medicine for Students in Animal Husbandry. Three credit hours. Winter Quarter. Mr. Krill.

The more common infectious and communicable diseases of animals with methods of handling. Horseshoeing and soundness examination.

453. Agricultural Veterinary Medicine for Students in Animal Husbandry. Three credit hours. Spring Quarter. Mr. Krill.

Veterinary hygiene and sanitation applied on the farm.

ZOOLOGY AND ENTOMOLOGY
Office, 101 Botany and Zoology Building

PROFESSORS OSBURN, OSBORN (EMERITUS), BARROWS, DeLONG, PETERSON, KENNEDY, AND SNYDER, ASSOCIATE PROFESSORS D. F. MILLER, PRICE, AND CAMPBELL, ASSISTANT PROFESSORS KOSTIR, J. A. MILLER, KNULL, HICKS, AND DAVIDSON, MR. J. N. MILLER, MR. WARNER, MR. SCHAEFER, MR. BORROR, MR. TIDD, MR. SCHOTT, MR. RIFE, MR. HAUB, MR. VENARD, AND ASSISTANTS

ZOOLOGY

401-402. General Zoology. Five credit hours. Two Quarters. Both 401 and 402 are given Autumn, Winter, Spring. Five lecture-laboratory periods each week. Mr. Barrows, Mr. D. F. Miller, Mr. Price, Mr. J. A. Miller, instructors, and assistants.

A course intended to give the student a general view of the nature of animal life and to point out its relation to man's economic and social activities. The chief topics considered are as follows: nature and structure of living substance, food and its energy transformations, the essentials of reproduction; a review of the animal groups with special stress on useful and harmful qualities; animal distribution and relation to environment; heredity and evolution with particular stress upon their relation to human affairs.

403. General Principles of Heredity. Five credit hours. One Quarter. Autumn, Winter, Spring. Five lectures each week. Horticulture, and Rural Economics and Rural Sociology, second year; Plant Science, third year. Prerequisite, Zoology 401-402 or Botany 401-402 or equivalent. Mr. Snyder, Mr. Schott, Mr. Rife.

A study of the principles of heredity, to serve as a basis for advanced work in animal and plant breeding, and as a necessary background in the analysis of problems of sociology and public welfare. Demonstrations of living animals and plants will be frequently used, and discussions of the problems and principles of genetics and eugenics will be conducted daily. Heredity characters found in human beings will be used wherever feasible as a basis for discussion.

408. Ornithology. Three credit hours. Spring Quarter. Two lectures and one laboratory period each week. Prerequisite, Zoology 401-402 or equivalent. Mr. Borrer.

A study of the structure, classification, and habits of birds, with emphasis on their identification and economic importance. Several Saturday field trips, for which students should provide themselves with field glasses.

490. General Zoology (Special). Five credit hours. Spring Quarter. Five recitation-laboratory periods each week. A course for exceptional students in lieu of Zoology 401-402. Open only to students with a point-hour ratio of 3.5 or better in Botany 401-402, and to exceptional students with prerequisites acceptable to the instructor. Desirable antecedent, elementary chemistry. Permission of the Junior Dean or Secretary of the College required. Class limited to 35 students.

This course includes the major features described for Zoology 401-402.

Not open to students who have credit for Zoology 401-402.

504. General Parasitology. Five credit hours. One Quarter. Winter and Spring. Two lectures and three two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Mr. J. N. Miller and assistants.

An introductory course in parasitology stressing general principles of parasitism and the morphology and physiology of parasites as illustrated by the protozoan, helminth, and arthropod groups. This course is required of veterinary students in the sophomore year and is recommended for those specializing in medicine and zoology. Attention is given to the influence of the parasites upon their hosts, their relation to disease, their identification, and the general conditions of parasitic life.

509. Evolution. Five credit hours. One Quarter. Winter and Spring. Five lectures each week. Prerequisite, two Quarters of biological or geological science. Mr. Osburn.

The facts and theories of organic evolution. The general treatment is: historical aspects, evidences, factors, and the theories proposed from the time of Lamarck to the present.

Not open to students who have credit for Zoology 409.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

601. Advanced Genetics. Three credit hours. One Quarter. Autumn and Winter. Three lecture-discussion periods each week. Prerequisite, Zoology 403 or equivalent, and permission of the instructor. Mr. Snyder.

This is largely a study of human inheritance, with especial emphasis on the methods of research in this branch of genetics. The mathematical analysis of human pedigrees is intensively studied.

605. Animal Behavior. Three credit hours. Autumn Quarter. One lecture each week, the remainder laboratory work. Prerequisite, Zoology 401-402 or equivalent, two additional Quarters of biology, and permission of the instructor. Given in alternate years. Mr. Barrows.

This course is devoted to the study of the various parts of the nervous system of invertebrates with emphasis on the mechanics of adjustment to heat, light, chemical, and mechanical stimulation. Considerable time will be spent on experiments with living worms and insects.

***606. Animal Behavior.** Three credit hours. Winter Quarter. One lecture each week, the remainder laboratory work. Permission of the instructor is required. Given in alternate years. Mr. D. F. Miller.

This course is devoted to the study of the responses of insects to the stimulating factors of their environment. These studies are directed toward the types of behavior which are important in insect control.

609. Animal Microtechnic. Three or five credit hours. Autumn Quarter. A laboratory course. Laboratory work, assigned readings, and conferences. This course is designed for students intending to major in one of the biological sciences. Prerequisite, Zoology 401-402 or equivalent. The class is limited to twelve students and permission of the instructor must be obtained before registering for the course. Mr. Kostir.

Theory and practice of microscopic methods, including fixing, embedding, sectioning, and staining of animal tissues, making permanent preparations and special manipulation of the microscope and its accessories.

Not open to students who have credit for Zoology 407.

617. Cellular Biology I. Three or five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Permission of the instructor must be obtained before registering for this course. Mr. Kostir.

A study of the organization of living cells and the fundamental phenomena of life.

618. Cellular Biology II. Three or five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 403 or equivalent. Zoology 617 is desirable, but not essential. Mr. Kostir.

A study of the physical basis of heredity, variation, and evolution.

620. Advanced Zoology of Vertebrates. Five credit hours. Spring Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Zoology 509 and one Quarter in comparative anatomy are also desirable. Mr. Price.

A study of the various vertebrate groups, emphasizing their origin, phylogeny, classification, life histories, habits, distribution, and economic importance. Laboratory, museum and field work. Especially recommended for students specializing in biological science.

625. Advanced Zoology of Invertebrates I. The Protozoa. Five credit hours. Autumn Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Mr. Kostir.

Zoology 625, 626 and 627 are fundamental courses designed to give the student a general knowledge of the structure, life histories, habits, and relationships of the invertebrate animals. While it is preferable that these courses be taken in the order given, this is not essential, and any one of the three may be elected independently of the others. Course 625 deals with the protozoa, including both free-living and parasitic forms.

Not open to students who have credit for Zoology 615.

* Not given in 1937-1938.

626. Advanced Zoology of Invertebrates II. Five credit hours. Winter Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Mr. Kostir.

A study of the structure, life histories, habits and relationships of sponges, coelenterates, worms and arthropods, together with the consideration of important biological principles illustrated by these groups. Note statement under Zoology 625.

Not open to students who have credit for Zoology 616.

627. Advanced Zoology of Invertebrates III. Five credit hours. Spring Quarter. Two lectures and three two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Mr. Kostir.

A study of the structure, life histories, habits and relationships of molluscs, echinoderms, brachiopods, and bryozoa, together with the consideration of important biological principles illustrated by these groups. Note statement under Zoology 625.

630. The Interpretation of Biological Data. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Permission of instructor must be obtained before registering for this course. Mr. Schott.

A study of biological variability, methods of classification, and analysis, based on biometrical usage. The methods of collecting and assembling data and the consideration of their biological validity will be stressed.

640. Wildlife Conservation. Five credit hours. Winter Quarter. Five lectures each week. Prerequisite, thirty hours of biological science and permission of instructor. Mr. Hicks.

An introduction to the field of wildlife conservation. Value of wildlife resources, relation to other natural resources, agriculture, forestry and recreation, wildlife economics, land utilization contributions, conservation fundamentals, research and field techniques, ecology of game and non-game species, role of vegetation in habitat developments, interrelationships of species, management methods, demonstrations, utilization, administration, education and public relations, history of wildlife conservation organizations or institutions, and personnel entrusted with custody of wildlife resources today.

643-644-645. Wildlife Conservation Conference. One credit hour. Autumn, Winter, and Spring Quarters. Prerequisite, Zoology 640. Mr. Hicks.

Review of research, discussion of assigned subjects, problems encountered, research methods, current literature, etc. Reports on subjects related to wildlife conservation by staff members of various departments and addresses by visiting wildlife technicians, research workers, educators, and administrators.

701. Special Problems. Three or five credit hours each Quarter. Autumn, Winter, Spring. A student may enter at the beginning of any Quarter. Prerequisite, satisfactory preparation for individual work in the field of the chosen problem. The student may have free choice of the instructor under whom he desires to work, but the permission of the instructor must be obtained before registering for the course. The staff.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

ENTOMOLOGY

550. General Entomology. Five credit hours. Winter Quarter. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Not open to freshmen except by special permission. Mr. DeLong and assistants.

A survey of the orders and families of insects with special emphasis on the biology and habits of the more important families. In the laboratory the more important insect families will be studied. This course is especially recommended for students in the Colleges of Arts and Sciences and Education, who intend to teach biology, or who wish an introduction to the study of insects.

Not open to students who have credit for Entomology 452 or 450.

551. Economic Entomology. Five credit hours. One Quarter. Autumn and Spring. Three lectures and two two-hour laboratory periods each week. Horticulture, second year. Prerequisite, Zoology 401-402 or equivalent. Not open to freshmen except by special permission. Mr. DeLong and assistants.

The economic importance of insects, the basis for insect control, a survey of the important pests of farm, garden, orchard, forest, household, mill, storehouse, and those that affect the health of man and domestic animals with a discussion of their specific control.

Field observations of habits and damage, the recognition of many economic species and the preparation and application of remedial measures. Students are required to prepare a collection. Those desiring to collect specimens in advance should get printed instructions from the department.

Not open to students who have credit for Entomology 451.

***555. Bee Culture.** Three credit hours. Spring Quarter. Two lectures and one two-hour laboratory period each week. Given in alternate years. Prerequisite, Zoology 401 or Botany 401. Mr. Dunham.

This course is designed to give the student an introduction to the field of bee culture. Special attention is given to the social organization of honeybees; their life habits; approved methods in bee management; queen rearing; diagnosis and control of bee diseases; and other practical aspects in the production and marketing of honey. Laboratory time will be spent in the college apiary, in making field trips, or in library work.

Not open to students who have credit for Entomology 461.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

According to the University regulations, courses in this group are not open to Freshmen or Sophomores.

558. Garden and Greenhouse Insects. Three credit hours. Autumn Quarter. Two lectures and one two-hour laboratory period each week. Prerequisite, Entomology 551. Mr. Davidson.

A practical study of the characteristics, biology, ecology, and control of the most important insects attacking garden and greenhouse plants. Field and laboratory studies will be made as far as possible on recognition of types of injury, habits, abundance, and identification of insect species. Recommended for students in Horticulture and Floriculture.

560. Shade Tree and Ornamental Shrub Insects. Three credit hours. Spring Quarter. Two lectures and one two-hour laboratory period each week. Prerequisite, Entomology 551. Mr. Davidson.

A study of the economic importance of insects attacking shade trees and ornamental shrubs; their characteristics, habits, ecology, and biology; with a discussion of the most practical control measures. Field and laboratory observations will be made on recognition of types of injury and the various stages of the insects causing it.

†650. Entomology for Biology Teachers. Five credit hours. Three lectures and two two-hour laboratory periods each week. Prerequisite, Zoology 401-402 or equivalent. Mr. Davidson.

The course deals with the economic importance of insects, their general characteristics, morphological structure, metamorphosis, and control. A survey of the orders and families of insects with special emphasis on the biology and ecology of the most important families. The laboratory will consist of studies on the most important insect groups, how to make an insect collection, preparation of killing bottles, preserving insects for study, culturing insects for class use and for class demonstrations. Recommended especially for biology teachers or to students who desire a general knowledge of insects.

Not open to students who have credit for Entomology 550.

651-652. Advanced Entomology. Five credit hours. Autumn and Winter Quarters. Two lectures and three two-hour laboratory periods each week. Prerequisite, two Quarters of zoology and two Quarters of entomology or other biological science. Mr. Kennedy.

Advanced entomology for those desiring to investigate some special group of insects or to fit themselves for professional work in entomology.

Entomology 651 deals with the comparative external morphology, the evolutionary history and classification of insects; laboratory work is systematic and material will be furnished, but it will be preferable if the student collects and pins material for himself during the summer preceding.

Entomology 652 deals with insect behavior, life histories, and particularly with ecological principles governing occurrence and distribution of insect species, and the principles underlying insect control. The laboratory work is systematic. The two Quarters cover all the insect orders.

* Not given in 1937-1938.

† Not given during the academic year, 1937-1938.

653-654. Insect Control. Five credit hours. Autumn and Spring Quarters. Two lectures and two three-hour laboratory periods each week. Prerequisite, Zoology 401-402 and Entomology 550-551 or equivalent. A background of training in physics and quantitative chemistry is desirable. Mr. Campbell.

This course deals with materials and methods used for the control of insect pests. Insecticides used for plant protection are studied in Entomology 653. Insecticides for the protection of man, animals, and stored products, and physical and mechanical means of control in Entomology 654.

655. Medical and Veterinary Entomology. Five credit hours. Winter Quarter. Given biennially. Three lectures and two laboratory periods each week. Prerequisite, Zoology 401-402 and Entomology 550-551 or equivalent. Mr. Peterson.

The insects, mites, and ticks which cause or transmit disease of man and domestic animals; the sources of infection, methods of transmission and interrelations with pathogenic bacteria and protozoa; the relations of the subject to parasitology, bacteriology, veterinary medicine, sanitary engineering and public health; field observations of unsanitary conditions, practice in feeding, breeding, and handling experimental insects, and practical problems in the control of parasites and insect borne diseases.

The student is advised if possible to take Zoology 504 before electing this course.

657. Insect Pollination. Three credit hours. Spring Quarter. Two lectures and one two-hour laboratory period each week. Prerequisite, Zoology 402 or Botany 402. Mr. Dunham.

The importance of insects in the pollination of orchard, farm, and truck crops. Influence of environmental factors on insect activity, and on the production of nectar and pollen. Habits, special adaptations, relative abundance and pollinating capacity of various insects. Special attention is given to the utilization of honey bees in the pollination of orchards, small fruits, vegetable crops, and in clover seed production. Laboratory to be given over to demonstrations, and visits to orchards, fields, gardens, etc.

***660. Entomological Literature and Principles of Taxonomy.** Five credit hours. Winter Quarter. Prerequisite, Zoology 401-402 and Entomology 550-551 or equivalent. Given in alternate years. Mr. Kennedy.

Lectures on the development of entomological writing, studies of Government and Experiment Station bulletins and other publications, assigned readings, and preparation by each student of a report or review upon some publication. Intended to familiarize the student with past and current publications and give him command of the published records in his field of study.

A study of the principles of classification with lectures on taxonomic systems, codes of nomenclature, etc. Practical work in the classification of a selected group or groups of insects or other animals.

Not open to students who have credit for Entomology 456.

665. Immature Insects. Three or five credit hours. Spring Quarter. One lecture and two or four two-hour laboratory periods each week. Prerequisite, Entomology 550 (551), 651, and 652, or equivalents. Mr. Peterson.

This course will give a student an opportunity to become familiar with families, genera and species of insects in their immature stages. The laboratory work will deal primarily with the determination of eggs, larvae and pupae of insects having complete metamorphosis. Library and field work will also be included. Topics such as external morphology and methods of collecting, rearing, preparation and material, etc., will be discussed.

701. Special Problems. Three or five credit hours each Quarter. Autumn, Winter, Spring. A student may enter at the beginning of any Quarter. Prerequisite, satisfactory preparation for individual work in the field of the chosen problem. The student may have free choice of the instructor under whom he desires to work, but the permission of the instructor must be obtained before registering for the course. The staff.

FOR GRADUATES

An undergraduate student shall not be permitted to take any course in the "800" group except by permission of the Graduate Council.

For description of graduate courses in this department see the Bulletin of the Graduate School.

* Not given in 1937-1938.

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