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Volume XXI

Number H

New York State College of Agriculture Announcement of the Two-Year Courses for 1930-31

Ithaca, New York
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THE CALENDAR FOR 1930-31

FIRST TERM

	1930		
Sept.	15	Monday	University entrance examinations begin.
Sept.	22	Monday	Academic year begins. Registration of new students.
Sept.	23	Tuesday	
		9-12 a.m.	Registration of new students.
		1-5 p.m.	Registration of old students.
Sept.	24	Wednesday	Registration of old students.
Sept.	25	Thurs. 8 a.m.	Instruction begins.
Oct.	17	Friday	Last day for payment of tuition.
Nov.	27-29		Thanksgiving recess.
Dec.	20	Sat. 12.50 p.m.	Instruction ends.
	1931		} Christmas recess.
Jan.	5	Mon. 8 a.m.	Instruction resumed.
Jan.	11	Sunday	Birthday of Ezra Cornell. Founder's Day.
Jan.	26	Monday	Term examinations begin.

SECOND TERM

Feb.	6	Friday	} Registration of all students.
Feb.	7	Saturday	
Feb.	9	Mon. 8 a.m.	Instruction begins in regular courses.
Feb.	9-14		Farm and Home Week.
Mar.	2	Monday	Last day for payment of second-term tuition.
Mar.	28	Sat. 12.50 p.m.	Instruction ends.
Apr.	6	Mon. 8 a.m.	Instruction resumed.
June	1	Monday	Term examinations begin.
June	15	Monday	Sixty-third Annual Commencement.

NEW YORK STATE COLLEGE OF AGRICULTURE

STAFF OF ADMINISTRATION AND INSTRUCTION IN THE TWO-YEAR COURSES

Livingston Farrand, A.B., M.D., L.H.D., LL.D., President of the University.
 Albert Russell Mann, B.S.A., A.M., D.Sc., D.Agr., Dean of the College of Agriculture and Director of Experiment Stations.
 Cornelius Betten, Ph.D., D.Sc., Director of Resident Instruction.
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 Olin Whitney Smith, B.S., Secretary.
 Anson Wright Gibson, M.S., Associate Secretary, Former Student Relations.
 Willard Waldo Ellis, A.B., LL.B., Librarian.
 George Wilson Parker, Bursar.

Raymond Albrechtsen, Assistant in Animal Husbandry.
 Winfred Enos Ayres, Assistant Professor of Dairy Industry.
 William Charles Baker, B.S.A., Professor of Drawing.
 Lindsay McLeod Black, B.S.A., Assistant in Plant Pathology.
 Harold Eugene Botsford, B.S., Extension Professor of Poultry Husbandry.
 Herman Jacob Brueckner, B.S., Instructor in Dairy Industry.
 Harry Oliver Buckman, Ph.D., Professor of Soil Technology.
 Doak Bain Carrick, Ph.D., Professor of Pomology.
 Martin Paul Catherwood, M.S., Assistant Professor of Business Management.
 Herbert Press Cooper, Ph.D., Assistant Professor of Field Crops.
 Charles Hughes Crawford, M.S., Assistant in Animal Husbandry.
 Harriet Creighton, A.B., Assistant in Botany.
 Otis Freeman Curtis, Ph.D., Professor of Botany.
 Ralph Wright Curtis, M.S.A., Professor of Ornamental Horticulture.
 Benjamin Harold Davis, A.B., Instructor in Plant Pathology.
 E. Gorton Davis, B.S., Professor of Landscape Architecture.
 Jesse Allison DeFrance, M.S., Assistant in Ornamental Horticulture.
 George Abram Everett, A.B., LL.B., Professor of Extension Teaching.
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 Edward Sewall Guthrie, Ph.D., Professor of Dairy Industry.
 Goldan Orlando Hall, Ph.D., Assistant Professor of Poultry Husbandry.
 Earle Volcart Hardenburg, Ph.D., Professor of Vegetable Crops.
 Merritt Wesley Harper, M.S., Professor of Animal Husbandry.
 John Frederick Harriott, Ph.D., Assistant Professor of Farm Management.
 Edwin Shepherd Harrison, B.S., Instructor in Animal Husbandry.
 Arthur John Heinicke, Ph.D., Professor of Pomology.
 Glenn Washington Herrick, B.S.A., Professor of Economic Entomology.
 Barbour Lawson Herrington, B.S., Instructor in Dairy Industry.
 Gustave Frederick Heuser, Ph. D., Professor of Poultry Husbandry.
 Robert Byron Hinman, Ph.D., Assistant Professor of Animal Husbandry.
 Edwin Fraser Hopkins, Ph.D., Assistant Professor of Botany.
 William R. Horsfall, M.S., Instructor in Entomology.
 Chester Jermain Hunn, B.S.A., Assistant Professor of Ornamental Horticulture.
 John Carl Huttar, Ph.D., Instructor in Poultry Husbandry.
 Minna Frotscher Koch, Assistant in Botany.
 Lewis Knudson, Ph.D., Professor of Botany.
 Richard August Laubengayer, B.S., Instructor in Botany.
 Alton A. Lindsey, A.B., Assistant in Botany.
 John Clarence McCurdy, B.S., C.E., Professor of Agricultural Engineering.
 Laurence Howland MacDaniels, Ph.D., Professor of Pomology.
 Bassett Maguire, B.S., Assistant in Botany.
 Lua Alice Minns, M.S. in Agr., Instructor in Floriculture.
 Frank Barron Morrison, B.S., Professor of Animal Husbandry.

Clyde Hadley Myers, Ph.D., Professor of Plant Breeding.
William Irving Myers, Ph.D., Professor of Farm Finance.
Leo Chandler Norris, Ph.D., Research Assistant Professor of Poultry Husbandry.
George Eric Peabody, M.S., Assistant Professor of Extension Teaching.
Frank Ashmore Pearson, Ph.D., Professor of Marketing.
Loren Clifford Petry, Ph.D., Professor of Botany.
Joseph Pullman Porter, B.S., M.S.A., M.L.D., Acting Professor of Ornamental Horticulture.
Whiton Powell, Ph.D., Professor of Business Management.
Myers Peter Rasmussen, Ph.D., Professor of Marketing.
James Edward Rice, B.S.A., Professor of Poultry Husbandry.
Howard Wait Riley, M.E., Professor of Agricultural Engineering.
Harold Ellis Ross, M.S.A., Professor of Dairy Industry.
Dwight Sanderson, Ph.D., Professor of Rural Social Organization.
Elmer Seth Savage, Ph.D., Professor of Animal Husbandry.
Burch Hart Schneider, M.S., Assistant in Animal Husbandry.
James Morgan Sherman, Ph.D., Professor of Dairy Industry.
Henry Thomas Skinner, Propagator in Ornamental Horticulture.
Leland Spencer, Ph.D., Professor of Marketing.
Clifford Nicks Stark, Ph.D., Assistant Professor of Bacteriology.
Mrs. Pauline Whitson Stark, M.S., Instructor in Bacteriology.
Allan Hosie Treman, LL.B., Lecturer in Business Law.
Hugh Charles Troy, B.S.A., Professor of Dairy Industry.
Kenneth L. Turk, Assistant in Animal Husbandry.
George Frederick Warren, Ph.D., Professor of Agricultural Economics and Farm Management.
Donald Stuart Welch, Ph.D., Assistant Professor of Plant Pathology.
Ralph Hicks Wheeler, B.S., Professor in Extension Service.
Herbert Hice Whetzel, M.A., D.Sc., Professor of Plant Pathology.
Edward Albert White, B.Sc., Professor of Floriculture and Ornamental Horticulture.
John Peter Willman, M.S., Instructor in Animal Husbandry.
Paul Work, Ph.D., Professor of Vegetable Crops.
Samuel Healea Work, B.S., Assistant in Animal Husbandry.
Forrest Blythe Wright, M.S., Instructor in Agricultural Engineering.
Donald Wyman, B.S.A., Instructor in Floriculture.

NEW YORK STATE COLLEGE OF AGRICULTURE

The New York State College of Agriculture is maintained by the State as one of three state colleges within Cornell University. It is equipped with a staff and facilities for teaching resident students of various types, for making 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 the land and other large facilities and services freely placed at the disposal of the College by Cornell University.

COURSES AVAILABLE

The information contained in this announcement relates to certain newly organized two-year courses. These are 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 winter course beginning in November and running through twelve weeks; 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 courses, candidates must offer fifteen units acceptable by the University of the State of New York toward a state diploma, or the equivalent by school certificates. Candidates will also be required to furnish certificates of good moral character.

All students matriculating in the University must present a satisfactory certificate of vaccination against smallpox. This certificate is considered satisfactory only if it certifies to a successful vaccination within five years, or certifies that at least three unsuccessful attempts have been made within the same period.

Applicants are advised not to enter these courses unless they have had considerable farm experience.

THE APPLICATION FOR ADMISSION

Candidates for admission should address Dr. E. F. Bradford, Director of Admissions, Morrill Hall, Ithaca, New York, stating that they desire to enter one of the two-year courses in the College

of Agriculture. This should be done as early as possible, since the procuring of the necessary credentials often takes considerable time.

Every candidate for admission must make a deposit of \$25 with the Treasurer at the time of sending in the application blank. A check, draft, or money order should be made payable to Cornell University and sent to the Office of Admissions, Morrill Hall, Ithaca, New York.

If the candidate matriculates, the deposit will be credited to his account, \$10 for the matriculation fee and \$15 as a guaranty fund, which every two-year student is required to maintain, and which is to be refunded to him upon his permanent withdrawal, less any indebtedness to the University.

If admission is denied a candidate who has complied with these rules, the deposit is refunded in full at any time.

CERTIFICATE ON COMPLETION OF COURSE

Students who satisfactorily complete the work of a two-year course will be granted an appropriate certificate.

EXPENSES

TUITION

Tuition is free to two-year students in the New York State College of Agriculture, who at the beginning of the college year are, and for at least twelve months prior thereto have been, bona-fide residents of the State of New York. 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 \$200 for the full college year. This amount is payable in installments of \$110 at the beginning of the first term and \$90 at the beginning of the second term, but a student registered only for the second term of the academic year is required to pay at the rate of the first term.

Tuition and other fees become due when the student registers. The University allows twenty days of grace after the last registration day of each term of the regular session. The last day of grace is generally printed on the registration coupon which the student is required to present at the Treasurer's office. Any student who fails to pay his tuition charges, other fees, and other indebtedness to the University, or who, if entitled to free tuition, fails to claim it at the Treasurer's office and to pay his fees and other indebtedness, within the prescribed period of grace, is thereby dropped from the University unless the Treasurer has granted him an extension of time to complete payment. The Treasurer is permitted to grant such an extension when, in his judgment, the circumstances of a particular case warrant

his doing so. For any such extension the student is assessed a fee of \$5 for the first week and \$2 additional for each subsequent week in which the whole or any part of the debt remains unpaid, but the assessment in any case is not more than \$15. The assessment may be waived in any instance for reasons satisfactory to the Comptroller and the Registrar, when such reasons are set forth in a written statement.

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 *matriculation fee* of \$10 is required of every student upon entrance into the University. This fee must be paid at the time of registration. A new two-year student who has made the required deposit of \$25 with the Treasurer does not make an additional payment of the matriculation fee, because the Treasurer draws on the deposit for this fee.

An *infirmary fee* of \$5 a term is required at the beginning of each term of every student. In return, a student, in case of illness, is, upon his physician's certificate, admitted to the University infirmary and receives, without charge, a bed in a ward, board, and ordinary nursing for a period not exceeding two weeks in any academic year. For such service beyond the period of two weeks, a charge of \$2 a day is made. Extra charges are made for private rooms, special food, and special nurses.

A *Willard Straight Hall membership fee* of \$5 is required at the beginning of each term. Its payment entitles the student to a share in the common privileges afforded by the operation of Willard Straight Hall, subject to the regulations made by the Board of Managers.

A *physical recreation fee* of \$2, required at the beginning of each term, entitles the student to the use of a locker, bathing facilities, and towels, in the gymnasium, the New York State Drill Hall, or the Schoellkopf Memorial Building.

Laboratory fees are charged to cover the cost of materials used in certain courses that require laboratory and field work. A few of the courses involve out-of-town trips for the purpose of studying marketing and field conditions. Every student must pay his own travel and living expenses on these trips. The approximate total amount of the laboratory fees and trip expenses for each of the courses for two years is as follows:

	Laboratory fees	Trip expenses
Dairy Farming.....	\$51.00	\$ 7.00
Poultry Farming.....	39.00	9.00
Fruit Growing.....	52.00	7.00
Vegetable Growing.....	61.00	21.00
Marketing of Fruits and Vegetables.....	57.00	21.00
Manufacture and Marketing of Dairy Products.....	73.00	15.00
Commercial Floriculture.....	74.50	30.00
Nursery Landscape Service.....	76.00	30.00

BOARD AND LODGING

The University is gradually adding to the number of residential halls for men; at present there are accommodations for about 597 students. For particulars, address the Manager of Residential Halls, Morrill Hall, Ithaca, New York.

Many private lodging houses near the University offer furnished rooms, with heat and light, at rates ranging from \$3 to \$6 a week for a single room. Before he rents a room in a private house, a student should make sure, by a personal inspection, that the sanitary arrangements of the house are good, and he should especially insist on a good fire escape. The University publishes a list of lodging houses that have been inspected and found to be satisfactory in the above respects; the list is ready for distribution on August 15. New students, if they have not already engaged rooms, are advised to come to Ithaca and do so a few days before the day set for registration. The Freshman Advisory Committee offers its help to new students, and sends them a circular letter of suggestions about September 1.

The number of private houses that offer both rooms and board is small, and many students get their meals outside the houses where they live. The University conducts a cafeteria in Cascadilla Hall and another in Willard Straight Hall, and the College of Home Economics also has a public cafeteria. There are other good cafeterias that are patronized mainly by students. In the comparatively few boarding houses, the rates for table board range upward from \$9.00 a week.

It is possible to obtain satisfactory board and lodging for the full college year for a total of \$500. Those with limited means will be able to save \$1 or \$2 a week from this amount by living at a somewhat greater distance from the campus.

The total necessary college expenses for the two years, exclusive of clothes and travel, may average \$600 a year. The additional amount spent for clothes and incidentals will vary with the tastes and means of the student.

RELATION TO THE FOUR-YEAR DEGREE COURSE

Except in respect of the items of administration and curriculum specifically covered in this announcement, students in the two-year course are governed by exactly the same conditions as are students of the four-year course. They should, therefore, consult the fuller 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 if all conditions of entrance are fully met and if, in addition, the record made in the first two years gives evidence of ability to carry advanced work. Students transferring will thus take most of their work in the basic sciences between the elementary and the advanced courses in

agriculture. In some cases a loss of time may result from taking the work required for the degree in this sequence, but there are compensating advantages. Full credit toward the degree will be given for work satisfactorily passed in the two-year course.

THE TWO-YEAR CURRICULA

The two-year course has organized within it eight curricula giving preparation for the major types of farming in New York State and and for certain allied businesses. Changes from these suggested curricula may be made with the consent of the Director of Resident Instruction and the department chiefly concerned. These matters may be taken up with the faculty adviser to whom the student will be assigned when he registers.

Requests for further information regarding these curricula should be addressed to the Secretary of the College of Agriculture, Roberts Hall, Ithaca, New York.

CURRICULUM IN DAIRY FARMING

FIRST YEAR

First term	<i>Hours credit</i>	Second term	<i>Hours credit</i>
Oral and Written Expression 1 . . .	3	Oral and Written Expression 2 . . .	3
Introductory Inorganic Chemistry 101	3	Livestock Feeding 10	3
Introductory Inorganic Chemistry 105	3	Elementary Dairy Industry 2 . . .	2
Livestock Production 1	3	Soils 6	3
Farm Mechanics 1	3	Special Vegetable Crops 2	3

SECOND YEAR

Farm Records and Accounts 101 .	3	Dairy Cattle 50	3
Animal Breeding 20	3	Farm Management 102	5
Health and Diseases of Animals 30	3	Agricultural Bacteriology 3	3
Organization and Problems of Rural Society 11	3	Elective	4
Cooperative Marketing 131 . . .	3		

CURRICULUM IN POULTRY FARMING

FIRST YEAR

First term	<i>Hours credit</i>	Second term	<i>Hours credit</i>
Oral and Written Expression 1 . . .	3	Oral and Written Expression 2 . . .	3
Introductory Inorganic Chemistry 101	3	Soils 6	3
Introductory Inorganic Chemistry 105	3	Poultry Nutrition 2	3
Livestock Production 1	3	General Pomology 1	3
Breeds of Poultry, and Judging 11	2	Special Vegetable Crops 2	3

SECOND YEAR

Farm Mechanics 1.....	3	Agricultural Bacteriology 3.....	3
Organization and Problems of Rural Society 11.....	3	Farm Management 102.....	5
Physiology of the Nutrition and Secretion of the Domesticated Animals 10.....	3	Poultry Incubation and Brooding 3.....	3
Cooperative Marketing 131.....	3	Poultry Management and Housing 135.....	4
Marketing Poultry Products 31.....	3		
The Field of Poultry Husbandry 137.....	1		

CURRICULUM IN FRUIT GROWING

FIRST YEAR

First term	Hours credit	Second term	Hours credit
Oral and Written Expression 1...	3	Oral and Written Expression 2....	3
Introductory Inorganic Chemistry 101.....	3	Soils 6.....	3
Introductory Inorganic Chemistry 105.....	3	General Plant Pathology 1.....	3
Farm Mechanics 1.....	3	Elementary Economic Entomology 42.....	3
General Botany 1.....	3	General Pomology 1.....	3

SECOND YEAR

Fruit Varieties 2.....	2	Farm Management 102.....	5
Organization and Problems of Rural Society 11.....	3	Special Vegetable Crops 2.....	3
Cooperative Marketing 131.....	3	Advanced Laboratory Course in Pomology 112.....	2
Marketing Fruits and Vegetables 142.....	3	Optional	
Packing and Storage of Fruit for Market 111.....	2	Farm Poultry 1.....	4
Orchard Field Trip 113 (optional)	1	Livestock Feeding 10.....	3
		Agricultural Bacteriology 3.....	3
		General Beekeeping 61.....	3

CURRICULUM IN VEGETABLE GROWING

FIRST YEAR

First term	Hours credit	Second term	Hours credit
Oral and Written Expression 1...	3	Oral and Written Expression 2....	3
Introductory Inorganic Chemistry 101.....	3	Soils 6.....	3
Introductory Inorganic Chemistry 105.....	3	Elementary Economic Entomology 42.....	3
General Botany 1.....	3	General Plant Pathology 1.....	3
Grading and Handling Vegetable Crops 12.....	3	Vegetable Crops 1.....	3

SECOND YEAR

Farm Mechanics 1.....	3	Farm Management 102.....	5
Cooperative Marketing 131.....	3	Special Vegetable Crops 2.....	3
Organization and Problems of Rural Society 11.....	3	Optional	
Types and Varieties of Vege- tables 13.....	3	Farm Poultry 1.....	4
		Vegetable Forcing 11.....	3
		General Pomology 1.....	3
Optional			
Livestock Production 1.....	3		
Production of Field Crops 11....	4		
Marketing Fruits and Vegetables 142.....	3		

CURRICULUM IN MARKETING OF FRUITS AND VEGETABLES

FIRST YEAR

First term	Hours credit	Second term	Hours credit
Oral and Written Expression 1...	3	Oral and Written Expression 2....	3
Introductory Inorganic Chemis- try 101.....	3	General Pomology 1.....	3
Introductory Inorganic Chemis- try 105.....	3	Vegetable Crops 1.....	3
General Botany 1.....	3	Elementary Economic Entomol- ogy 42.....	3
Accounting 121.....	3	General Plant Pathology 1.....	3

SECOND YEAR

Cooperative Marketing 131.....	3	Farm Management 102.....	5
Marketing Fruits and Vegetables 142.....	3	Special Vegetable Crops 2.....	3
Grading and Handling Vegetable Crops 12.....	3	Agricultural Prices 115.....	3
Types and Varieties of Vegetables 13.....	3	Public Problems of Agriculture 151	2
Packing and Storage of Fruit for Market 111.....	2		
Fruit Varieties 2.	2		

CURRICULUM IN THE MANUFACTURE AND THE MARKETING OF DAIRY PRODUCTS

FIRST YEAR

First term	Hours credit	Second term	Hours credit
Oral and Written Expression 1...	3	Oral and Written Expression 2....	3
Introductory Inorganic Chemis- try 101.....	3	Livestock Feeding 10.....	3
Introductory Inorganic Chemis- try 105.....	3	Market Milk and Milk Inspe- ction 102.	3
Accounting 121.....	3	Analysis and Control of Dairy Products 101.....	3
Testing and Composition of Dairy Products 1.....	3	Farm Mechanics 1.....	3

SECOND YEAR

General Bacteriology 1.....	6	Milk-Products Manufacturing 104	5
Milk-Products Manufacturing 103	5	Agricultural Prices 115.....	3
Cooperative Marketing 131.....	3	Farm Management 102.....	5
Agricultural Business 144.....	2	Marketing Dairy Products 143...	3

COLLEGE OF AGRICULTURE

CURRICULUM IN COMMERCIAL FLORICULTURE

FIRST YEAR

First term	Hours credit	Second term	Hours credit
Oral and Written Expression 1...	3	Oral and Written Expression 2...	3
General Botany 1.....	3	Soils 6.....	3
Introductory Inorganic Chemis- try 101.....	3	General Plant Pathology 1.....	3
Introductory Inorganic Chemis- try 105.....	3	Garden Flowers 6.....	3
Principles and Methods of the Propagation and Management of Greenhouse Crops 11.....	4	Flower Arrangement 31.....	1
		A Brief Introduction to Landscape Design 43.....	3

SECOND YEAR

Plant Physiology 31.....	4	Advanced Woody-Plant Materials 8	3
Commercial Floriculture 121.....	4	Elementary Economic Entomol- ogy 42.....	3
Wholesaling and Retailing Flow- ers 123.....	3	Plant Breeding 103.....	3
Business Law 145.....	2	Commercial Floriculture 122.....	4
Farm Records and Accounts 101.	3	Conservatory Plants 125.....	2

CURRICULUM IN NURSERY LANDSCAPE SERVICE

FIRST YEAR

First term	Hours credit	Second term	Hours credit
Oral and Written Expression 1...	3	Oral and Written Expression 2...	3
General Botany 1.....	3	Free-Hand Drawing 11.....	3
Introductory Inorganic Chemis- try 101.....	3	Landscape Work on Small Proper- ties 61a.....	4
Introductory Inorganic Chemis- try 105.....	3	Plant Design 62a.....	2
Advanced Woody-Plant Materials 8.....	3	Advanced Woody-Plant Materials 8.....	3

SUMMER SESSION

Woody-Plant Materials for Landscape Planting S8.....	4
Garden Flowers S6.....	2

SECOND YEAR

Farm Engineering 21.....	3	Plant Physiology 31.....	4
General Plant Pathology 1.....	3	Elementary Economic Entomol- ogy 42.....	3
Woody-Plant Propagation 1.....	4	Shade-Tree Pathology and Tree Surgery 112.....	2
Landscape Work on Small Proper- ties, Advanced Course 61b.....	4	Soils 6.....	3
Plant Design, Advanced Course 62b.....	2	Lawn-making and Green-keeping 51.....	2

DESCRIPTION OF COURSES

The courses described in the following pages are those required in one or more of the preceding curricula. With the exception of two courses in chemistry and one in veterinary science, they are all 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. There are several departments whose work is not required in the two-year curricula now organized, 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.

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

101. Farm Records and Accounts. First term, Credit three hours. Lectures, T Th 8. Caldwell 100. Laboratory, M 1.40-4, or T 1.40-4. Marketing Building. Assistant Professor HARRIOTT and Mr. ———.

Farm inventories; cash accounts; income-tax reports; single-enterprise cost accounts; complete farm cost accounts; farm maps; other farm records; interpretation of the results of cost accounts and their application in the organization and management of farms. Fee for materials furnished, \$3.

102. Farm Management. Second term. Credit five hours. Lectures, M W F 10. Farm Management Building 102. One laboratory period a week, by assignment. Farm Management Building 102. On days when farms are visited, laboratory work may last longer than two and one-half hours. Professor W. I. MYERS and Mr. ———.

Farming as a business; types of farming; balance of business; size of business; rates of production; farm layout; building arrangement; labor management; machinery; marketing; ways of starting to farm; forms of tenure and leases; choosing and buying a farm; use of capital and credit; planning, organization, and management of specific farms. Four half-day field trips will be taken during April and May to visit farms in near-by regions. Fee for materials furnished, \$3.

115. Agricultural Prices. Second term. Credit three hours. Lectures, T Th 8. Laboratory, W 1.40-4. Farm Management Building 102. Professor PEARSON and Mr. ———.

A study of prices of farm products in relation to agricultural and industrial conditions. Fee for materials furnished, \$3.

121. Accounting. First term. Credit three hours. Lectures, T Th 9. Farm Management Building 102. Laboratory, T or Th 1.40-4. East Roberts 232. Assistant Professor CATHERWOOD.

The fundamentals of the double-entry system; the theory of debit and credit; the common books of original and final entry; the analysis and recording of ordinary business transactions; the trial balance; closing the books; preparation of work sheet and financial statements. The principles are developed mainly in terms of the simple trading enterprise. Fee for materials furnished, \$1.

131. Cooperative Marketing. First term. Credit three hours. Lectures, T Th 11. Farm Management Building 102. Laboratory, Th 1.40-4. Farm Management Building 102. Professors W. I. MYERS and POWELL and Mr. ———.

Business management of cooperative organizations. The cooperative corporation; legal basis of cooperative business; types of cooperative organizations; contracts; relations to members. Primary consideration is given to a study of some of the important factors affecting the efficiency of cooperative business, including volume of business, financing, price policies, and capital efficiency. Fee for materials furnished, \$2.

142. Marketing (Fruits and Vegetables). First term. Credit three hours. Lectures, M W 9. Farm Management Building 102. Laboratory, W 1.40-4. Marketing Building. Professor RASMUSSEN and Mr. ———.

A study of the economic factors involved in the marketing of fruits and vegetables. Regional and seasonal competition; areas of distribution; methods of handling; costs of marketing; types of marketing organizations; sales methods; transportation and carrier services; produce law and methods of credit rating; terminal problems. Fee for materials furnished, \$2.

143. Marketing (Dairy Products). Second term. Credit three hours. Lectures, T Th 10. Laboratory, T 1.40-4. Marketing Building. Professor SPENCER.

Economic aspects of the distribution of the more important dairy products from producer to consumer, with special emphasis on market milk. One all-day trip will be arranged. Fee for materials furnished, \$2.

144. Agricultural Business (By Nonresident Lecturers). First term. Credit one or two hours. Lecture and discussion, F 11-1. Farm Management Building 102. Professor SPENCER in charge.

Most of the lectures are given by executives of private or cooperative business organizations engaged in the distribution of farm products or farm supplies.

A discussion period at 12 o'clock affords an opportunity for informal discussion of questions related to the subject of the preceding lecture. Two-hours credit is allowed those who take this period in addition to the lecture.

145. Business Law. First term. Credit two hours. Lectures, T Th 12. Farm Management Building 102. Lectures by Mr. Allan H. Treman. Registration in charge of Professor SPENCER.

Consideration is given chiefly to legal problems of particular interest to persons who expect to engage in business; including contracts, liens, mortgages, and negotiable instruments; ownership and leasing of property; wills, estates; inheritance taxation; and other practical problems.

151. Public Problems of Agriculture. Second term. Credit two hours. Lectures, M W 12. Farm Management Building 102. Professor WARREN.

A discussion of some of the more important problems of agriculture that involve collective or government action.

AGRICULTURAL ENGINEERING

1. Farm Mechanics. First or second term. Credit three hours. Planned to give basic training for understanding the farm applications of mechanical and electrical methods and appliances. Reasonable proficiency in drawing is necessary, and Drawing 1 is recommended as preparation for this course. Lectures, T Th 10. Dairy Building 218. Practice, M or T 1.40-4. Agricultural Engineering Laboratories. Professor RILEY and Messrs. WRIGHT and ———.

A course intended to develop ability to think and to reason in terms of mechanical and electrical devices. The machines used are the following: single-cylinder gas engine, grain binder, pumps, spray machinery, domestic water-supply systems, and electrical equipment. Laboratory fee, \$2.

21. Farm Engineering. First or second term. Credit three hours. It is recommended but not required that students have training in mechanical drawing. Lectures: first term, M W 9; second term, M W 10. Dairy Building 119. Practice, M or T 1.40-4. Dairy Building, Fourth Floor, and field. Professor MCCURDY.

A study of the practical solution of the elementary problems involved in connection with surveying and mapping the farm; leveling for farm drainage and water supply; laying out building foundations. Farm drainage, concrete, and sewage disposal are studied. Laboratory fee, \$2.

AGRONOMY

6. Soils. Second term. Credit three hours. Lectures and recitations, M T Th 11. Caldwell 100. Laboratory, M 1.40-4. Caldwell 49. Professor BUCKMAN.

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. Laboratory fee, \$3.

11. Production of Field Crops. First or second term. Credit four hours. Lectures, M W 10. Recitation, F 10. Caldwell 100. One laboratory practice. Caldwell 250. Assistant Professor COOPER.

A course dealing with the principal field crops of the United States, special emphasis being placed upon those grown in the Northeastern States. Cultural methods, crop rotations, fertilizer practices, soil and climatic adaptation, and the better varieties of the important crops, are considered. Laboratory fee, \$3.

ANIMAL HUSBANDRY

1. Livestock Production. First term. Credit three hours. Lectures, W F 10. Animal Husbandry Building A. One laboratory period, M 10-12.20 or Th 1.40-4. Judging Pavilion. Professors SAVAGE and HARPER, Assistant Professor HINMAN, and Mr. J. P. WILLMAN.

Introduction to types, breeds, judging, and management of livestock. Laboratory fee, \$2.

10. Livestock Feeding. Second term. Credit three hours. Lectures, T Th 9. Animal Husbandry Building A. One laboratory period, M 1.40-4, T 10-12.20, W 11-1, or Th 1.40-4. Professor MORRISON and Messrs. SCHNEIDER and TURK.

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. First term. Credit three hours. Prerequisite, courses 1 and 10. Lectures, M W 9. Recitation, demonstration, or laboratory, T 1.40-4. Animal Husbandry Building B and Animal Breeding Laboratory. Assistant Professor HINMAN and Mr. ALBRECHTSEN.

A general outline of the principles of heredity as applied to the breeding of farm animals, origin, and formation of breeds. Inheritance as applied to animal production. Elementary genetics. Laboratory fee, \$2.

30. Health and Diseases of Animals. First term. Credit three hours. Not open to freshmen or to those who have had no courses in animal husbandry. Lectures, M W F 11. Veterinary College. Professor BIRCH.

The course is designed to give the student a clear conception of the causes and nature of the diseases of animals, with suggestions for their prevention. Special attention is given to the methods of preventing the spread of the infectious and epizootic diseases. Such information as is practicable is given for the treatment of slight injuries and for first aid in emergencies.

50. Dairy Cattle. Second term. Credit three hours. Lectures, T Th 10. Animal Husbandry Building A. Practice, M W or Th 1.40-4. Animal Husbandry Building A and Judging Pavilion. Professor SAVAGE and Messrs. HARRISON, CRAWFORD, and WORK.

Origin, history, and development of the breeds of dairy cattle; methods of breeding; economy of feeding; production of milk; care, management, and sanitation of the dairy herd. Practice in judging, scoring, tracing pedigrees, and keeping records. Laboratory fee, \$2.

BACTERIOLOGY

1. General Bacteriology. First term. Credit six hours. Prerequisite, Chemistry 101. Lectures, recitations, and laboratory practice, M W F 1.40-5. Dairy Building 119 and 301. Assistant Professor STARK and Mrs. STARK.

An introductory course; a general survey of the field of bacteriology, with the fundamentals essential to further work in the subject. Laboratory fee, \$10.

3. Agricultural Bacteriology. Second term. Credit three hours. Prerequisite, Chemistry 101. Not accepted as a prerequisite for advanced courses. Lectures, M W F 9. Dairy Building 119. Professor SHERMAN.

The elements of bacteriology, with a survey of the relation of microorganisms to agriculture.

BOTANY

1. **General Botany.** First and second terms. Credit three hours a term. Lectures, T Th 9 or 11. East Roberts 222. Laboratory, one period of two and one-half hours. Stone. Professor PETRY, Messrs. LAUBENGAYER and LINDLEY, and Misses KOCH, MAGUIRE, CREIGHTON, and others.

A survey of the fundamental facts and principles of plant life. The work of the first term deals with the structures and functions of the higher plants, with special emphasis on nutrition. The work of the second term traces the evolution of the plant kingdom, as illustrated by representatives of the principal groups, and concludes with a brief introduction to the principles of classification of the flowering plants. Laboratory fee, \$3.50 a term.

31. **Plant Physiology.** First or second term. Credit four hours. Prerequisite, course 1. Lectures, T Th 10. First term, Caldwell 143; second term, Roberts 292. Laboratory, T Th 1.40-4 or W F 1.40-4. Stone 21. Professor KNUDSON or Professor O. F. CURTIS, Assistant Professor HOPKINS, and Mr. FLEISCHER.

This course is designed to acquaint the student with the general principles of plant physiology and their application. The important topics considered are water relations, photosynthesis, translocation, digestion, respiration, mineral nutrition, growth, and reproduction. Laboratory fee, \$4; deposit, \$3.

DAIRY INDUSTRY

1. **Testing and Composition of Dairy Products.** First or second term. Credit three hours. Lectures, T Th 11, Dairy Building 218; practice, M or F 1.40-4.30. Dairy Building 209. Professor TROY and Mr. BRUECKNER.

The topics considered are secretion and composition of milk, the lactometer, the Babcock test for fat, acid tests, moisture tests, salt tests, preservative tests, and adulterations. Laboratory fee, \$5.

2. **Elementary Dairy Industry.** Second term. Credit two hours. Prerequisite, Chemistry 101. Not accepted as a prerequisite for advanced courses. Lectures, recitations, and laboratory practice, T W 1.40-4. Dairy Building 120. Professor GUTHRIE.

A course designed primarily for non-degree students in Agriculture. The elements of milk testing, sanitary milk production, and dairy inspection. Laboratory fee, \$5.

101. **Analysis and Control of Dairy Products.** Second term. Credit three hours. Lecture and laboratory practice, T 1-6. Dairy Building 218. Professor TROY and Mr. HERRINGTON.

The application of chemical methods to commercial dairy practice; analysis by standard chemical and factory methods; standardization and composition control; tests for adulterants and preservatives. Laboratory fee, \$5.

102. **Market Milk and Milk Inspection.** Second term. Credit three hours. Must be preceded or accompanied by course 1; should be preceded or accompanied by Bacteriology 1 or its equivalent. Lecture and laboratory practice, W 1-6. Dairy Building 218 and 146. Professor Ross.

Attention is given to the production and the control of market milk, with special reference to its improvement; milk as food; shipping stations; transportation and sale; pasteurizing; standardizing; clarification; certified milk; milk laws; commercial buttermilk; methods of cooling; harvesting and storage of ice; duties of milk inspectors; apparatus and buildings. The practice includes visits to dairies in the vicinity of Ithaca. A required two-day inspection trip in the neighboring counties may be arranged. Laboratory fee, \$5.

103. **Milk-Products Manufacturing.** First term. Credit five hours. Prerequisite, course 1. Lectures, recitations, and laboratory practice, T Th 1-6. Dairy Building 120. Professor GUTHRIE and Assistant Professor AYRES.

The principles and practice of making butter, cheese, and casein, including a study of the physical, chemical, and biological factors involved. Consideration is given also to commercial operations and dairy-plant management. Laboratory fee, \$5.

104. Milk-Products Manufacturing. Second term. Credit five hours. Prerequisite, course 1; should be preceded or accompanied by course 101. Lectures, recitations, and laboratory practice, F 1-6 and S 8-1. Dairy Building 120. Assistant Professor AYRES.

The principles and practice of making condensed and evaporated milks, milk powders, ice cream, and by-products, including a study of the physical, chemical and biological factors involved. Laboratory fee, \$5.

DRAWING

11. Free-Hand Drawing. First and second terms. Credit from two to four hours a term. If the course is first entered upon in the second term, the registration must be for a minimum of three hours. Lectures during practice. Practice by appointment, daily 9-12.50 and 1.40-4, except W afternoon and S morning. East Roberts 371. Professor BAKER and Assistant Professor GARRETT.

An elementary course for the development of graphic expression applicable to scientific studies. Of special value to those who expect to enter the field of teaching, nature study, or biological research.

ENTOMOLOGY

42. Elementary Economic Entomology. Second term. Credit three hours. Lectures, T Th 9. Roberts 392. Practical exercise, T 1.40-4. Roberts 392. Professor HERRICK and Mr. HORSFALL.

The course includes lectures on the life histories and habits of injurious insects with consideration of methods of control. The practical exercises include a study of the more important insecticides and of as many of the common pests as time will permit. Laboratory fee, \$2.

61. General Beekeeping. Second term. Credit three hours. Lectures, T Th 9. Roberts 292. Practical exercises, W 1.40-4. Dairy Building 128. Professor PHILLIPS.

This course is intended to afford a general knowledge of the fundamentals of beekeeping, including the life history, instincts, and general behavior of bees, their products, the sources of honey, the rôle of bees in cross-pollination, the equipment of the apiary, wintering problems, the diseases of bees, and the rearing of queens. Laboratory fee, \$2.50.

EXTENSION TEACHING

1. Oral and Written Expression. First term. Credit three hours. Lectures and practice, M W F 9. Roberts 131. Criticism, by appointment, daily, 8-1. Professor EVERETT and Assistant Professor PEABODY.

Practice in oral and written presentation of topics in agriculture, 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 material and other forms, to train for effective self-expression in public. In addition, some study is made of representative works in English literature. Special training is given to competitors for the Eastman Prizes for Public Speaking and the Farm Life Challenge contest. (See announcement of four-year course.)

2. Oral and Written Expression. Second term. Credit three hours. Continuation of course 1. M W F 9. Roberts 131. Professor EVERETT and Assistant Professor PEABODY.

Part of the work of this course is a study of parliamentary practice.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

1. Woody-Plant Propagation. First term. Credit four hours. Lectures, W 10, F 12. Practice, T 11-12.50 and S 10.30-12.50. Greenhouses and nurseries. Assistant Professor HUNN and Mr. SKINNER.

This course is planned for both the general student and those specializing in floriculture and ornamental horticulture. It consists of a study of the elementary

methods of woody-plant propagation and the care of the plant stocks produced. All members of the class are required to participate in an excursion to nurseries at Newark or vicinity early in November. Laboratory fee, \$4.

6. Garden Flowers. Second term. Credit three hours. Prerequisite, course 5 or 11. Lectures, T Th 9. Registration limited to fifteen students. Countryman Building. Lectures, discussions, and practice, W 1.40-4. Greenhouses and gardens. Miss MINNS.

A study of the identification and culture of annuals, herbaceous perennials, and garden roses. The aim is to give the student an intimate knowledge of those forms of annual and herbaceous plants that may be used in garden planting, either on home grounds or in public parks. An excellent collection of plant material is available for demonstration work in this course. All members of the class are required to participate in an excursion to the Thompson estate at Canandaigua, on May 29. Laboratory fee, \$2.

8. Advanced Woody-Plant Materials. Second and first terms. Inclusion of the summer school is not required but is strongly advised. Credit three hours a term. Lecture, Th 12. Laboratory and field trips, M W 1.40-4. East Roberts 7. Professor R. W. CURTIS and Mr. WYMAN.

A study of the trees, shrubs, and vines used in landscape planting and in nursery work. All members of the class are required to participate in two excursions to the Rochester parks, one in the spring and one in the fall. The transportation and one-meal charge for each trip is \$6. Laboratory fee, \$4.

11. Principles and Methods of the Propagation and Management of Greenhouse Crops. First term. Credit four hours. Lectures, M T Th 9. Countryman Building. Practice, T 1.40-4. Greenhouses. Professor WHITE and Mr. ———.

An elementary course in commercial flower growing intended to acquaint students with the scientific principles and floricultural methods governing the propagation and culture of flowers under glass. The construction, heating, and equipment of greenhouses is also studied. Laboratory fee, \$2.50.

31. Flower Arrangement. Second term. Credit one hour. Registration limited to fifteen students in each section. Preference for registration in Section I will be given to students specializing in Floriculture or in Agriculture. Section II is for students in the College of Home Economics. Lectures, demonstrations, and practice: Section I, T 1.40-4; Section II, Th 1.40-4. Greenhouses. Professor WHITE and Mr. ———.

A study of the principles and methods of arrangement of flowers for home decoration and table decoration, in baskets, vases, and formal designs; also the arrangement of flowers and plants for all types of interior decoration. Laboratory fee, \$5.

43. A Brief Introduction to Landscape Design. Second term. Credit three hours a term. Lectures, M W F 12. Caldwell 100. Professor DAVIS.

A discussion of the first principles involved in landscape planning, with special application to small city and suburban homes, farmsteads, and cottage grounds. The course is intended for students who desire an intelligent point of view in landscape work but who do not intend to take the more technical courses in theory.

51. Lawn-making and Green-keeping. Second term. Credit two hours. S 8-1. East Roberts 7. Professor R. W. CURTIS.

This course deals with the principles, practices, and materials that have to do with the construction and maintenance of lawns and greens. It includes weekly laboratories, and reports, and occasional discussions by men prominent as turf experts and green-keepers.

61a. Landscape Work on Small Properties. Second term. Credit four hours. Lectures, W F 10. Laboratory, T F 1.40-4. Caldwell 400. Acting Professor PORTER and Mr. DEFRANCE.

A study of arrangement, construction, and planting of small properties. Laboratory fee, \$2.50.

61b. Landscape Work on Small Properties, Advanced Course. First term. Credit four hours. Laboratory, T 1.40-4 and three other periods at the con-

venience of the student. Caldwell 400. Acting Professor PORTER and Mr. DEFRANCE.

A continuation of course 61a. Laboratory fee, \$2.50.

62a. Plant Design. Second term. Credit two hours. Lecture, T II. Laboratory, Th 10-12.50. Caldwell 400. Acting Professor PORTER and Mr. DEFRANCE.

A study of the nature and characteristics of woody-plant materials in their relation to planting arrangements. The grouping of plants to produce serviceable as well as beautiful designs and compositions. A study of form, color, texture, and habit. Laboratory fee, \$2.

62b. Plant Design, Advanced Course. First term. Credit two hours. Lecture, Th 8. Laboratory, Th 10-12. Caldwell 400. Acting Professor PORTER and Mr. DEFRANCE.

A continuation of course 62a. Laboratory fee, \$2.

121. Commercial Floriculture. First term. Credit four hours. No student will be admitted to the course who has not had at least a half year of practical experience in a greenhouse. Lectures and recitations, M W F 10. Countryman Building. Practice, F 1.40-4. Greenhouses. Professor WHITE and Mr. ———.

Studies in the culture of commercial florists' crops. Methods of packing, shipping, and marketing are considered. The class will participate in a required excursion to Utica and Rome on October 15. Laboratory fee, \$2.

122. Commercial Floriculture. Second term. Credit four hours. Lectures and recitations, M W F 10. Countryman Building. Practice, F 1.40-4. Greenhouses. Professor WHITE and Mr. ———.

A continuation of course 121, with methods of culture of commercial crops not previously considered. Students taking these courses are expected to work on commercial ranges during one semester and vacations. The class will participate in a required excursion to Elmira on March 20. Laboratory fee, \$2.

123. Wholesaling and Retailing Flowers. First term. Credit three hours. Lectures, M W 9. East Roberts 7. Practice, W 1.40-4. Greenhouses. Mr. ———.

This course is planned with the view of giving students a thorough knowledge of methods of retail-store management, store equipment, salesmanship, business methods, delivery, decorating for all functions, flower arrangement and the making of designs, methods of conducting cooperative flower exchanges, and wholesale markets. Other topics of a like nature are discussed. There will be a required trip to Rochester, to visit a wholesale establishment and retail stores, on November 18. Laboratory fee, \$5.

125. Conservatory Plants. Second term. Credit two hours. Lectures and laboratory, T Th II. Countryman Building. Professor WHITE and Mr. ———.

Designed for students interested in work on private estates or in parks. A study of such tropical and subtropical foliage and flowering plants as are used for the ornamentation of glasshouses of decorative type. Laboratory fee, \$1.

PLANT BREEDING

103. Plant Breeding. First term. Credit three hours. Lectures, T Th 8. Lecture and practice, S 8-10. Fernow 210. Professor C. H. MYERS.

A discussion of the principles primarily concerned in plant breeding and the development of methods of breeding for different types of plants. Lectures are supplemented by periods in the laboratory, greenhouses, and experimental fields to acquaint the student with the technique of hybridization, selection, seed production, and distribution. The course is intended to be of value to those interested in plant production, to seed growers, to county agents, and to teachers of agriculture in secondary schools.

PLANT PATHOLOGY

1. General Plant Pathology. First or second term. Credit three hours. Lecture, W 8. East Roberts 222. Practice, first term, W F 1.40-4, or Th 1.40-4 and S 10.30-12.50; second term, W F 1.40-4. Bailey, West Basement. Professor WHETZEL, Assistant Professor WELCH, and Messrs. DAVIS and BLACK.

A fundamental course treating of the nature, cause, and control of plant diseases, illustrated by studies of the commoner diseases of cultivated crops. The practice sections are limited to twenty-four students each. Admission, if registration is in excess of twenty-four per section, on the basis of average scholastic standing to date. Laboratory fee, \$4.50; breakage deposit, \$3.

112. Shade-Tree Pathology and Tree Surgery. Second term. Credit two hours. Lecture, W F 10. Bailey, West Basement. Assistant Professor WELCH.

Dealing with the recognition and control of diseases of ornamental trees and shrubs and the principles of tree repair.

POMOLOGY

1. General Pomology. Second term. Credit three hours. Lectures, T Th 8. East Roberts 222. Laboratory, M T or Th 1.40-4. East Roberts 108. Professor CARRICK and Mr. ———.

A study of the general principles and practices in pomology; propagation and care of orchard trees and small fruits; harvesting, storing, and marketing fruit; practical work in budding, grafting, pruning, and planting; study of varieties, growth, and fruiting habits.

2. Fruit Varieties. First term. Credit two hours. Lecture or laboratory, T Th 8-10. East Roberts 108. Professor MACDANIELS and Mr. ———.

A study of the most important varieties of apples, pears, peaches, plums, grapes, and small fruits from the standpoint of their identification, growth, characters, regional adaptation, season of ripening, storage quality, and other matters of a similar nature. A part of the time is given to the judging of exhibition fruit, and the Farm and Home Week fruit exhibit is set up by the students in this course.

111. Packing and Storage of Fruit for Market. First term. Credit two hours. S 8-1. East Roberts 222 and the packing house. Professor CARRICK.

The important factors in harvesting and handling fruit that affect quality and marketability are studied. Particular emphasis is placed on packing apples, in barrels, baskets, boxes, and other retail packages, but the work covers also such fruits as peaches, plums, pears, and grapes, in so far as these are available. The effect of grades and packages on distribution and marketing is fully discussed, and consideration is given to some of the problems of operating a central fruit-packing house. The principles and practices of common and cold storage are also considered.

112. Advanced Laboratory Course. Second term. Credit two hours. S 8-1. Professors HEINICKE, CARRICK, and MACDANIELS.

This course is designed to give more extended practice in the various nursery and orchard operations than can be given in course 1. Special attention is given to problems of pruning, tree surgery, bracing, and pest control.

113. Orchard Field Trip. Credit one hour. Given in alternate years. Prerequisite, permission to register. To be taken during the week preceding the week of registration for the first term. Students who wish to take this trip must signify their intention by July 20 preceding. The expense of this trip—about \$30—must be met by the individual student. Students may register for this course in the first term. Professor HEINICKE, Professor CARRICK, or Professor MACDANIELS.

The course is designed to give the students who specialize in pomology an intimate knowledge of practical orchard conditions.

POULTRY HUSBANDRY

1. Farm Poultry. Second term. Credit four hours. Lectures and recitations, M W F 9. Poultry Building 375. Practice: Th or F 1.40-4 or S 8-10.20. Poultry Building 300. Professors RICE and HEUSER, Extension Professor BOTSFORD, Assistant Professors HALL and BRUNETT, Dr. HUTTAR, and Mr. ———.

A brief general course dealing with the practical application of the principles of poultry husbandry to general farm conditions, designed for students not intending to take the specialized poultry courses.

2. Poultry Nutrition. Second term. Credit three hours. Lectures, T Th 9. Practice, Th 1.40-4. Poultry Building 325. Professor HEUSER and Research Assistant Professor NORRIS.

The principles of poultry nutrition, including methods of feeding for egg production, rearing and fattening; the study of feeds suitable for poultry; the compounding of rations; and practice in poultry-feeding management.

3. Poultry Incubation and Brooding. Second term. Credit three hours. Lecture, F 11. Practice, F 1.40-4; also reporting three times daily, including Sunday, for approximately six weeks, hours to be arranged by appointment. Poultry Building 325. Mr. ———.

Principles and practice of incubation and brooding. Daily practice for three weeks in operating incubators and for three weeks in the management of a brooder and a flock of chickens.

11. Breeds of Poultry, and Judging. First term. Credit two hours. Lecture or recitation, F, 11. Poultry Building 325. Practice, Th or F 1.40-4. Breed Observation House. Assistant Professor HALL.

The origin, history, and classification of breeds of domestic poultry; judging the principal breeds for fancy and production points by score-card and comparison methods; fitting fowls for exhibition. A required trip is made to one of the leading poultry shows the second or third week of January.

31. Marketing Poultry Products. First term. Credit three hours. Lecture or recitation, M W 11. Poultry Building 325. Practice, M or T 1.40-4. Poultry Building 100. Dr. HUTTAR.

Preparation of poultry and eggs for market and study of marketing problems. A weekly market news letter is prepared by students in the class. A class trip to New York City markets is required of all students. A three-day study of marketing in all its phases is made on this trip, which immediately follows the Christmas recess. The total necessary expense is about \$35.

135. Poultry Management and Housing. Second term. Credit four hours. Lectures, T Th S 10. Laboratory, W 1.40-4. Poultry Building 375. Professor RICE and Extension Professor BOTSFORD.

The principles of farm management as applied to poultry farming. Selection of the farm, construction, design, and arrangement of buildings, together with a study of the principles of poultry-house construction. Farm layout and a study of farm records.

137. The Field of Poultry Husbandry. First term. Credit one hour. Lecture, T 9. Poultry Building 325. Professor RICE.

A study of the general field of poultry husbandry for students specializing in the department. About one-fourth of the term will be devoted to a study of the industry, its growth, magnitude, distribution, and factors tending to limit or expand its growth. One-fourth of the term will be devoted to a study of the opportunities in the field of poultry husbandry, and the balance of the term to a consideration of the national poultry organizations and the national poultry problems.

RURAL SOCIAL ORGANIZATION

11. Organization and Problems of Rural Society. First term. Credit three hours. Open to two-year students only. Lectures, reports, and discussions. M W F 8. Roberts 392. Professor SANDERSON.

A study of the different groups and organizations characteristic of rural society, their relations to each other and to the individual, including such topics as public health, the school, the church, the family, recreation, the standard of living, local government, and community organization. Students make studies of their own communities and thus apply the work of the course to concrete local situations.

VEGETABLE CROPS

1. Vegetable Crops. Second term. Credit three hours. Lectures, W F 11. Poultry Building 174. Laboratory, Th or F 1.40-4. Vegetable greenhouses and East Ithaca gardens. Professor WORK.

A general study of the principles of vegetable growing and handling, giving a comprehensive survey of the industry. Economic importance, geography, cultural requirements, and marketing, storage, and uses, of the important vegetables. A one-day trip is required; approximate expense, \$4. Laboratory fee, \$2.

2. Special Vegetable Crops. Second term. Credit three hours. Lectures, T Th 10. Laboratory, T or W 1.40-4. Poultry Building 174. Professor HARDENBURG.

A special study of those crops that are grown in New York principally as cash crops and for manufacture, including potatoes, field beans, field cabbage, and the important canning crops, peas, tomatoes, sweet corn, and snap beans. About one-third of the term's work is devoted to potatoes. A visit to near-by bean elevators is required; approximate expense, \$2. Laboratory fee, \$2.

11. Vegetable Forcing. Second term. Credit three hours. Lectures, W F 8. Poultry Building 174. Laboratory, W 1.40-4. Vegetable Greenhouses. Professor WORK.

Growing vegetables under glass; greenhouses for vegetables; management problems; the greenhouse crops, their requirements and culture. Laboratory work consists chiefly of practical exercises in crop production. A one- or two-day excursion to Rochester to visit greenhouses is required; approximate expense, \$9. Laboratory fee, \$2.

12. Grading and Handling Vegetable Crops. First term. Credit three hours. Lectures, T Th 10. Poultry Building 174. Laboratory, T or Th 1.40-4. Professor WORK.

Geography of vegetable production and distribution, factors of environment, culture, and handling as affecting quality, condition, and marketing of vegetable crops. Harvesting, grades and grading, packing, shipping-point and terminal-market inspection, transportation, refrigeration, and storage are discussed with reference to the various crops. A two-day trip is required; approximate cost, \$10. Laboratory fee, \$2.

[13. Types and Varieties of Vegetables. First term. Credit three hours. One week of laboratory work preceding beginning of regular instruction. Professor WORK.] Not given in 1930-31.

Taxonomy, origin, history, characteristics, adaptation, identification, classification, exhibition, and judging, of kinds and varieties of vegetables. Characteristics, production, and handling of vegetable seeds. The leading varieties of the vegetable crops are grown each year. Laboratory fee, \$2.

COURSES IN OTHER COLLEGES

101. Introductory Inorganic Chemistry. First or second term. Credit three hours. Lectures: two sections, M W F 11 or T Th S 11. Baker. Main Lecture Room. Professor BROWNE and Assistant Professor LAUBENGAYER.

105. Introductory Inorganic Chemistry. First or second term. Credit three hours. Recitations and laboratory practice. Laboratory sections, M F 1.40-4, T Th 1.40-4, W 1.40-4, and S 8-10.20. Baker 150. Professor BROWNE, Assistant Professor LAUBENGAYER, and assistants.

10. Physiology of the Nutrition and Secretion of the Domesticated Animals. First or second term. Credit three hours. Lectures: first term, M W F 9; second term, M W F 10. Veterinary College. Professor FISH.

