NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

TWO-YEAR COURSE 1959-1960

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THE NEW YORK STATE COLLEGE OF AGRICULTURE—TWO-YEAR COURSE

THE New York State College of Agriculture, a unit of the State University of New York, is maintained by the State as one of four state colleges or schools within Cornell University. It is equipped with a staff and facilities to teach resident students, to make investigations in all phases of agriculture and the underlying sciences, and to disseminate its teachings to the people of the State. The support of the State towards these ends is supplemented by substantial appropriations from the Federal Government, and by land and other facilities and services placed at the disposal of the College by Cornell University.

GENERAL INFORMATION

THE COURSES AVAILABLE

The information contained in this Announcement relates to the two-year course. This course is designed for young men who expect to go into farming or into business closely allied thereto, and who desire agricultural training of college grade, but cannot devote more than two years to it. The College offers, in addition, a summer session of six weeks; a four-year course, leading to the degree of Bachelor of Science; and graduate courses, leading to higher degrees. These offerings give preparation for different kinds and different levels of agricultural vocations and call for different prerequisites for admission. A separate printed Announcement of each of these courses is available on application to the Secretary of the College of Agriculture, Roberts Hall, Ithaca, New York.

REQUIREMENTS FOR ADMISSION

For admission to the two-year course, candidates must offer:

Sixteen units acceptable to Cornell University in subjects credited by the University of the State of New York toward a state diploma, or in the case of applicants whose secondary-school training has been outside New York State, the equivalent by school certificates. It is recommended that at least 1 unit shall be in mathematics.

The Scholastic Aptitude Test of the College Entrance Examination Board.

Approximately one year of practical experience on a farm or in a business related to the curriculum to be followed.

A satisfactory certificate of immunization against smallpox on the form supplied by the University. This certificate is considered satisfactory only if it certifies to a successful vaccination within three years. Further details of the health requirements and the health services may be found in the *General Information Announcement,* obtainable by writing to the Announcements Office, Edmund Ezra Day Hall.

THE APPLICATION FOR ADMISSION

Candidates for admission should address the Director of Admissions, Edmund Ezra Day Hall, Ithaca, New York, stating that they desire to enter the two-year course in the College of Agriculture. This should be done as early as possible in the senior year of secondary school, because it often takes considerable time to procure the necessary credentials.

CERTIFICATION ON COMPLETION OF COURSE

Students who satisfactorily complete the work of an approved two-year course with credit for at least sixty hours will be granted an appropriate certificate.

RELATION TO FOUR-YEAR COURSE

Except in respect to the items of administration and curriculum specifically covered in this Announcement, students in this course are governed by exactly the same conditions as are students of the four-year course. They should, therefore, consult the Announcement of the latter course for further details of information and for the description of courses open to their election but not here listed or described.

Transfer to the degree course will be possible at the end of one of these curricula for those who have given evidence of ability to carry advanced work. Students who qualify for such transfer will not be required to offer any further entrance credit. The transfer is possible solely on a basis of the record and on completion of the curriculum. The record must be considerably better than average. Students who transfer to the four-year course are given full credit toward the degree for work satisfactorily passed in the two-year course.

Two-year students are registered as special students and are not eligible to represent the University in intercollegiate athletics.

EXPENSES

TUITION

Tuition is free to two-year students in the New York State College of Agriculture, who at the time of their matriculation are, and for at

least twelve months prior thereto have been, bona-fide residents of the State of New York. Since physical presence in the State, especially for persons under age, by no means constitutes legal residence, applicants who are at all doubtful of their right to exemption should address inquiries in advance to the Director of Resident Instruction in the College of Agriculture. A student transferring from one college or course in the University to another must pay, for the hours' credit he receives in the latter college or course, an amount corresponding to the difference in tuition, and no such transfer is allowed or credit given until such payment has been made.

Students in agriculture who are not exempt under these provisions are required to pay tuition of $200 a term. Tuition and other fees become due when the student registers. The University allows a period of grace after the last registration day of each term of the regular session. The last day of grace is printed on the registration card which the student is required to present at the Treasurer's office. Any student, graduate or undergraduate, except as hereinafter provided, who fails to pay his tuition, fees, and other indebtedness or if entitled to free tuition fails to claim the same at the Treasurer's office and pay his other fees, within the time prescribed by the University, is thereby dropped from the University. When in his judgment the circumstances in a particular case so warrant, the Treasurer may allow an extension of time to complete payments. For such extension, the student will be assessed a fee of $5. A reinstatement fee of $10 will be assessed any student who is permitted to continue or return to classes after being dropped from the University for default in payments. For reasons satisfactory to the Treasurer and the Registrar, which must be presented in writing, the latter assessment may be waived in any individual case. If the student withdraws, University fees are charged on the basis of 10 per cent for each week or fraction thereof in attendance.

Any tuition or other fee may be changed by the Board of Trustees to take effect at any time without previous notice.

OTHER FEES

A DEPOSIT OF $45 must be made after the applicant has received notice of provisional acceptance. At the time of the first registration in the University, the deposit is used to cover matriculation charges, provides for certain graduation expenses, and establishes a fund for undergraduate and alumni class activities. The deposit is not refundable, and none of it applies toward tuition or fees.

A DEPOSIT OF $30 is required for a uniform, payable at registration in the first term, in the Basic Course in Military Science. Most of this deposit is returned as earned uniform allowance upon completion of the Basic Course.

A UNIVERSITY AND COLLEGE COMPOSITE FEE OF $115 is required of every student at the beginning of each term. This fee covers the following services: (1) *Health services and medical care.* These services are centered in the University Clinic or out-patient department and in Cornell Infirmary or hospital. Students are entitled to unlimited visits at the Clinic; laboratory and X-ray examinations indicated for diagnosis and treatment; hospitalization in the Infirmary with medical care for a maximum of fourteen days each term and emergency surgical care. The cost for these services is included in the College and University general fee. For further details, including charges for special services, see the *General Information Announcement.* (2) *Willard Straight Hall membership.* Willard Straight Hall is the student union; each student shares in the common privileges afforded by the operation of Willard Straight Hall, subject to regulations approved by the Board of Managers of the Hall. (3) *Laboratory services* for courses taken in the State Colleges. (4) *University administration and endowed college laboratory services.* (5) *Physical recreation.* Each male student is entitled to the use of the gymnasium and the university playgrounds, and to the use of a locker, bathing facilities, and towels in Teagle Hall, Barton Hall, or the Schoellkopf Memorial Building; and each woman student to the use of the women's gymnasium, recreation rooms, and playgrounds, and to the use of a locker. (6) *Student activities.* The fee helps to provide funds for worthy student organizations as approved by the Board of Trustees on recommendation of the Student Council.

Books, instruments, and instructional supplies may cost from $25 to $50 a term.

STUDENT HOUSING AND DINING ARRANGEMENTS

MEN STUDENTS

Housing for men is available in the Residential Halls of the University, in private homes, in rooming houses, and in fraternities (for members only). At present, University facilities house approximately 30 per cent of the men students.

Cornell University provides, on the campus, adequate dormitory living facilities for approximately 2100 men. These dormitories are a five-minute walk from the center of the campus. A snack bar is in the dormitory area. Complete cafeteria service is provided in Willard Straight Hall, the student union building, which is between the dormitories and the academic buildings. In addition to two complete cafeterias, equipped for regular meal and snack service, there is a well-appointed dining room with table service. These dining facilities, as well as the dormitories, are under the supervision of the Department of Residential Halls. In addition to the above-mentioned facilities,

there is a cafeteria in Martha Van Rensselaer Hall, operated by the College of Home Economics, and also one in Stocking Hall, operated by the Department of Dairy Industry.

Application forms for University dormitories will be mailed automatically to each male candidate for admission as a freshman or as a transfer student at the time of notification of provisional acceptance to the University. Housing in University dormitories can be guaranteed for undergraduate men who have been admitted to the University and have filed dormitory applications by June 1.

THE CURRICULA

The two-year course has organized within it seven curricula giving preparation for the major types of farming in New York State and for certain allied business. A two-year student must select one of these curricula and follow closely the work outlined. Changes from these outlines may be made with the consent of the Director of Resident Instruction and the faculty adviser to whom the student will be assigned when he registers. All two-year men students must register for the Basic Course in Military Science. Men and women are required to register for Physical Education. These courses are described in the *Announcement of the Independent Divisions and Departments.*

Requests for further information regarding these curricula should be addressed to L. H. Harden, in charge of admissions in the College of Agriculture, Roberts Hall, Ithaca, New York.

CURRICULUM IN DAIRY FARMING

FIRST YEAR

Fall term	*Hours credit*	*Spring term*	*Hours credit*
Extension Teaching 1 (Oral and Written Expression)	3	Extension Teaching 1 (Oral and Written Expression)	3
Animal Husbandry 50 (Dairy Cattle)	4	Agronomy 2 (Introduction to Field Crops)	3
Biochemistry 2 (Introductory Agricultural Chemistry)	5	Agronomy 6 (Soils)	3
Education 7 (Reading Improvement Program)		Military Science	
Military Science		Physical Education	
Physical Education		Agricultural Elective	6 to 7
Agricultural Elective	3 to 4	Suggested:	
Suggested:		Agricultural Economics 140	
Agricultural Engineering 1		Agricultural Engineering 103	
Agricultural Economics 50		Orientation 5	
		Vegetable Crops 3	

SECOND YEAR

Animal Husbandry 10 (Livestock Feeding)	4	Agricultural Economics 102 (Farm Management)	5
Animal Husbandry 20 (Animal Breeding)	3	Veterinary 61 (Health and Diseases of Animals)	3
Animal Husbandry 1 (Introductory Livestock Production)	3	Animal Husbandry 150 (Dairy Cattle, Advanced Course)	3
Military Science		Military Science	
Physical Education		Physical Education	
Agricultural Elective	4 to 6	Agricultural Elective	4 to 6
Suggested:		Suggested:	
Agricultural Engineering 42, 102		Agricultural Engineering 40, 42	
Botany 1		Botany 2	
Poultry Husbandry 1		Entomology 10	
		Pomology 1	
		Poultry Husbandry 110	

CURRICULUM IN GENERAL LIVESTOCK FARMING

FIRST YEAR

Fall term	*Hours credit*	*Spring term*	*Hours credit*
Extension Teaching 1 (Oral and Written Expression)	3	Extension Teaching 1 (Oral and Written Expression)	3
Animal Husbandry 1 (Introductory Livestock Production)	3	Animal Husbandry 10 (Livestock Feeding)	4
Biochemistry 2 (Introductory Agricultural Chemistry)	5	Agronomy 6 (Soils)	3
Education 7 (Reading Improvement Program)		Military Science	
Military Science		Physical Education	
Physical Education		Agricultural Elective	6
Agricultural Elective	3 to 5	Suggested:	
Suggested:		Agricultural Engineering 103	
Agricultural Economics 50		Agronomy 2	
Agricultural Engineering 1		Animal Husbandry 60, 70	
		Orientation 5	

SECOND YEAR

Animal Husbandry 20 (Animal Breeding)	3	Agricultural Economics 102 (Farm Management)	5
Animal Husbandry 80 (Sheep)	3	Veterinary 61 (Health and Diseases of Animals)	3
Poultry Husbandry 1 (Introduction to Poultry Science)	3	Military Science	
Animal Husbandry 90 (Meat and Meat Products)	3	Physical Education	
Military Science		Agricultural Elective	7 to 8
Physical Education		Suggested:	
Agricultural Elective	3	Animal Husbandry 50	
Suggested:		Entomology 10, 61	
Agricultural Engineering 102		Vegetable Crops 3	
Pomology 1			

CURRICULUM IN POULTRY FARMING

FIRST YEAR

Fall term	*Hours credit*	*Spring term*	*Hours credit*
Extension Teaching 1 (Oral and Written Expression)	3	Extension Teaching 1 (Oral and Written Expression)	3
Biochemistry 2 (Introductory Agricultural Chemistry)	5	Bacteriology 3 (Agricultural Bacteriology)	3
Poultry Husbandry 1 (Introduction to Poultry Science)	3	Orientation 5	3
Poultry Husbandry 20 (Breeds, Breeding and Judging)	3	Agricultural Engineering 1 (Farm Mechanics)	3
Education 7 (Reading Improvement Program)		Military Science	
Military Science		Physical Education	
Physical Education		Agricultural Elective	3 to 5
Agricultural Elective	0 to 3		

SECOND YEAR

Poultry Husbandry 50 (Market Eggs and Poultry)	2	Agricultural Economics 102 (Farm Management)	5
Poultry Husbandry 170 (Poultry Hygiene and Disease)	2	Poultry Husbandry 80 (Poultry Farm Management)	3
Agricultural Economics 50 (Agricultural Geography)	4	Poultry Husbandry 110 (Poultry Nutrition)	3
Biology 1	3	Biology 2	3
Military Science		Military Science	
Physical Education		Physical Education	
Agricultural Elective	3 to 6	Agricultural Elective	3

SUGGESTED ELECTIVES

Agricultural Economics 140
Agricultural Engineering 40, 42
Agronomy 2, 6
Animal Husbandry 1, 20, 50
Bacteriology 5
Conservation 3
Drawing 1
Pomology 1, 2
Rural Sociology 1
Vegetable Crops 3

CURRICULUM IN FRUIT GROWING

FIRST YEAR

Fall term	*Hours credit*	*Spring term*	*Hours credit*
Extension Teaching 1 (Oral and Written Expression)	3	Extension Teaching 1 (Oral and Written Expression)	3
Botany 1 (General)	3	Botany 2 (General)	3
Biochemistry 2 (Introductory Agricultural Chemistry)	5	Agronomy 6 (Soils)	3
Pomology 1 (Tree Fruits)	3	Pomology 2 (Small Fruits)	3
Education 7 (Reading Improvement Program)		Military Science	
Military Science		Physical Education	
Physical Education		Agricultural Elective	3
Agricultural Elective	0 to 4	Suggested:	
Suggested:		Agronomy 2	
Agricultural Economics 50		Orientation 5	
Animal Husbandry 1		Vegetable Crops 11	
Poultry Husbandry 1			

SECOND YEAR

Pomology 111 (Handling and Storage of Fruits)	3	Agricultural Economics 102 (Farm Management)	5
Agricultural Economics 140 (Marketing)	3	Plant Pathology 1 (Elementary)	3
Entomology 10 (Introductory Entomology)	3	Pomology 112 (Advanced Laboratory)	2
Agricultural Engineering 1 (Farm Mechanics)	3	Military Science	
Military Science		Physical Education	
Physical Education		Agricultural Elective	5 to 6
Agricultural Elective	3		

CURRICULUM IN VEGETABLE GROWING

FIRST YEAR

Fall term	*Hours credit*
Extension Teaching 1 (Oral and Written Expression)	3
Botany 1 (General)	3
Biochemistry 2 (Introductory Agricultural Chemistry)	5
Education 7 (Reading Improvement Program)	
Military Science	
Physical Education	
Agricultural Elective	3 to 4
Suggested:	
Agricultural Economics 50	
Agricultural Engineering 1	
Animal Husbandry 1	
Poultry Husbandry 1	

Spring term	*Hours credit*
Extension Teaching 1 (Oral and Written Expression)	3
Agronomy 6 (Soils)	3
Vegetable Crops 11 (Commercial Vegetable Production)	4
Military Science	
Physical Education	
Agricultural Elective	5 to 6
Suggested:	
Agronomy 2	
Animal Husbandry 10	
Botany 2	
Orientation 5	
Pomology 1, 2	
Vegetable Crops 22	

SECOND YEAR

Vegetable Crops 12 (Post-Harvest Handling)	3
Entomology 10 (Introductory Entomology)	3
Botany 31 (Plant Physiology)	4
Military Science	
Physical Education	
Agricultural Elective	6
Suggested:	
Agricultural Economics 140	
Agricultural Engineering 40, 42	
Pomology 111	

Agricultural Economics 102 (Farm Management)	5
Agricultural Economics 147 (Marketing Institutions)	2
Plant Pathology 1 (Elementary)	3
Military Science	
Physical Education	
Agricultural Elective	6

CURRICULUM IN GENERAL FARMING

FIRST YEAR

Fall term	*Hours credit*	*Spring term*	*Hours credit*
Extension Teaching 1 (Oral and Written Expression) ..	3	Extension Teaching 1 (Oral and Written Expression) ..	3
Biochemistry 2 (Introductory Agricultural Chemistry) ...	5	Agronomy 2 (Introduction to Field Crops)	3
Education 7 (Reading Improvement Program) ...		Agronomy 6 (Soils)	3
Military Science		Military Science	
Physical Education		Physical Education	
Agricultural Elective.....6 to 7		Agricultural Elective.....6 to 7	
Suggested:		Suggested:	
Agricultural Economics 50		Agricultural Engineering 1	
Animal Husbandry 1, 50		Floriculture and Ornamental Horticulture 2	
Poultry Husbandry 1		Orientation 5	
		Pomology 1, 2	
		Vegetable Crops 3	

SECOND YEAR

Animal Husbandry 10 (Livestock Feeding)	4	Agricultural Economics 102 (Farm Management)	5
Military Science		Military Science	
Physical Education		Physical Education	
Agricultural Elective....11 to 12		Agricultural Elective....10 to 12	
Suggested:		Suggested:	
Agricultural Economics 130, 140, 143		Agricultural Economics 126	
Agricultural Engineering 31, 40, 42, 102		Agricultural Engineering 101, 103	
Animal Husbandry 20		Agronomy 112	
Botany 1		Botany 2	
Poultry Husbandry 20		Entomology 10	
Rural Education 10		Rural Sociology 12	
		Vegetable Crops 22	
		Veterinary 61	

CURRICULUM IN GENERAL FLORICULTURE AND ORNAMENTAL HORTICULTURE

FIRST YEAR

Fall term	*Hours credit*
Extension Teaching 1 (Oral and Written Expression)	3
Botany 1 (General)	3
Drawing 9 (Drawing for landscape students)	3
Biochemistry 2 (Introductory Agricultural Chemistry)	5
Floriculture and Ornamental Horticulture 1 (General)	3
Military Science	
Physical Education	

Spring term	*Hours credit*
Extension Teaching 1 (Oral and Written Expression)	3
Botany 2 (General)	3
Agronomy 6 (Soils)	3
Military Science	
Physical Education	
Agricultural Elective	6
Suggested:	
Agricultural Engineering 1	
Drawing 1, 11	
Floriculture and Ornamental Horticulture 5	
Pomology 1, 2	

SECOND YEAR

Floriculture and Ornamental Horticulture 2 or 3 (Elementary Landscape Design)	3
Military Science	
Physical Education	
Agricultural Elective	12 to 13
Suggested:	
Agricultural Engineering 42	
Botany 31	
Entomology 10	
Floriculture and Ornamental Horticulture 10	

Floriculture and Ornamental Horticulture 13 (Woody Plant Materials)	4
OR	
Floriculture and Ornamental Horticulture 125 (Flower Store Management)	3
Military Science	
Physical Education	
Agricultural Elective	11 to 12
Suggested:	
Floriculture and Ornamental Horticulture 12, 32	
Rural Education 10	

DESCRIPTION OF COURSES

THE COURSES described in the following pages are those required or suggested for one or more of the preceding curricula. They are given by members of the staff of the College of Agriculture.

The administrative units of the College in charge of the various subject-matter fields are called *departments*. The work given in several of the departments is not required in these curricula, but the courses offered by them may be elected as time permits and if the prerequisites are met. For the description of these offerings, reference should be made to the Announcement of the four-year courses.

The arrangement of the courses in the foregoing curricula is such that two-year students will be admitted if the courses are taken in the order in which they are listed. One should consult the four-year Announcement for course prerequisites before making any change in the order of schedule.

ORIENTATION

5. *ORIENTATION*. Spring term. M W F 9 or 11. Warren 37. Assistant Professor GEISELMANN.

The course emphasizes the analysis and reasoning involved in the solution of work problems which have been drawn mainly from College of Agriculture courses requiring the use of mathematics.

AGRICULTURAL ECONOMICS

50. *AGRICULTURAL GEOGRAPHY*. Fall term. Credit four hours. Lectures, M W F 9 or 11. Warren 45. Discussion, W Th or F 2–4 or W 7–9 p.m. Warren 345. Professor ————.

The economics and geography of the world's agriculture, providing a basis for understanding past development and future changes in agriculture. Elementary economic principles, historical development, physical geography, and population growth are studied in their relation to agricultural development and to the economic problems of farmers. Particular emphasis is placed upon study of the agriculture of various farming regions of the United States, their economic problems and competitive situation.

102. *FARM MANAGEMENT*. Spring term. Credit five hours. Not open to first-year students. Lectures, M W F 10. Warren 45. Laboratory, T W Th or F 2–4. Warren 101. On days when farms are visited, the laboratory period is from 2–6. Professor WARREN.

A study of the organization and operation of the farm from the point of view of efficiency and continuous profit; farm records, farm business analysis, factors affecting profits, size of business, choice of enterprises, partnership arrangements, getting

started in farming, planning the organization and management of specific farms. One all-day trip and five half-day trips are taken to visit farms in nearby regions.

126. *FARMERS' COOPERATIVES.* Spring term. Credit three hours. Lectures, M W 9. Warren 45. Discussion, W or Th 2–4. Warren 145. Associate Professor CARPENTER.

What cooperatives are, what they have tried to do, and what they have done; their legal status and special problems of organization, finance, and control.

130. *RURAL GOVERNMENT.* Fall term. Credit three hours. T Th 9 and Th 2–4. Warren 260. Professor LUTZ.

Government in the United States with emphasis upon organization, administration, functions, and finance of government in rural New York.

140. *MARKETING.* Fall or spring term. Credit three hours. Lectures: fall term, M W F 10; spring term, M W F 11 except for weeks when field trips are taken, then M F lectures only. Warren 45. Field trips, T W or Th 1:30–5:30. Professor DARRAH.

A study of how farm products are marketed. Special attention is given to the consumption of farm products, the factors that affect consumption, production areas, market channels, the operation of different marketing agencies, marketing services, and costs. One all-day and five half-day trips are taken to visit marketing agencies.

143. *PRICING AND DISTRIBUTION OF MARKET MILK.* Fall term. Credit four hours. Lectures, T Th 10. Warren 245. Discussion period, M or T 1:40–4:00. Warren 260. Professor SPENCER.

Special attention is given to the marketing system for milk; charaeteristics of supply and demand for milk, how milk prices are determined, and how they are affected by various factors; and the regulation of milk prices by state and federal orders.

147. *MARKETING INSTITUTIONS.* Spring term. Credit two hours. Enrollment limited to 40. F 12. Warren 245. Professor ————.

Economic functions performed by various types of specialized marketing agencies, with an emphasis on their physical operating patterns. Five days of spring vacation are spent in New York City inspecting and studying the major terminal marketing institutions. Total cost of the trip need not exceed $50 in addition to transportation to and from New York.

AGRICULTURAL ENGINEERING

1. *FARM MECHANICS.* Fall or spring term. Credit three hours. Lectures, T Th 10. Computing period, F 12. Riley-Robb 125. Laboratory, M T W Th or F 2–4:30. Riley-Robb 160.

A course planned to give training in understanding the farm application of physical principles, mechanical methods, and appliances. Topics for discussion include pumps, water systems, plumbing, surveying, hoists and elevators, farm wiring, electric motors, refrigeration, and forced air drying.

102. *FARM POWER.* Fall term. Credit three hours. Prerequisite, course 1. Lectures, T Th 11. Riley-Robb 125. Laboratory, M T W or Th 2–4:30. Riley-Robb 78. Professor TERRY.

A study of the principles of operation and adjustment of internal combustion engines and their farm applications. Principal emphasis on farm tractors, including care and operation, power transmission, power requirements, and economic factors.

103. *FIELD MACHINERY.* Spring term. Credit three hours. Prerequisite, course 1. Lectures, T Th 11. Riley-Robb 125. One recitation period, F 8, 9, 10, 11 or 12. Riley-

Robb 225. Laboratory, M T W or Th 2–4:30. Riley-Robb 78. Associate Professor MILLIER.

A study of the use, care, operation, and adjustment of farm field machines. Machines in each of the major groups, tillage, seeding, harvesting, processing, spraying and dusting, fertilizing, and crop loading are included.

31. *FARM STRUCTURES.* Fall term. Credit three hours. Prerequisites, Intermediate Algebra and Physics. Lectures, M W F 8. Riley-Robb 105. Associate Professor LEVINE.

A course in the elementary problems of farm buildings; a study of basic structural requirements, insulation, ventilation, and functional requirements for farm animals.

40. *WOODWORKING AND CARPENTRY.* Fall or spring term. Credit two hours. Lecture, T 9. Riley-Robb 125. Laboratory, M T or Th 1–4:30. Riley-Robb 70. Limited to twenty-five students per section. Professor Foss.

A course designed to acquaint the student with the common woodworking, carpentry, concrete, tool-fitting, and wood-finishing jobs common to the farm and home. The skill in use of both hand and power tools is emphasized in the construction and repair of farm equipment. A field trip is included to a local woodworking plant and sawmill.

42. *FARM METAL WORK.* Fall or spring term. Credit two hours. Lecture, Th 9. Riley-Robb 125. Laboratory including metal lathe work, M 1:30–4:30. Laboratory not including metal lathe work, T 8–11, or Th or F 1:30–4:30. Riley-Robb 60 and 64. Limited to 20 students per laboratory section. Assistant Professor LECHNER.

A course giving instruction and practice in the fundamentals of electric arc welding, oxyacetylene welding, sheet metal work, pipe fitting, hot and cold metal work, and metal lathe work as they apply to farm shop work for both repair and construction jobs.

AGRONOMY

2. *INTRODUCTION TO FIELD CROPS.* Spring term. Credit three hours. Discussion period, W F 10. Caldwell 100. Laboratory, M T W or Th 2–4:30. Caldwell 250. Professor HARTWIG.

A study of the culture of the common field crops that are produced in the Northeastern States, with emphasis on the practical aspects. Rotations with their seed and fertilizer requirements are worked out for three or four type-farms where the objective is to produce feed and food.

6. *SOILS.* Spring term. Credit three hours. Lectures, T Th 9. Caldwell 100. Discussion—laboratory, M T W Th or F 2–4:30. Warren 37. Associate Professor LATHWELL.

A course dealing with the composition, properties, and plant relations of soils, with particular reference to the practical use of lime, fertilizers, and other means of maintaining soil fertility and of controlling soil erosion.

112. *PASTURE AND HAY CROPS.* Spring term. Credit three hours. Lectures and discussions, T Th S 8. Caldwell 100. Three required field trips in April and May. M T W Th or F 1:30–5. Professor KENNEDY.

The establishment, maintenance, productivity, use, and quality of various pasture and hay crops are discussed, especially those for humid, temperate climates. Practical applications are emphasized. Of particular value to those interested in agronomy, animal production, and soil conservation.

ANIMAL HUSBANDRY

1. *INTRODUCTORY LIVESTOCK PRODUCTION.* Fall term. Credit three hours. Lectures, M W 8 or 10. Wing A. Laboratory, T Th or F 2–4:30, W 11–1. Judging Pavilion. Assistant Professor POND and assistants.

A survey intended to give the student a concept of the scope of the livestock industry, a perception of its fundamental problems and an insight into the opportunities it offers. It includes the fundamentals of livestock production that form a basis for specialized knowledge in succeeding courses in Animal Husbandry and in other related fields. Animals specifically covered are beef cattle, sheep, swine, and horses. Two scheduled evening prelims are given.

10. *LIVESTOCK FEEDING.* Fall or spring term. Credit four hours. Lectures: fall term, M W F 11; spring term, M W F 9, Wing A. Laboratory: fall term, Th or F 2–4:20, Wing A; spring term, M W Th or F 2–4:20. Wing C. Fall term, Associate Professor WARNER and assistants; spring term, Professor S. E. SMITH and assistants.

The feeding of farm animals, including the general basic principles, feeding standards, the computation of rations, and the composition and nutritive value of livestock feeds.

20. *ANIMAL BREEDING.* Fall term. Credit three hours. Lectures, M W 9. Wing A. Recitation, demonstration, and laboratory, M T W Th or F 2–4:20. Wing C. Associate Professors R. W. BRATTON and FOOTE, and assistants.

An introduction to the anatomy and physiology of reproduction and the improvement of farm animals through the application of genetics. Emphasis is placed on traits of economic importance to the livestock industry.

HEALTH AND DISEASES OF ANIMALS. (Veterinary 61.) Spring term. Credit three hours. Lectures, M W F 11. Veterinary College. Room D 105. Professor GILMAN and collaborators.

The causes and the nature of the common diseases of livestock are discussed. Emphasis is placed on the prevention and control of animal diseases.

50. *DAIRY CATTLE.* Fall or spring term. Credit four hours. Lectures: fall term, T Th S 8; spring term, T Th S 10. Wing A. Laboratory: fall term, M 2–4:20 or S 9–11:20; spring term, M or Th 2–4:20. Wing A and Judging Pavilion. Fall term, Assistant Professor SCHMIDT and assistants; spring term, Professor TURK and assistants.

This course deals with some of the economic aspects of the dairy industry; study of dairy breeds; factors in breeding and development of dairy cattle; milking methods and milk-production problems; efficient feeding; and care, management, and health of the dairy herd. Practice in selection, herd management, formulating of rations, planning of breeding programs, and keeping of records.

150. *ADVANCED DAIRY PRODUCTION.* Spring term. Credit three hours. Lectures, T Th 11. Lecture and discussion, T 2–4:20. Wing A. Professor TRIMBERGER.

Analysis of breeding and management programs in successful herds. Evaluation of the programs of dairy-cattle breed associations. Emphasis is placed on the application of the principles of dairy breeding, feeding, and management to the development and operation of a successful dairy farm.

60. *BEEF CATTLE.* Spring term. Credit three hours. Lectures, W F 10. Wing A. Laboratory, F 2–4:20. Judging Pavilion and Beef Cattle barn. Professor J. I. MILLER.

A general course in beef-cattle production. The management, feeding, breeding, selection, and marketing problems involved in the beef-cattle enterprise are emphasized. A one-day field trip is taken to study successful beef-production methods.

70. *SWINE.* Spring term. Credit three hours. Lectures, W F 11. Wing 9. Laboratory, T 2–4:20. Judging Pavilion and Swine Barn. Assistant Professor POND.

A general course in swine production. The breeding, feeding, management and selection of swine are studied, and practical exercises are included. A one-day field trip is taken.

80. *SHEEP.* Fall term. Credit three hours. Lectures, T Th 10. Wing A. Practice, M 2–4:20. Judging Pavilion and Sheep Barn. Assistant Professor HOGUE.

A general course in the care, breeding, feeding, management and selection of sheep. Lectures and practice periods designed to give the student a practical knowledge of sheep production as well as some scientific background for improved practices in sheep production.

90. *MEAT AND MEAT PRODUCTS.* Fall or spring term. Credit three hours. Lecture, M 8. Fall term, Wing C; spring term, Wing A. Laboratory, M T or W 1–5. Registration limited to sixteen students in each section. Assistant Professor STOUFFER.

A course in livestock slaughtering, retail meat cutting, live animal-carcass relationships, and the storage and preservation of meat and meat products. A one-day field trip to packing plants will be taken.

BACTERIOLOGY

3. *AGRICULTURAL AND HOME ECONOMICS BACTERIOLOGY.* Spring term. Credit three hours. Lectures, M W F 11. Plant Science 233. Associate Professor VANDEMARK.

The basic principles of bacteriology and their applications in agriculture, home economics, industry, and public health.

BIOCHEMISTRY

2. *INTRODUCTORY AGRICULTURAL CHEMISTRY.* Fall term. Credit five hours. Lectures and recitations, M W F 9, Plant Science 233; T Th 9, Caldwell 100. Associate Professor NEAL and assistants.

Lectures, demonstrations, and recitations dealing with the fundamental principles of chemistry and their application to agricultural practices. This course is not accepted as a prerequisite for further courses in Chemistry or Biochemistry.

BIOLOGY

1–2. *GENERAL BIOLOGY.* Fall and spring terms. Credit three hours a term. The course may be entered only in the fall term. Lectures, M W 9, Comstock 245, or M W 11, Caldwell 100; spring term, M W 9 or 11, Comstock 245. Laboratory, M T W Th or F 2–4:30 or T 10–12:30. Roberts 392. Occasional evening lectures by guest speakers (attendance optional). Assistant Professor EISNER.

Designed to acquaint students majoring within or outside the animal and plant sciences with the established principles of biology, and with the body of research that led to the formulation of these principles. Specifically, the course deals with the organization, integration, and maintenance of living organisms and with their reproduction, heredity, behavior, and interactions. Emphasis is placed on an understanding of each topic in the light of modern evolutionary theory.

BOTANY

1–2. *GENERAL BOTANY.* Fall and spring terms. Credit three hours a term. Lectures, T Th 9 or 11. Plant Science 233. One laboratory a week, M T W Th or F

2–4:30, T 10–12:30, F or S 8–10:30, or S 9–11:30. Plant Science 240, 242, and 262. Professor BANKS, Dr. MCDONOUGH, and assistants.

A course intended to acquaint the general student with the principles of botanical science, and to provide the basic knowledge necessary for those who intend to specialize in some aspect of plant science.

The fall term is devoted to a survey of the flowering plants, with emphasis placed on structure, function, and reproduction. In the spring term emphasis is placed on the phyla of plants, representative life cycles, and the importance of various groups in the study of biological principles. The evolution of plant groups is treated from the point of view of genetics and heredity. The principles of classification are introduced by means of field trips and the use of living material.

31. *PLANT PHYSIOLOGY.* Fall or spring term. Credit four hours. Lectures, T Th 10. Plant Science 143. Laboratory, T Th or W F 2–4:30, or M 2–4:30 and S 8–10:30. Plant Science 227. Professor CLARK.

This course is designed to acquaint the student with the general principles of plant physiology Topics such as water relations, photosynthesis, translocation, digestion, respiration, mineral nutrition, growth, and reproduction are studied in detail. Particular emphasis is placed, both in laboratory and classroom, on the discussion of principles and their application to plants.

DRAWING

1. *MECHANICAL DRAWING.* Fall or spring term. Credit three hours. Lectures, T Th 8. Riley-Robb 105. Laboratory: fall term, W 1–5 or Th 1–5; spring term, W 1–5. Riley-Robb 425. Limited to 40 students per laboratory. Book and supply lists are available at the book stores. Assistant Professor DART.

A course dealing with graphic presentation. The work includes lettering; use of instruments; orthographic projection involving plans, elevations, and sections; isometric drawing; auxiliaries, and the practical applications of these principles to simple problems.

9–10. *DRAWING FOR LANDSCAPE STUDENTS.* Throughout the year. Credit three hours a term. Fall term is prerequisite to spring term, Fall term, W F 2–4:30; spring term, M W F 11–1. Mann 500. Associate Professor BURCKMYER and Assistant Professor LAMBERT.

A course planned to develop (1) practical ability in the sketching of outdoor planting and landscaped features; (2) facility in lettering; (3) knowledge of isometric and perspective construction from plans and elevations. Sketch-book assignments, to be done outside of class, will be given throughout the year.

11. *FREEHAND DRAWING.* Fall or spring term. Credit three hours. For beginning students. Lecture, T or W 10. Six hours of time, including the lecture period, are to be spent in the drawing room, preferably in two-hour units. These hours must be scheduled between 9 and 11 M T W Th F, or T 2–4. Mann 500. Associate Professor BURCKMYER and Assistant Professor LAMBERT.

The objective is to develop accuracy of observation and skill in delineation. Practice is given in outdoor sketching and in the drawing of still-life set-ups, interior scenes, and human figures. The principles of freehand perspective are taught and applied. The course is designed to aid those who plan to work in nature study, biological sciences, and home economics. Sketch-book assignments to be done outside of class will be given throughout the year.

ENTOMOLOGY

10. *INTRODUCTORY ENTOMOLOGY.* Fall or spring term. Credit three hours. Lectures: fall term, W F 11; spring term, T Th 9. Comstock 245. Laboratory: fall term, W Th or F 2–4:30; spring term, M T W Th or F 2–4:30. Comstock 100. Professor WATKINS and assistants.

A survey of the structure, biology, and classification of insects; types of insect control and the major groups of insecticides, their formulation and application. Laboratory exercises on the anatomy and biology of insects, with practice in the identification of representative forms including many of the commoner species of economic importance.

61. *INTRODUCTORY BEEKEEPING.* Spring term. Credit two hours. Lectures, T Th 11. Comstock 245. Professor DYCE.

This course is intended to afford a general knowledge of the fundamentals of beekeeping, including the life history, instincts, and general behavior of honeybees. Special attention is given to the role of bees in the cross-pollination of agricultural crops, as well as production of honey and beeswax.

EXTENSION TEACHING

1. *ORAL AND WRITTEN EXPRESSION.* Throughout the year. Credit three hours a term. Fall term is prerequisite to spring term. Lectures and practice: fall term, M W F 8 or 11 or T Th S 10; spring term, M W F 8, 9, or 11. Warren 231. Criticism by appointment, daily 8–5, and S 8–1. Associate Professors FREEMAN and MARTIN, and Messrs. LUEDER and ————.

Practice in oral and written presentation of topics in agriculture and other fields, with criticism and individual appointments on the technique of public speech. Designed to encourage interest in public affairs, and, through demonstrations and the use of graphic materials and other forms, to train for effective self-expression in public. Special training is given to competitors for the Eastman Prizes for Public Speaking and the Rice Debate Stage. In addition, some study is made of representative work in English literature. Part of the work in the second term is a study of parliamentary practice.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

1. *GENERAL FLORICULTURE AND ORNAMENTAL HORTICULTURE.* Fall term. Credit three hours. Lectures, M W 10. Plant Science 37. Laboratory, T or W 2–4. Plant Science 15. Assistant Professor LANGHANS.

An elementary course covering the principles and practices of growing ornamental plants in the garden, greenhouse, and home.

2. *INTRODUCTION TO LANDSCAPE DESIGN.* Fall or spring term. Credit three hours. Lectures, M W F 9. East Roberts 222. Professor ————.

A consideration of the principles of landscape design as applied to the small-residence property.

3. *ELEMENTARY LANDSCAPE DESIGN.* Fall term. Credit three hours. Lectures, T Th 11. Laboratory, Th 2–4:30. Plant Science 433. Assistant Professor SCANNELL.

Principles of design, with practice in the use of drawing instruments and graphic interpretation of ideas.

5. *FLOWER ARRANGEMENT.* Fall or spring term. Credit two hours. Enrollment limited to 18 students for each laboratory section. Fall term: lecture, Th 9,

Plant Science 37. Laboratory, W or Th 2–4:30, or Th 10–12:30, Plant Science 22. Spring term: lecture, T 10, Plant Science 37. Laboratory, T or W 2–4:30, or Th 10–12:30, Plant Science 22. Assistant Professor Fox.

A study of the principles and methods of arranging flowers and other plant materials for decorative use in the home and for exhibition.

10. *TAXONOMY OF CULTIVATED PLANTS.* Fall term. Credit four hours. Lectures, W F 10. Laboratory, W F 2–4:30. Plant Science 29. Assistant Professor INGRAM.

A study of the kinds of cultivated ferns and seed plants and their classification into families and genera. Emphasis is placed on methods of identification, the preparation and use of the analytical keys, the distinguishing characteristics of the families concerned and their importance in ornamental horticulture.

12. *HERBACEOUS PLANT MATERIALS.* Spring term. Credit three hours. Lectures, T Th 8. Plant Science 37. Laboratory, W 10–12:30 or 2–4:30. Plant Science 15. Associate Professor LEE.

A study of the ornamental herbaceous plants used in landscape and garden plantings. Emphasis is placed on the identification, use, and culture of bulbs, annuals and perennials.

13. *WOODY-PLANT MATERIALS.* Spring term. Credit four hours. Lectures, T Th 9. Plant Science 37. Laboratory and field trips, M and W or F 2–4:30. Plant Science 29. Professor CORNMAN.

A study of the trees, shrubs, and vines used in landscape planting. Emphasis is placed on their characteristics and values for use as landscape material. The class visits Rochester parks.

32. *INTERMEDIATE LANDSCAPE DESIGN.* Spring term. Credit three hours. Lecture, M 11. Laboratory, T Th 10–12:30. Plant Science 433. Professor ————.

The application of the principles of design to the specific problems of the small residential property. A terminal course for those not intending to major in this field.

125. *FLOWER-STORE MANAGEMENT.* Spring term. Credit two hours. Prerequisite, course 5, which may be taken concurrently, or permission to register. Lecture, one hour to be arranged. Laboratory, M 2–4:30. Plant Science 22. Assistant Professor Fox.

Lectures devoted to flower-shop management, business methods, merchandising, and marketing of floricultural commodities. Laboratories to include the application of subject matter and the principles of commercial floral arrangement and design. A two-day field trip is made to flower shows, and to wholesale and retail florist establishments.

PLANT PATHOLOGY

1. *ELEMENTARY PLANT PATHOLOGY.* Fall or spring term. Credit three hours. Lecture, Th 11, Plant Science 336. Recitation, T 11. Laboratory, T W Th or F 2–4. Plant Science 341 and 343. Conferences to be arranged. Professor ————.

An introductory course dealing with the nature, cause, and control of disease in plants. Representative diseases of cultivated crops are studied in the laboratory.

POMOLOGY

GENERAL HORTICULTURE. (See Vegetable Crops 3.) Those who want a general course in horticulture covering flowers, fruits, and vegetables should take this course.

1. *TREE FRUITS.* Fall or spring term. Credit three hours. Should be preceded or accompanied by an elementary course in botany. Lectures, T Th 8. Warren 131. Laboratory, T or W 2–4:30. Plant Science 107. Fall term: Professor EDGERTON; spring term: Professor SMOCK.

A study of the general principles and practices of tree-fruit culture and their relation to the underlying sciences. Topics to be covered include propagation, varieties, orchard management, and growth and fruiting habits. Practical work is presented in grafting, pruning, site and soil selection, and planting.

2. *SMALL FRUITS.* Spring term. Credit three hours. Lectures, T Th 8. Plant Science 143. Laboratory, Th 2–4:30. Plant Science 107. Professor BOYNTON.

A study of the general principles and practices in the culture of grapes, strawberries, brambles, and bush fruits and their relation to the underlying sciences. Fruiting and growth habits are covered, with practical work in pruning, planting, and propagation. One or two Saturday field trips will be taken.

111. *POST-HARVEST PHYSIOLOGY, HANDLING, AND STORAGE OF FRUITS.* Fall term. Credit three hours. Prerequisite, course 1 or 2. Lectures, T Th 8. Plant Science 143. Laboratory, Th or F 2–4:30. Plant Science 107. Professor SMOCK.

The chemistry and physiology of fruits as they affect quality and marketability are studied. Handling methods, maturity indices, and storage practices are considered. Practical work involves grading and inspection of fruits and storage of fruit in different ways. One Saturday field trip is required.

112. *ADVANCED LABORATORY COURSE.* Spring term. Credit two hours. S 8–1. Plant Science 107. Intended for students doing their major work in pomology. Professors HOFFMAN, BOYNTON and EDGERTON.

This course is designed to give more extended practice in the various orchard operations than can be given in course 1. Special attention is given to problems of pruning, grafting, orchard-soil selection and management, pollination, and spray practices. One or two field trips extending into the afternoon are made.

POULTRY HUSBANDRY

1. *INTRODUCTION TO POULTRY SCIENCE.* Fall term. Credit three hours. Lectures, M W F 10. One recitation period, to be arranged. Warren 231. Associate Professor BAKER, assisted by other members of the staff.

A general course dealing with the principles of poultry production.

20. *POULTRY BREEDS, BREEDING, AND JUDGING.* Fall term. Credit three hours. Given in alternate years. Lecture or recitation, T Th 10. Rice 101. Laboratory, T or W 2–4. Judging Laboratory. Professor MARBLE.

Selecting and judging birds for production and breed characters; origin, history, and classification of breeds; introduction to breeding.

[50. *MARKET EGGS AND POULTRY.* Fall term. Credit two hours. Given in alternate years. Associate Professor BAKER.] Not given in 1959–1960.

A detailed study of the interior and exterior qualities of eggs, abnormalities, egg grades, and standards; practice in candling, grading and packing. Grades and standards of market poultry; killing, dressing, and packing. General market information. Two field trips are taken.

[80. *POULTRY FARM MANAGEMENT.* Spring term. Credit three hours. Given in alternate years. Professor MARBLE.] Not given in 1959–1960.

Management of the hatchery, young stock and laying flock. Practical management problems of the hatcheryman and commercial poultryman will be studied.

110. *POULTRY NUTRITION.* Spring term. Credit three hours. Lectures, M W F 8. Rice 300. Professor F. W. HILL.

The principles of poultry nutrition and their application to poultry feeding and feed manufacturing.

170. *POULTRY HYGIENE AND DISEASE.* Fall term. Credit two hours. Lectures and laboratory, Th 2–4:30. Veterinary College. Dr. CHALQUEST.

The course deals with the nature of the infectious and parasitic diseases of poultry and with the principles of hygiene applicable to poultry farming for the prevention and control of diseases.

RURAL EDUCATION

10. *PSYCHOLOGY.* Fall or spring term. Credit three hours. Lectures, M W 10. Plant Science 233. Discussion sections, Th 8, 9, 10 or 11 or F 8, 9, 10, 11 or 12. Professor AHMANN.

A study of topics in psychology such as learning, perception, motivation, emotion, individual differences, and personal-social relationships.

READING IMPROVEMENT PROGRAM. (Education 7.) Fall or spring term. Non-credit. Lecture and discussion, M W 11 or T Th 11. Laboratory, two-half hour periods a week to be arranged. Spring program is open to all registered students. Enrollment limited. Stone 105. Assistant Professor PAUK.

Designed to increase efficiency in reading rate and comprehension. Principles and techniques of good reading are explained, demonstrated, and practiced in class. The laboratory is equipped to provide an opportunity to practice good reading habits under controlled conditions.

RURAL SOCIOLOGY

1. *GENERAL SOCIOLOGY FOR STUDENTS OF RURAL LIFE.* Fall or spring term. Credit three hours. Not open to first-year students. Lectures and discussions, M W F 8. Warren 45. Professor ANDERSON.

This is a general introductory sociology course designed especially for students in agriculture and home economics. Its object is to create an understanding of the group and the ecological and institutional organization of society, and how they function. Illustrations are chiefly from rural society. The general social organization is described to show the interrelatedness of society.

12. *EFFECTIVE COMMUNITY LIVING.* Fall or spring term. Credit three hours. Not open to first-year students. M W F 11–12:20. Warren 31. Fall term: Associate Professor REEDER; spring term. Professor THOMAS.

The course is primarily concerned with helping students to acquire the kinds of understanding, skills, and attitudes that are essential in functioning effectively as members of a rural community. Students practice organization skills in the solution of laboratory problems. Principles are emphasized in relation to their application.

VEGETABLE CROPS

3. *GENERAL HORTICULTURE.* Spring term. Credit four hours. Lectures, M W F 8. Plant Science 233. Laboratory, M T W Th or F 2–4:30. East Roberts 301. Professor PRATT.

An introductory course in general horticulture, including flower, fruit, and vege-

table growing. Intended primarily for students who want a general knowledge but do not plan to specialize in any one of these fields.

11. *COMMERCIAL VEGETABLE PRODUCTION.* Spring term. Credit four hours. Lectures, M W F 11. East Roberts 222. Laboratory, W or F 2–4:30. East Roberts 301. Professor SWEET.

Intended for the students who wish to specialize in commercial vegetable growing, whether the vegetables are for the fresh market or for processing. A study of the general principles of vegetable growing. Consideration is also given to the economic importance, cultural requirements, marketing, and storage of important vegetables. Field trips are required.

12. *HANDLING AND MARKETING VEGETABLE CROPS.* Fall term. Credit three hours. Lectures, T Th 11. East Roberts 222. Laboratory, T or W 2–4:30. East Roberts 223. Professor HARTMAN.

Students registered for the Tuesday laboratory are scheduled to go on a field trip at 9:30 a.m., Wednesday, September 23.

The handling of vegetables at or after harvest, whether for fresh market or for processing: personnel, facilities, machinery, and organization of the industry; quality maintenance, quality measurement, and grade standards; federal, state and other regulations; principles and practices in precooling, storage, packaging, prepackaging, transportation, and display.

22. *POTATO PRODUCTION AND PROCESSING.* Spring term. Credit three hours. Lectures, T Th 10. East Roberts 222. Laboratory, T or W 2–4:30. East Roberts 223. Professor ORA SMITH.

General principles and practical phases of potato production, storage, and processing are discussed. Growth processes and soil and environmental factors are emphasized as influencing production. Topics such as storage methods, grading, packaging, cooking quality, nutritive value, processing, and industrial uses of potatoes also are studied. Two field trips, one of which is an all-day trip, are taken to potato farms and processing plants.