BS in Agriculture
Options in:
- Agricultural Science and Education
- Animal Science
- Plant Science
- Land Stewardship

BS in Agricultural Business
Minor in Agriculture
Minor in Agricultural Business
Certificate in Plant Protection
Pre-professional Advising:
- Veterinary Medicine

Teaching Credentials:
- Single Subject in Agriculture
- Specialist in Agriculture

Agriculture will remain a major industry in the nation as well as in California. There is a steady, continuing supply of professional managerial jobs for well-educated people in agriculture and natural resource management. In response to the quality of our programs and the career opportunities, the number of majors in the College of Agriculture continues to rise.

Individuals enrolled in the College of Agriculture receive both theoretical knowledge and practical experience — both very necessary to become the future leaders of this important economic sector. Students learn through a systems approach about the complex set of interrelationships between agriculture, the environment, political and social forces, and other sectors of the economy.

The BS in Agriculture covers agriscience and technology. Options are offered in agriscience and education, animal and plant science, and land stewardship. State-of-the-art procedures reflect the science-based nature of agriculture and natural resource management in the 21st century. A student can choose either to concentrate in a single option or emphasize a broad overview. The program is designed for “hands-on” learning. A rigorous industry-based internship program, undergraduate research experiences and a variety of learning activities at the Agricultural Teaching and Research Center give this program its reputation for student-centered learning.

The BS in Agricultural Business provides students with an excellent and comprehensive background in business theory combined with a working knowledge of production agriculture. The Agricultural Teaching and Research Center, microcomputer lab, and off-campus internships are available to gain valuable practical experience. The emphasis of this degree program is to prepare students for entry-level management positions. Specialized subject areas include agricultural marketing, agricultural finance and appraisal, and agricultural business management.

Facilities
Excellent agricultural facilities include 800 acres of irrigated farmland and approximately 240 acres of rangeland. A wide variety of crops are grown at the Agricultural Teaching and Research Center. It has excellent orchards and croplands and is stocked with many head of registered animals.

Barns, shops, greenhouses, orchards, laboratories, along with ample classrooms and well-equipped laboratories on the main campus, provide the student with a fine environment in which to study and learn about agriculture, natural resources and agricultural business management.

The Agricultural Teaching and Research Center offers students the opportunity to obtain practical experience in many different areas of both plant and animal production systems. In addition, students have excellent opportunities to participate in funded applied agricultural research activities.

Career Outlook
Federal reports indicate that in the 21st century there will be more professional job openings in the agricultural and natural resource management sectors than there will be qualified graduates to fill those positions. Career opportunities appear excellent.

Some graduates in agriculture enter positions leading to management responsibilities on the farm or ranch, in industry, in business, in governmental land management and regulatory agencies, or in research and education. Other agriculturists are finding employment in various agriculturally related careers such as purchasing, advertising, public relations, transportation, inspection, and market reporting. And still others have taken positions with agricultural cooperatives, food and dairy product companies, agrichemical manufacturing and sales companies, farm credit, and agricultural communications.

For today’s commercial farmer and natural resource manager, a degree in agriculture provides the technical and business background necessary to keep up with rapid changes that are taking place within the agricultural industry. The professional areas of teaching, agricultural extension, rural development, and basic or applied research also attract many graduates.
THE BACHELOR OF SCIENCE IN AGRICULTURE

Total Course Requirements for the Bachelor's Degree: 120 units

See "Requirements for the Bachelor’s Degree" in The University Catalog for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

A suggested Major Academic Plan (MAP) has been prepared to help students meet all graduation requirements within four years. Please request a plan from your major adviser or view it and other current advising information on the CSU, Chico Web.

General Education Requirements: 48 units

See “General Education Requirements” in The University Catalog and The Class Schedule for the most current information on General Education Requirements and course offerings. The course requirements marked below with an asterisk (*) may also be applied toward General Education.

For both the BS in Agriculture and the BS in Agricultural Business, ABUS 101 may be applied to General Education Breadth Area D1.

Cultural Diversity Course Requirements: 6 units

See “Cultural Diversity” in The University Catalog. Most courses taken to satisfy these requirements may also apply to General Education.

American Institutions Requirement: 6 units

See the “American Institutions Requirement” under “Bachelor’s Degree Requirements.” For this major, this requirement is normally fulfilled by completing HIST 130 and POLS 155. For this major, HIST 130 may also be applied to General Education Breadth Area A1, B2, or B3.

Literacy Requirement:

See “Mathematics and Writing Requirements” in The University Catalog. Writing proficiency in the major is a graduation requirement and may be demonstrated through satisfactory completion of a course in your major which has been designated as the Writing Proficiency (WP) course for the semester in which you take the course. Students who earn below a C- or better before you may register for a WP course.

Course Requirements for the Major: 83 units

The following courses, or their approved transfer equivalents, are required of all candidates for this degree. Additional required courses, depending upon the selected option or advising pattern, are outlined following the degree core program requirements.

DEGREE CORE PROGRAM: 46 units

Lower-Division Core: 33 units

2 courses required:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRI 180</td>
<td>1.0 FS</td>
<td></td>
</tr>
<tr>
<td>MATH 105</td>
<td>3.0 FS*</td>
<td>Completion of ELM requirement.</td>
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1 course selected from:

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>CHEM 107</td>
<td>4.0 FS*</td>
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<tr>
<td>CHEM 111</td>
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1 course selected from:

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<tbody>
<tr>
<td>CHEM 108</td>
<td>4.0 FS</td>
<td>Prerequisites: CHEM 107 or CHEM 111 or equivalent.</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>4.0 FS</td>
<td>Prerequisites: CHEM 111.</td>
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1 course selected from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
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<tbody>
<tr>
<td>ABUS 101</td>
<td>3.0 FS</td>
<td>Prerequisites: CHEM 107 or CHEM 111.</td>
</tr>
<tr>
<td>ABUS 261</td>
<td>3.0 FS</td>
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1 course selected from:

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<tbody>
<tr>
<td>AGET 120</td>
<td>3.0 FA</td>
<td>Prerequisites: CHEM 107 or CHEM 111.</td>
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<tr>
<td>AGET 150</td>
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</table>

NOTE: Students selecting the Option in Agricultural Business may also be applied toward General Education Breadth Area D1.

Writing proficiency in the major is a graduation requirement and may be demonstrated through satisfactory completion of a course in your major which has been designated as the Writing Proficiency (WP) course for the semester in which you take the course. Students who earn below a C- or better before you may register for a WP course.

OPTION CORE REQUIREMENTS: 25 units

Genetics

1 course required:

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>AGRI 305</td>
<td>4.0 SP</td>
<td>Prerequisites: ANSC 101 or BIOL 108 or PSSC 101; CHEM 107 or CHEM 111.</td>
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Animal Science

2 courses selected from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 301</td>
<td>3.0 FS</td>
<td>Intermediate Animal Systems</td>
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</tbody>
</table>

Animal Nutrition

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>ANSC 330</td>
<td>3.0 SP</td>
<td>Prerequisites: ANSC 101 or PSSC 210, ANSC 230.</td>
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</table>

Reporth Physical Domestic Animals

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>ANSC 340</td>
<td>3.0 FA</td>
<td>Prerequisites: ANSC 101 or PSSC 210.</td>
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</table>

Animal Health and Disease

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<thead>
<tr>
<th>Course</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>ANSC 360</td>
<td>3.0 SP</td>
<td>Prerequisites: ANSC 101 or PSSC 210.</td>
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</table>

Plant and Soil Science

2 courses selected from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>PSSC 274</td>
<td>3.0 S1</td>
<td>Greenhouse Management</td>
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</tbody>
</table>

Agricultural Chemicals

<table>
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<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>PSSC 353</td>
<td>3.0 F1</td>
<td>Prerequisites: ANSC 101.</td>
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Soil Quality and Health

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>PSSC 356</td>
<td>3.0 S2</td>
<td>Prerequisites: PSSC 250 or instructor permission.</td>
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</tbody>
</table>

Ecology of Crop Production

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>PSSC 360</td>
<td>3.0 S2</td>
<td>Prerequisites: ANSC 331.</td>
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</tbody>
</table>

Production of Annual Crops

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>PSSC 361</td>
<td>3.0 FA</td>
<td>Prerequisites: Upper-division standing.</td>
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</tbody>
</table>

Fruit and Nut Production

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>PSSC 366</td>
<td>3.0 SP</td>
<td>Prerequisites: Upper-division standing.</td>
</tr>
</tbody>
</table>
Agricultural Engineering Technology
1 course selected from:
- AGET 340 GPS/GIS in Ag/Nat Res Mgmt 3.0 SP
- AGET 360 Irrigation 3.0 SP
Prerequisites: PSSC 101 or PSSC 250.

Agricultural Business
1 course selected from:
- ABUS 321 Agribusiness Management 3.0 SP
Prerequisites: ABUS 101 or equivalent.
- ABUS 331 Agricultural Mgmt Info Systems 3.0 FS

Natural Resources
1 course selected from:
- AGRI 432 Holistic Resource Management 3.0 F2
- PSSC 330 Rangeland Resources/Management 3.0 FA
- PSSC 314 Wetland/Riparian Res and Mgmt 3.0 F1
Prerequisites: Completion of lower-division core.

Area of Study: 12 units
The following courses, or their approved transfer equivalents, are required depending upon the area of study chosen. Students must select one of the following areas of study for completion of the major course requirements. Courses must be approved in advance by the academic advisor.

Agricultural Science Area of Study
12 units selected from:
- Any upper-division courses in agricultural science and related subject matter approved by the advisor. Students selecting this area of study are strongly encouraged to gain practical skills and knowledge through an approved internship or directed work experience.

Agricultural Education Area of Study
The required course work in agriculture and in agricultural education for this option and area of study fulfills the requirements for two teaching credentials—the Single Subject Credential in Agriculture, and the Specialist Credential in Agricultural Education. Students pursuing this career objective should also complete HCSV 451 and EDTE 302 and pass the California Basic Education Skills Test.

5 courses required:
- AGRI 201 Intro to Agricultural Educ 3.0 FA
- AGRI 210 Directed Field Exp in Ag Ed 2.0 FA
- AGRI 321 Program Dev in Ag Education 2.0 SP
- AGRI 420 Tech in Vocational Ag Instruct 2.0 SP
- AGRI 421 Curric/Method Tch Ag Mechanics 3.0 SP
Prerequisites: AGET 120. Recommended: AGET 150.

THE OPTION IN ANIMAL SCIENCE: 37 units
This option prepares students for diverse careers involving all aspects of animal agriculture. Careers in animal production, allied industries, and pre-professional preparation for graduate study, are possible directions for students in this option. The option emphasizes science-based study of animals and animal production, including nutrition, health, reproduction, genetics, and meat science. In addition, management level courses in several domestic animal species are offered. Students who pursue this option have the flexibility to follow one of several different areas of study that directly prepares them for their career goals.

5 courses required:
- AGRI 305 Agri Genetics & Biotechnology 4.0 SP
- ANSC 301 Intermediate Animal Systems 3.0 FS
Prerequisites: ANSC 101 or BIOL 108 or PSSC 101 or CHEM 107 or CHEM 111.
- ANSC 330 Animal Nutrition 3.0 SP
Prerequisites: ANSC 101 or BIOL 210, ANSC 230.
- ANSC 340 Repro Physiol Domestic Animals 3.0 FA
Prerequisites: ANSC 101 or BIOL 108.
- ANSC 360 Animal Health and Disease 3.0 SP
Prerequisites: ANSC 101 or BIOL 210.

1 course selected from:
- ANSC 471 Beef Production & Management Prerequisites: ANSC 101.
- ANSC 474 Dairy Production & Management Prerequisites: ANSC 101.

1 course selected from:
- ANSC 272 Sheep Production & Management Prerequisites: ANSC 101.
- ANSC 273 Swine Production & Management Prerequisites: ANSC 101.

Area of Study: 15 units
15 units selected from:
Courses must be selected in advance and approved by the adviser. In selecting courses to meet this requirement, students must create a concentration of courses that best meets their career goals. The following courses are recommended for the indicated areas of study.

Animal Production Area of Study
15 units selected from:
- ABUS 321 Agribusiness Management 3.0 SP
Prerequisites: ABUS 101 or equivalent.
- ANSC 320 Advanced Livestock Selection 3.0 FA
- ANSC 350 Meat and the Consumer 3.0 FS
- PSSC 330 Rangeland Resources/Management 3.0 FA
OR (the following course may be substituted for the above)
- PSSC 363 Forage Crops 3.0 SP
Prerequisites: BIOL 209 or PSSC 101 or PSSC 330.

3 units selected in consultation with your adviser.

Animal Industry Area of Study
15 units selected from:
- ABUS 211 Agri Selling & Consulting 3.0 SP
- ABUS 311 Ag Markets and Pricing 3.0 FS
Prerequisites: ABUS 101.
- ABUS 321 Agribusiness Management 3.0 SP
Prerequisites: ABUS 101 or equivalent.
- ABUS 331 Agricultural Mgmt Info Systems 3.0 FS
- AGRI 380A Fair Mgmt & Ag Leadership 3.0 FA
OR (the following course may be substituted for the above)
- AGRI 380B Ag Leadership & Fair Mgmt 3.0 SP
Prerequisites: AGRI 380A or permission of the instructor.

Pre-professional: Food Animal Veterinary Medicine Area of Study
3 courses required:
- BIOL 151 Biological Principles 4.0 FS
Prerequisites: Recommend CHEM 111 or concurrent enrollment.
- CHEM 270 Organic Chemistry 4.0 FS
Prerequisites: CHEM 112.
- CHEM 370 Organic Chemistry 3.0 FS
Prerequisites: CHEM 270.

The following course, or their approved transfer equivalents, are required:
- AGRI 380B Ag Leadership & Fair Mgmt 3.0 SP
Prerequisites: AGRI 380A or permission of the instructor.

NOTE: Students selecting this area of study must select CHEM 111 and CHEM 112 in the lower-division core. Additional requirements for application to veterinary school include PHYS 202A, PHYS 202B, BIOL 416, and CHEM 250. In order to complete all requirements for a degree in Agriculture (Option in Animal Science) and requirements for admission to veterinary school, student programs will exceed 120 units.

THE OPTION IN PLANT SCIENCE: 37 units
This option prepares students to manage agricultural enterprises for the production of plant crops for human and animal consumption, for the protection of these crops and resources against pests (insects, diseases, weeds, vertebrates), and for the stewardship of their natural resources (soil, water, air, and biota). The option emphasizes sustainable land use and crop protection practices and contains three parallel areas of study: crop production, crop protection (which also prepares students for careers as Pest Control Advisors), and soil management. Career opportunities may be found in the agricultural production industry, in agricultural research, and in agricultural advising and regulation.

Option Core Requirements: 22 units
Soil and Water Resources
1 course selected from:
- AGET 360 Irrigation 3.0 SP
Prerequisites: PSSC 101 or PSSC 250.
- PSSC 353 Agrichemicals 3.0 F1
Prerequisites: CHEM 107 or CHEM 111; PSSC 250.
- PSSC 356 Soil Quality and Health 3.0 S2
Prerequisites: PSSC 250 or instructor permission.
Agriculture

Genetics
1 course required:
AGRI 305 Agri Genetics & Biotechnology 4.0 SP
Prerequisites: ANSC 101 or BIOL 108 or PSSC 101; CHEM 107 or CHEM 111.

Crop Production
1 course selected from:
PSSC 274 Greenhouse Management 3.0 S1
PSSC 361 Production of Annual Crops 3.0 FA
PSSC 362 Production of Field Crops 3.0 Inq
Prerequisites: BIOL 209 or PSSC 101 or PSSC 330.
PSSC 364 Seed Production 3.0 F2
Prerequisites: BIOL 209 or PSSC 101 or faculty permission.
PSSC 366 Fruit and Nut Production 3.0 SP
Prerequisites: Upper-division standing.

Agronomic Pests and Control
1 course selected from:
PSSC 340 Economic Entomology 3.0 F1
PSSC 342 Plant Pathology 3.0 F2
PSSC 343 Introduction to Weed Science 3.0 S1
Prerequisites: AGRI 331.

Crop Function
1 course required:
BIOL 414 Plant Physiology 4.0 FS
Prerequisites: BIOL 108 or BIOL 152; BIOL 209; CHEM 108 or CHEM 270; or faculty permission.

Production Experience
1 course selected from:
PSSC 309A Dir Work in Field/Row Crops 2.0 FA
PSSC 309B Dir Work in Field/Row Crops 2.0 SP
Prerequisites: PSSC 309A or faculty permission.
PSSC 310A Directed Work in Orchard Crops 2.0 SP
Prerequisites: PSSC 101.
PSSC 310B Directed Work in Orchard Crops 2.0 FA
Prerequisites: PSSC 309A.
PSSC 312 Dir Work in Greenhouse Prod 2.0 FS
PSSC 389 Internship 1.0-6.0 FS
Prerequisites: Junior standing, faculty permission.
PSSC 389 must be taken for 2 units.

Production Management
1 course selected from:
ABUS 321 Agribusiness Management 3.0 SP
Prerequisites: ABUS 101 or equivalent.
AGRI 432 Holistic Resource Management 3.0 F2
Prerequisites: AGRI 331.

Area of Study: 15 units
15 units selected from:
Courses must be selected and approved in advance by the adviser. In selecting courses to meet this elective requirement, students must select an area of study that will best meet career goals, such as Crop Production, Crop Protection, or Soil Management. A maximum of 6 units that substantially contribute to the Bachelor of Science in Agriculture may be lower-division.

THE OPTION IN LAND STEWARDSHIP: 37 units
This option prepares students to manage either the mostly public wildlands and rangelands for the production of goods and services (wildlife, livestock, recreation), or the private/public lands at the urban-rural interface for the protection or restoration of agricultural and natural resources. The option consists, therefore, of two parallel advising patterns, referred to as the Wildland-Range Science Area of Study and the Land Stewardship Area of Study. Career opportunities may be found in urban, agricultural, parkland, rangeland, and wildland environments with private landowners, city/state/federal agencies, and land conservancies and consultants.

Option Core Requirements: 22 units

Plant/Vegetation Management
1 course selected from:
PSSC 274 Greenhouse Management 3.0 S1
PSSC 330 Rangeland Resources/Management 3.0 FA

Soil Resources
1 course selected from:
PSSC 336 Soil Quality and Health 3.0 S2
Prerequisites: PSSC 250 or instructor permission.
PSSC 451 Soil Genesis & Classification 3.0 F1
Prerequisites: PSSC 250 or faculty permission.

Plant Foundation
1 course selected from:
BIOL 414 Plant Physiology 4.0 FS
Prerequisites: BIOL 108 or BIOL 152; BIOL 209; CHEM 108 or CHEM 270; or faculty permission.

Ecology
1 course selected from:
PSSC 433 Wildland Vegetation Ecology 3.0 F2
Prerequisites: PSSC 330 and completion of lower-division core.
PSSC 438 Landscape Ecology 3.0 F1
Prerequisites: PSSC 330 and completion of the lower-division core.

Wildland or Cropland Management
2 courses selected from:
PSSC 331 Grasses & Grasslands Wstrn US 3.0 S1
Prerequisites: BIOL 209 or PSSC 101. PSSC 330 is recommended.
PSSC 436 Vegetation Dynamics & Mgmt 3.0 S1
Prerequisites: PSSC 330 and completion of lower-division core.
PSSC 437 Wildland Classifictn & Invent 3.0 S2
Prerequisites: PSSC 330 and completion of lower-division core.
PSSC 343 Introduction to Weed Science 3.0 S1
Prerequisites: AGRI 331.
PSSC 441 Principles InTEGRAL Pest Mgmt 3.0 S2
Prerequisites: AGRI 331; PSSC 340 or PSSC 342 or PSSC 343.

Resource Management
1 course selected from:
AGRI 432 Holistic Resource Management 3.0 F2
Prerequisites: AGRI 331.
PSSC 334 Wetland/Riparian Res and Mgmt 3.0 F1
Prerequisites: Completion of lower-division core.
AGET 340 GPS/GIS in Ag/Nat Res Mgmt 3.0 FA
Prerequisites: AGET 200, AGET 240, AGET 300, AGET 440, successful completion of computer literacy requirement, or faculty permission.

Area of Study: 15 units
15 units selected from:
Courses must be selected and approved in advance by the adviser. In selecting courses to meet this requirement, students must create a concentration of courses that will best meet career goals, such as Wildland-Range Science or Land Stewardship. A maximum of 6 units that substantially contribute to the Bachelor of Science in Agriculture may be lower-division. The following courses are recommended for the indicated areas of study.

Wildland-Range Science Area of Study
Additional course work in wildland-range science and related subject matter selected from the option core and from:
AGET 340 GIS/GPS in AgNat Res Mgmt 3.0 SP
Prerequisites: PSSC 101 or PSSC 250.
AGRI 305 Agri Genetics & Biotechnology 4.0 SP
Prerequisites: ANSC 101 or BIOL 108 or PSSC 101; CHEM 107 or CHEM 111.
PSSC 453 Soil Fert & Plant Nutrition 3.0 F2
Prerequisites: PSSC 250.
PSSC 464 Plant Reproduction Systems 3.0 S1
Prerequisites: PSSC 101 or BIOL 209; AGRI 305, or faculty permission.
Electives Requirement:
To complete the total units required for the bachelor's degree, select additional elective courses from the total university offerings. You should consult with an adviser regarding the selection of courses which will provide breadth to your university experience and possibly apply to a supportive second major or minor.

Students may double count only one approved upper-division General Education theme course with a required option elective.

Grading Requirement:
All courses taken to fulfill major course requirements must be taken for a letter grade except those courses specified by the department as Credit/No Credit grading only.

Advising Requirement:
Advising is mandatory for all majors in this degree program.
Consult your undergraduate adviser for specific information.
A sample program for students who wish to complete their major in four years is available in the Office of the College of Agriculture, CSU, Chico, CA 95929.

Honors in the Major
Honors in the Major is a program of independent work in your major. It involves 6 units of honors course work completed over two semesters. Your honors work will be recognized at your graduation, on your permanent transcripts, and on your diploma. It is often accompanied by letters of commendation from your mentor in the department or the department chair. Most importantly, however, the Honors in the Major program allows you to work closely with a faculty mentor in your area of interest on an original performance or research project. This year-long collaboration allows you to work in your field at a professional level and culminates in a public presentation of your work. Students sometimes take their projects beyond the university for submission in professional journals, presentation at conferences, or competition in shows; such experience is valuable for graduate school and later professional life.

Some common features of Honors in the Major program are:
1. You must take 6 units of Honors in the Major course work. At least 3 of these 6 units are independent study (499H) as specified by your department. You must complete each class with a minimum grade of B.
2. You must have completed 9 units of upper-division course work or 21 overall units in your major before you can be admitted to Honors in the Major. Check the requirements carefully, as there may be specific courses that must be included in these units.
3. Your cumulative GPA should be at least 3.5 or within the top 5 percent of majors in your department.
4. Your GPA in your major should be at least 3.5 or within the top 5 percent of majors in your department.
5. Most students apply for or are invited to participate in Honors in the Major during the second semester of their senior year. Then they complete the 6 units of course work over the two semesters of their senior year.
6. Your honors work culminates with a public presentation of your Honors project.

While Honors in the Major is part of the Honors Program, each department administers its own program. Please contact your major department or major adviser for further information.

THE BACHELOR OF SCIENCE IN AGRICULTURAL BUSINESS

Total Course Requirements for the Bachelor's Degree: 120 units

See “Requirements for the Bachelor’s Degree” in The University Catalog for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

A suggested Major Academic Plan (MAP) has been prepared to help students meet all graduation requirements within four years. Please request a plan from your major adviser or view it and other current advising information on the CSU, Chico Web.

Please see the General Education, Cultural Diversity, and U.S. History, Constitution and American Ideals requirements under the BS in Agriculture.

Literacy Requirement:
See “Mathematics and Writing Requirements” in The University Catalog. Writing proficiency in the major is a graduation requirement and may be demonstrated through satisfactory completion of a course in your major which has been designated as the Writing Proficiency (WP) course for the semester in which you take the course. Students who earn below a C- are required to repeat the course and earn a C- or better before you may register for a WP course.

Course Requirements for the Major: 86 units

The following courses, or their approved transfer equivalents, are required of all candidates for this degree.

Lower-Division Requirements: 35 units

10 courses required:

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<th>Title</th>
<th>Units</th>
<th>Mode</th>
<th>Notes</th>
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<tbody>
<tr>
<td>ABUS 101</td>
<td>Intro to Ag Business/Economics</td>
<td>3.0</td>
<td>FS</td>
<td></td>
</tr>
<tr>
<td>ABUS 261</td>
<td>Farm Accounting</td>
<td>3.0</td>
<td>FS</td>
<td></td>
</tr>
<tr>
<td>ABUS 262</td>
<td>Mgmt Accounting for Ag</td>
<td>3.0</td>
<td>FS</td>
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</table>

1 course selected from:

ANSC 102 Principles of Macro Analysis 3.0 FS

3 units selected from:

Any lower-division Agricultural Business (ABUS), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant and Soil Science (PSSC), or Agriculture (AGRI) course.

Upper-Division Requirements: 51 units

9 courses required:

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<td>WP</td>
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Grading Requirement:
Course requirements for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

A suggested Major Academic Plan (MAP) has been prepared to help students meet all graduation requirements within four years. Please request a plan from your major adviser or view it and other current advising information on the CSU, Chico Web.

Please see the General Education, Cultural Diversity, and U.S. History, Constitution and American Ideals requirements under the BS in Agriculture.

Literacy Requirement:
See “Mathematics and Writing Requirements” in The University Catalog. Writing proficiency in the major is a graduation requirement and may be demonstrated through satisfactory completion of a course in your major which has been designated as the Writing Proficiency (WP) course for the semester in which you take the course. Students who earn below a C- are required to repeat the course and earn a C- or better before you may register for a WP course.

Course Requirements for the Major: 86 units

The following courses, or their approved transfer equivalents, are required of all candidates for this degree.

Lower-Division Requirements: 35 units

10 courses required:

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1 course selected from:

ANSC 102 Principles of Macro Analysis 3.0 FS

3 units selected from:

Any lower-division Agricultural Business (ABUS), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant and Soil Science (PSSC), or Agriculture (AGRI) course.

Upper-Division Requirements: 51 units

9 courses required:

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</table>
1 course selected from:
- ABUS 389 Internship in Agribusiness 1.0-3.0 FA
- Prerequisites: Permission of Internship Coordinator.
- ACET 389 Internship 1.0-3.0 FS
- Prerequisites: Prior approval of academic goals by the Internship Coordinator.
- ANSC 389 Internship in ANSC 1.0-3.0 FS
- Prerequisites: Prior approval of academic goals by the Internship Coordinator.
- PSSC 389 Internship 1.0-6.0 FS
- Prerequisites: Junior standing, faculty permission.
- Only 1 unit of internship is required.

3 units selected from:
- Any upper-division production course from Animal Science (ANSC) or Plant and Soil Science (PSSC). These courses are limited to those offerings that have either ANSC 101 or PSSC 101 as a prerequisite.

20 units selected from:
- Any upper-division College of Agriculture courses selected with approval of your adviser. Fifteen of the 20 units should be Agricultural Business courses.

Electives Requirement:
- To complete the total units required for the bachelor's degree, select additional elective courses from the total university offerings. You should consult with an adviser regarding the selection of courses which will provide breadth to your university experience and possibly apply to a supportive second major or minor.
- Students may double count only one approved upper-division General Education theme course with a required option elective.

Grading Requirement:
- All courses taken to fulfill major course requirements must be taken for a letter grade except those courses specified by the department as Credit/No Credit grading only.

Advising Requirement:
- Advising is mandatory for all majors in this degree program.
- Consult your undergraduate adviser for specific information.
- A sample program for students who wish to complete their major in four years is available in the Office of the College of Agriculture, CSU, Chico, CA 95929.

Honors in the Major
- Honors in the Major is a program of independent work in your major.
- It involves 6 units of honors course work completed over two semesters.
- Your Honors work will be recognized at your graduation, on your permanent transcripts, and on your diploma. It is often accompanied by letters of commendation from your mentor in the department or the department chair. Most importantly, however, the Honors in the Major program allows you to work closely with a faculty mentor in your area of interest on an original performance or research project. This year-long collaboration allows you to work in your field at a professional level and culminates in a public presentation of your work. Students sometimes take their projects beyond the university for submission in professional journals, presentation at conferences, or competition in shows; such experience is valuable for graduate school and later professional life.

Some common features of Honors in the Major program are:
1. You must take 6 units of Honors in the Major course work. At least 3 of these 6 units are independent study (499H) as specified by your department.
2. You must complete each class with a minimum grade of B.
3. You must have completed 9 units of upper-division course work or 21 overall units in your major before you can be admitted to Honors in the Major. Check the requirements carefully, as there may be specific courses that must be included in these units.
4. Your cumulative GPA should be at least 3.5 or within the top 5 percent of majors in your department.
5. Your GPA in your major should be at least 3.5 or within the top 5 percent of majors in your department.
6. Your GPA is a factor for students invited to participate in Honors in the Major. Then they complete the 6 units of course work over the two semesters of their senior year.
7. Your honors work culminates with a public presentation of your Honors project.

While Honors in the Major is part of the Honors Program, each department administers its own program. Please contact your major department or major adviser for further information.
THE CERTIFICATE IN PLANT PROTECTION

Course Requirements for the Certificate: 46 units

The following courses, or their approved transfer equivalents, are required of all candidates for this certificate.

This certificate fulfills the eligibility requirements for taking the State of California Pest Control Advisor (PCA) exam. An overall grade point average of 2.5 is required for the entire program.

Chemistry: 4 units

1 course selected from:

- CHEM 107 Gen Chem for Applied Sciences 4.0 FS *
- CHEM 111 General Chemistry 4.0 FS *

(One year of high school physics and one year of high school mathematics past Algebra II are recommended.)

Physical and Biological Sciences: 9 units

3 courses required:

- AGRI 331 Agricultural Ecology 3.0 FS
- PSSC 250 Introduction to Soil Science 3.0 FS
- PSSC 251 Plant Pathology 3.0 F2

Factors Affecting Crop Health: 12 units

4 courses selected from:

- BIOL 341 Agri Entomology/Insect Control 3.0 SP
- PSSC 252 Economic Entomology 3.0 F1
- PSSC 342 Plant Pathology 3.0 F1
- PSSC 343 Introduction to Weed Science 3.0 S1

Pest Management Systems and Methods: 9 units

3 courses selected from:

- AGRI 331 Pest Management Systems and Methods 3.0 F2
- PSSC 330 Integrated Pest Management 3.0 S2
- PSSC 334 Integrated Pest Management 3.0 S2

Production Systems: 12 units

12 courses selected from:

- AGR 302 Irrigation
- PSSC 274 Greenhouse Management 3.0 S1
- PSSC 309A Dir Work in Field/Row Crops 2.0 FA
- PSSC 309B Dir Work in Field/Row Crops 2.0 SP
- PSSC 310A Directed Work in Orchard Crops 2.0 SP
- PSSC 310B Directed Work in Orchard Crops 2.0 FA
- PSSC 311 Dir Work in Greenhouse Prod 2.0 FS
- PSSC 330 Rangeland Resources/Management 3.0 FA
- PSSC 361 Production of Annual Crops 3.0 FA
- PSSC 366 Fruit and Nut Production 3.0 SP

(Available courses must be arranged with the subject matter preparation advisor.)

THE SINGLE SUBJECT TEACHING CREDENTIAL IN AGRICULTURE and THE SPECIALIST TEACHING CREDENTIAL IN AGRICULTURE

There are two credentials available for student who wish to pursue a career as an agricultural education teacher in California: the Single Subject Teaching Credential and the Specialist Credential. The Single Subject Teaching Credential in Agriculture authorizes the holder to teach in the classroom. Candidates who fulfill the requirements for the Specialist Credential in Agriculture are prepared to teach in out-of-classroom settings such as serving as an FFA adviser and Supervised Agricultural Experience Program supervisor.

The Single Subject Teaching Credential in Agriculture includes two components—a Subject Matter Preparation program and a Professional Education program. Students can complete the Subject Matter Preparation program by completing the Agriscience and Education Option. Students completing another option or major in agriculture should consult the agricultural credential adviser to identify additional course requirements. Candidates may also demonstrate subject matter competence by successfully passing the appropriate Single Subject Assessment Test (SSAT). The subject matter preparation adviser is responsible for verifying that subject matter preparation has been completed.

The Professional Preparation component of the Single Subject Teaching Credential includes professional education courses, a part-time Practicum I and a half-time Practicum II student teaching experience. This portion of the credential program is administered by the Department of Education within the School of Education. For prerequisites and other admission requirements for professional education programs, see the "Education" chapter of this catalog and the Focus on Teaching.

You may want to consider adding the following courses to your undergraduate program: EDUC 302, ENGL 377, and HCSV 451.

All of these courses are prerequisites for the credential program.

All credential candidates recommended by CSU, Chico are authorized to teach all students, including English language learners, in the regular classroom. You may also want to qualify for the BCLAD (Bilingual, Cross-cultural, Language, and Academic Development) emphasis if you have skills in Spanish language and culture.

The requirements for the Specialist Credential in Agriculture include a series of agricultural education courses and a student teaching experience. These courses are included in the Agriscience and Education Option. Student teaching is combined with the student teaching experience required for the Single Subject Teaching Credential in Agriculture. If you are interested in obtaining your credentials, confer with the appropriate credential adviser(s) early in your university career. Credential advisers can assist you in planning an educational program that will prepare you for both the BS in Agriculture and the teaching credential requirements.

The Faculty

Lee S. Altier, 1995, Professor, PhD, Cornell U.
Marian W. Baldy, 1971, Professor Emerita, PhD, UC Davis.
Richard W. Baldy, 1970, Professor Emeritus, PhD, UC Davis.
LeRoy N. Barker, 1965, Professor Emeritus, PhD, U VI.
Patrick T. Berends, 2003, Assist Professor, PhD, Kansas St.
Ronald C. Borge, 1974, Pr Voc Inst Emeritus, MS, OH St U.
Manuel S. Borges, 1965, Professor Emeritus, PhD, OK State U.
James R. Burleigh, 1971, Professor Emeritus, PhD, WA State U.
Lucas Calpouzos, 1980, Professor Emeritus, PhD, Harvard U.
A. Charles Crabb, 1999, Dean, Professor, PhD, UC Davis.
Cindy A. Daley, 1998, Assoc Professor, PhD, UC Davis.
David A. Daley, 1990, Coordinator, Professor, PhD, CO State U.
Bradley W. Dodson, 2000, Coordinator, Assoc Professor, PhD, Texas A&M.
Stephen P. Doyle, 2003, Assist Professor, PhD, CO State U.
Lynn Gallagher, 1992, Adjunct Professor, PhD, UC Davis.
Phil Hamilton, 2003, Assoc Professor, PhD, Iowa St U.
Dennis L. Hampton, 1972, Professor Emeritus, Med, UC Davis.
Hentricus C. Jansen, 1976, Professor Emeritus, PhD, UC Berkeley.
Mitchell M. Johns, 1998, Assoc Professor, PhD, Montana State Univ.
Annette E. Levi, 1991, Assoc Professor, PhD, WA State U.
Gary Lindner, 1992, Adjunct Professor, PhD, Clemson Univ.
Michael L. Maynard, 1969, Professor Emeritus, PhD, U Arizona.
Randall G. Mutters, 1996, Lecturer A, PhD, UCR.
Wesley R. Patton, 1969, Professor, PhD, Oregon State U.
Herbert A. Paul, 1970, Professor Emeritus, PhD, U Wyoming.
Lorenzo Pope, 1985, Adjunct Professor, PhD, BYU.
Richard C. Rosecrance, 1998, Assoc Professor, PhD, UC Davis.
Lal Singh, 1969, Professor Emeritus, EdD, OK State U.
Everett R. Southam, 1970, Professor Emeritus, PhD, U Wyoming.
Michael Spiehs, 2003, Assoc Professor, PhD, UC Davis.
Hank Wallace, 1982, Professor Emeritus, PhD, UC Davis.
Agriculture Course Offerings

Please see the section on “Course Description Symbols and Terms” in The University Catalog for an explanation of course description terminology and symbols, the course numbering system, and course units. All courses are lecture and discussion and employ letter grading unless otherwise stated. Some prerequisites may be waived with faculty permission. Many syllabi are available on the Chico Web.

AGRI 180 The University Experience

1.0 Fa/Spr

A college success course for agricultural majors new to California State University, Chico. The course will explore the academic and social opportunities and resources available to promote successful completion of the student’s educational goals. Meets the first half of the semester. Credit/no credit grading only. Formerly AGRI 010.

AGRI 181 Coordinating Group

1.0-2.0 Fa/Spr

Agricultural Activities

This course is offered for 1.0 to 2.0 units. An individualized class designed to develop and refine the student’s ability to organize and coordinate agriculture field days and other related group activities. Maximum of four semesters and/or 4 units toward BS degree. You may take this course more than once for a maximum of 6.0 credits. Credit/no credit grading only. Formerly AGRI 009.

AGRI 198 Special Topics

1.0-3.0 Fa/Spr

This course is offered for special topics offered for 1.0-3.0 units. Typically the topic is offered in a one-semester basis and may vary from term to term and be different for different sections. See The Class Schedule for the specific topic being offered. Formerly AGRI 098.

AGRI 201 Introduction to Agricultural Education

3.0 Fall

Objective, nature, and scope of teaching vocational agriculture. Types of programs and career opportunities in vocational education. Special fee required; see The Class Schedule. Formerly AGRI 100.

AGRI 210 Directed Field Experience

2.0 Fall

Agricultural Education

An individualized class in gaining teaching experience through observation and critique of high school students and teachers in the classroom, at FFA events, and in supervised occupational experiences. Formerly AGRI 101.

AGRI 305 Agricultural Genetics and Biotechnology

4.0 Spring

Prerequisites: ANSC 101 or BIOL 108 or FSSC 101; CHEM 105 or CHEM 111. Mendelian inheritance, gene structure and action, sex-related inheritance, linkage and mapping, polyploidy, population and quantitative inheritance, inbreeding and heterosis. Activities feature techniques in biotechnology with agricultural applications. 3.0 hours lecture, 2.0 hours activity.

AGRI 321 Program Development in Agricultural Education

2.0 Spring

Up-to-date approaches in integrated program development based on occupational opportunities and community needs. Philosophy, organization, and administration of agricultural education programs. Development of curriculum, supervised occupational experience. Future Farmers of America (FFA) and summer programs. Special fee required; see The Class Schedule. Formerly AGRI 209.

AGRI 331 Agricultural Ecology

3.0 Fa/Spr

Prerequisites: Completion of lower division core. An interdisciplinary treatment of physical and biological environments used for agriculture. Historical and ecological nature of agriculture its impact on the landscape and society. Comparison of sustainable and non-sustainable agricultural practices. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see The Class Schedule. Formerly AGRI 111.

AGRI 380A Fair Management and Ag Leadership

3.0 Fall

A study of the California fair system, including budgets, interim events, sponsorships, entertainment, exhibits, and purpose. Development of interpersonal skills needed to develop and coordinate agricultural events. Special fee required; see The Class Schedule. Formerly AGRI 190A.

AGRI 380B Agricultural Leadership

3.0 Spring

and Fair Management

Prerequisites: AGRI 380A or permission of the instructor. Development of communication and organizational skills needed to plan and conduct agricultural education activities, particularly those associated with fairs. Students will update their resumes, be interviewed and selected for leadership roles associated with the College of Agriculture’s spring events calendar. Special fee required; see The Class Schedule. Formerly AGRI 190B.

AGRI 398 Special Topics

1.0-3.0 Spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See The Class Schedule for the specific topic being offered. Formerly AGRI 198.

AGRI 399 Special Problems

1.0-3.0 Fa/Spr

Prerequisites: Upper-division standing. This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in agriculture under direct supervision of a faculty member. You may take this course more than once for a maximum of 6.0 units. Credit/no credit grading only. Formerly AGRI 199.

AGRI 420 Techniques in Vocational Agricultural Instruction

2.0 Spring

Prerequisites: AGRI 201 or faculty permission. Preparation for student teaching in agriculture. Orientation to classroom situations. Development of plans for teaching, including daily lessons and unit plans, utilization of source information, and resources. Class demonstration in teaching procedures, analysis, and evaluation. Special fee required; see The Class Schedule. Formerly AGRI 129.

AGRI 421 Curriculum and Methods in Teaching Agricultural Mechanics

3.0 Spring

Prerequisites: AGRI 331. A study of the design of sustainable, ecologically sound agricultural production systems. Case studies, problem-solving, and simulation modeling will be used to explore the influence of management decisions on the short- and long-term viability of agroecosystems. Formerly AGRI 231.

AGRI 482 Agricultural Issues

3.0 Fa/Spr

Prerequisites: ENGL 130 (or its equivalent) with a grade of C- or higher. A critical examination of major issues confronting agriculture. Students research current issues relevant to the role of agriculture in society. This is a writing proficiency, WP, course. A grade of C- or better certifies writing proficiency for majors. Formerly AGRI 292.

AGRI 490 Agricultural Experimental Research

4.0 Fa/Spr

Prerequisites: AGRI 331. Students will design and engineer applied agriculture research projects that seek to improve the management of agricultural enterprises. Students will learn the most common experimental designs for agricultural research, utilize computer programs to analyze and interpret experimental data and further develop scientific writing skills. 3.0 hours lecture, 3.0 hours laboratory. Special fee required; see The Class Schedule. Formerly AGRI 230A.

AGRI 491 Agricultural Experimental Research

3.0 Fa/Spr

Prerequisites: AGRI 490. This course is a continuation of AGRI 490. Students complete a research project and professional research paper and present research findings through public forums. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see The Class Schedule. Formerly AGRI 230B.

AGRI 498 Special Topics

1.0-3.0 Fa/Spr

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See The Class Schedule for the specific topic being offered. Formerly AGRI 298.

AGRI 499H Honors Research in Agriculture

6.0 Fa/Spr

An intensive 6-unit, one-year course in agricultural research. See School office for details. Open only to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. Formerly AGRI 299H.

AGRI 520 Supervised Teaching: Agriculture

10.0 Fa/Spr

Prerequisites: Acceptance into the fifth-year program in agricultural education. Supervised teaching in public secondary school daily for one semester. Candidate will arrange his/her schedule so that he/she is free from all other obligations. Formerly AGRI 210.

AGRI 521 Curriculum and Methods of Teaching Vocational Agriculture

3.0 Fa/Spr

Prerequisites: Acceptance into the fifth-year program in agricultural education. Principles of curriculum development in agriculture; methods of teaching and organization of teaching material. Formerly AGRI 211.
Agricultural Business Course Offerings

ABUS 101 Introduction to Agricultural Business and Economics
The role of agricultural business in the economy. Introductory economic and business principles and their application to the solution of agricultural problems. Formerly ABUS 080.

ABUS 211 Agricultural Selling and Consulting
Application of selling and consulting techniques for agribusiness firms. Formerly ABUS 111.

ABUS 261 Farm Accounting
Introduction to the principles of farm accounting, farm business record keeping, agribusiness management, financial analysis, and enterprise budgeting. Formerly ABUS 083.

ABUS 262 Management Accounting for Agriculture
Cost concepts as a management tool in agriculture are explored. Budgeting techniques for planning and control and for long-term projects are developed. Formerly ABUS 062.

ABUS 298 Special Topics
This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See The Class Schedule for the specific topic being offered. Formerly ABUS 099.

ABUS 300 Agricultural Business Competition
This course prepares interested students for regional and national Quiz Bowl competition of the American Agricultural Economics Association. Areas of preparation include agricultural business and economics, general agriculture, statistics, economics, accounting, finance management and marketing. You may take this course more than once for a maximum of 8.0 units. Credit/no credit grading only. Formerly ABUS 100.

ABUS 301 Agricultural Production Economics and Quantitative Analysis
Application of microeconomic theory to the agricultural production process, including single and multivariate production and cost functions, price determination in competitive and non-competitive markets and programs. Formerly ABUS 180.

ABUS 311 Agricultural Markets and Pricing
Economic principles applied to the marketing of agricultural products. Function, structure, and operation of agricultural markets. Introduction to the futures market. Trends in marketing of California agricultural crops and livestock, Special fee required; see The Class Schedule. Formerly ABUS 182.

ABUS 312 Wholesaling and Retailing Food Products
This course covers principles and practices of distributing food from producer to consumer. The functions of wholesalers and intermediate handlers, including food brokers, are discussed. An in-depth analysis of the food retail industry is included. Formerly ABUS 212.

ABUS 321 Agribusiness Management
The application of economic and management principles to the planning, control, and organization of agribusiness firms. Linear programming applications, decision trees, inventory control, and equipment replacement. Formerly ABUS 121.

ABUS 327 Agricultural Business Seminar
This course is offered for 1.0-2.0 units. You must register directly with a supervising faculty member. Current topics in agribusiness and industry. Application of business management concepts to agriculture; exploring careers in agribusiness and industry. You may take this course more than once for a maximum of 2.0 units. Formerly ABUS 280.

ABUS 331 Agricultural Management
Survey of microcomputer applications for agribusiness management, emphasizing personnel productivity software, including database manager, advanced spreadsheet, and electronic communication software. Special fee required; see The Class Schedule. Formerly ABUS 181.

ABUS 332 Agribusiness Systems Quantitative Methods
Data drawn from applied agricultural business systems research and technologically based agribusiness systems will be analyzed and interpreted. Programming (mathematics) and regression (statistics) will be introduced as the primary tools to perform these analyses. Students will perform their own analyses and evaluate results of analyses done by others. The evaluation will be done in order to suggest methodological changes and revised data requirements. Journal articles will be reviewed. This course is a prerequisite for other upper-division courses in the ABUS major. 2.0 hours lecture, 2.0 hours activity. Formerly ABUS 130.

ABUS 341 Natural Resource Economics
The economics of renewable natural resource use, management, development, and allocation. Conflicts in use, markets for resources, cases of market failure, and economic conservation will be discussed. Formerly ABUS 184.

ABUS 389 Internship in Agribusiness
Prerequisites: Permission of Internship Coordinator. This course is an internship offered for 1.0-3.0 units. You must register directly with a supervising faculty member. Work experience with selected agribusinesses, including financial institutions, marketing agencies, management firms, farms, ranches, private or public agencies. Experience must be related to business aspects of agriculture. Supervised by faculty and staff of cooperating banks, farms, agencies, and corporations. You may take this course more than once for a maximum of 15.0 units. Credit/no credit grading only. Formerly ABUS 189.

ABUS 390 World Food and Hunger Issues
A study of agricultural problems and policies of developing nations. Emphasis on cultural values; physical, economic, and political constraints; hunger and international trade. This is an approved General Education course. This is an approved Non-Western course. Formerly ABUS 192.

ABUS 398 Special Topics
This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See The Class Schedule for the specific topic being offered. Formerly ABUS 198.

ABUS 399 Special Problems
This course is an independent study of special problems and is offered for 1.0-3.0 units respectively. You may take this course more than once for a maximum of 6.0 units. Formerly ABUS 199.

ABUS 411 Agricultural Marketing Planning
To provide an in-depth understanding of operating marketing planning and implementation. Development of a marketing plan including product and market assessment, financial evaluation justification, a plan of action, and an evaluation/control component. Special fee required; see The Class Schedule. Formerly ABUS 290F.

ABUS 415 Agricultural Price Analysis

ABUS 421 Advanced Agribusiness Management
Agribusiness organization and management. Budgeting, input-output relationships, and enterprise analysis in decision making. Application of economic and management principles. Human resource management, Special fee required; see The Class Schedule. Formerly ABUS 283.

ABUS 425 Cooperatives Seminar
Cooperative principles and philosophy. Types and importance of cooperative activity in the U.S. accounting for cooperative activity. You may take this course more than once for a maximum of 6.0 units. Special fee required; see The Class Schedule. Formerly ABUS 290X.

ABUS 426 Farm Labor
Senior standing; completion of 6 units of upper-division ABUS courses. An examination of the critical role played by labor in the development and vitality of California’s agricultural industry. Emphasis on policy issues related to functioning of labor markets, employment practices, unionization and collective bargaining, immigration, and mechanization. Formerly ABUS 290P.

ABUS 426 Farm Labor
Senior standing; completion of 6 units of upper-division ABUS courses. An examination of the critical role played by labor in the development and vitality of California’s agricultural industry. Emphasis on policy issues related to functioning of labor markets, employment practices, unionization and collective bargaining, immigration, and mechanization. Formerly ABUS 290P.
Agricultural Engineering Technology Course Offerings

AGET 110 Directed Work AGET 1.0-2.0 Fa/Spr
Prerequisites: Faculty permission.
Weekly conferences for students with projects; directed work on the University Farm and elsewhere. Individual and group problems. Maximum of four semesters and/or 4 units toward BS degree. You may take this course more than once for a maximum of 4.0 units. Formerly AGET 099L.

AGET 120 Introduction to Agricultural Mechanics 3.0 Fall
Selection, care, and use of common tools; study of safety, common materials and skills used in electrical, plumbing, woodworking, metal work, and land measurement in the field of agriculture. 2.0 hours lecture, 3.0 hours laboratory. Formerly AGET 120.

AGET 125 Agricultural Welding and Fabrication 3.0 Inquire
A study of welding processes used in the agricultural industry, including arc, oxy, TIG, MIG, submerged arc, and shielded metal. Techniques used in hardfacing, cast iron, aluminum, cutting, fabrication, project design, and weld quality control will be included. 2.0 hours lecture, 2.0 hours laboratory. Formerly AGET 091.

AGET 150 Agricultural Machine Systems 3.0 Fa/Spr
Principles of operation, adjustments, calibration, and safety of wheel and track-type tractors including implements and equipment commonly used in California agriculture. 2.0 hours lecture, 3.0 hours laboratory. Formerly AGET 085.

AGET 155 Small Power Units 2.0 Inquire
The study of small power units and equipment, including engine theory, operation, maintenance, service, safety, and repair. Equipment selection and cost analysis will also be considered. 1.0 hour lecture, 2.0 hours activity. Formerly AGET 084.

AGET 230 Farm Structures 3.0 Inquire
Prerequisites: AGET 120 or equivalent. Methods of construction, use of materials, and animal requirements. Cost estimating. 2.0 hours lecture, 3.0 hours laboratory. Formerly AGET 290.

AGET 340 GPS & GIS in Agriculture and Natural Resource Management 3.0 Spring
Application of Global Positioning Systems (GPS) and Geographic Information Systems (GIS) in agriculture and natural resource management. Identification and delineation of locations and areas; collection, analysis, storage, and retrieval of site specific data for agriculture and natural resource management and monitoring. 2.0 hours lecture, 3.0 hours laboratory. Formerly AGET 196.

AGET 350 Energy Alternatives in Agriculture 3.0 Inquire
A study of energy alternatives currently used in agriculture, including solar, wind, and water. Emphasis on biomass conversions, including anaerobic digestion, fermentation, gasification, and direct combustion. Special fee required; see The Class Schedule. Formerly AGET 175.

AGET 360 Irrigation 3.0 Spring
Prerequisites: PSSC 101 or PSSC 250.
Field practices of irrigation. Evapotranspiration, soil/moisture relationships, water measurement, pumps, wells, drainage, and sprinkler, drip, and surface systems. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see The Class Schedule. Formerly AGET 152.

AGET 389 Internship in Agricultural Engineering Technology 1.0-3.0 Fa/Spr
Prerequisites: Prior approval of academic goals by the Internship Coordinator.
This course is work experience offered for 1.0 to 2.0 units. You must register directly with a supervising faculty member. Work experience with selected farm machinery shop or corporations is to be completed and supervised by faculty and staff of cooperating ranch or industry. You may take this course more than once for a maximum of 15.0 units. Credit/no credit grading only. Formerly AGET 189.

AGET 399 Special Problems 1.0-3.0 Fa/Spr
Prerequisites: Upper-division standing, faculty permission.
This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research/problem solving under direct supervision of a faculty member. You may take this course more than once for a maximum of 6.0 units. Credit/no credit grading only. Formerly AGET 199.

AGET 440 Agricultural Control Systems 3.0 Fall
A study of agricultural equipment (harvester, irrigation systems, etc.) and the computer, electronic, electrical, and mechanical controls involved. The operation, installation, trouble-shooting, and maintenance of control systems in agricultural applications. 2.0 hours lecture, 2.0 hours activity. Formerly AGET 295.

AGET 487 Personnel Safety and Equipment Management 3.0 Spring
Prerequisites: Faculty permission.
Workplace safety, rules and regulations. Equipment selection, maintenance, trends, and economics. Determining equipment requirements and costs. Systems for recording parts, services, and maintenance. 2.0 hours lecture, 2.0 hours activity. Formerly AGET 287.

Animal Science Course Offerings

ANSC 101 Introduction to Animal Science 3.0 Fa/Spr
An overview, using a scientific perspective, of farm animals, highlights anatomy and physiology of farm animals, reproduction, nutrition, animal health, animal products, animal behavior, and pertinent social issues, such as animal rights. Includes human opportunity to influence trait inheritance, population densities, and productivity. 2.0 hours lecture, 3.0 hours laboratory.

This is an approved General Education course. Formerly ANSC 002.

ANSC 110 Directed Work Experience in Animal Sciences 1.0-2.0 Fa/Spr
This course is work experience offered for 1.0 to 2.0 units. You must register directly with a supervising faculty member. Weekly conferences for students with projects; directed work on the University Farm and elsewhere. Individual and group problems. Maximum of four semesters and/or 4 units toward BS degree. You may take this course more than once for a maximum of 4.0 units. Formerly ANSC 009.

ANSC 120 Livestock Skills 3.0 Fall
An introduction to selection, nutrition, health, and management of beef, sheep, swine, and dairy for livestock youth programs, including ethical practices associated with livestock exhibition. This class is designed primarily for students pursuing a career in agricultural education. 2.0 hours lecture, 3.0 hours laboratory. Formerly ANSC 018.
ANSC 160  Veterinary Practices 2.0 Fa/Spr  
Designed to allow the student to become familiar with various vaccines,  
equipment, and restraining techniques used in routine treatment of  
farm animals. Selection of proper materials, veterinary nomenclature, actual  
handling and treatment of farm animals involved. 1.0 hour lecture,  
3.0 hours laboratory. Formerly ANSC 013.

ANSC 171  Principles of Livestock — Beef 1.0 Inquire  
Principles and practices used in the production of commercial herds  
of beef cattle. General husbandry, breeding, feeding, selection, housing,  
marketing, and records keeping. Eight weeks only. Formerly ANSC 015A.

ANSC 172  Principles of Livestock — Sheep 1.0 Inquire  
Principles and practices used in the production of commercial herds  
of sheep. General husbandry, breeding, feeding, selection, housing,  
marketing, and records keeping. Eight weeks only. Formerly ANSC 015B.

ANSC 173  Principles of Livestock — Swine 1.0 Inquire  
Principles and practices used in the production of commercial herds  
of swine. General husbandry, breeding, feeding, selection, housing,  
marketing, and records keeping. Eight weeks only. Formerly ANSC 015C.

ANSC 174  Principles of Livestock — Dairy 1.0 Inquire  
Principles and practices used in the production of commercial herds  
of dairy cows. General husbandry, breeding, feeding, selection, housing,  
marketing, and records keeping. Eight weeks only. Formerly ANSC 015D.

ANSC 175  Basic Horse Science 3.0 Spring  
Principles and practices used in the horse industry. An introduction  
to feeding, breeding, selection, housing, use, health, handling, training,  
tack, and basic equitation. Formerly ANSC 016.

ANSC 198  Special Topics 1.0-3.0 Fa/Spr  
This course is for special topics offered for 1.0-3.0 units. Typically the  
topic is offered on a one-time-only basis and may vary from term to  
term and be different for different sections. See The Class Schedule  
for the specific topic being offered. Formerly ANSC 098.

ANSC 230  Animal Feeds and Nutrition 3.0 Fa/Spr  
An introduction to the nutrition of domestic and wild animals with  
emphasis on appropriate nutrition for various activities. A survey of the  
integration of feed production and animal production systems. Computer  
formulation and analysis of diets to achieve desired performance levels  
of animals. 2.0 hours lecture, 2.0 hours activity. Formerly ANSC 013.

ANSC 250  Live Animal and Carcass Evaluation 3.0 Spring  
Evaluation of market livestock as related to growth and development,  
production efficiency, carcass merit, selection of breeding animals based  
on performance, production records and visual appraisal. Specific refer-  
ence to factors determining carcass value. 2.0 hours seminar, 2.0 hours  
activity. Formerly ANSC 017.

ANSC 260  Advanced Veterinary Practices 3.0 Fall  
Disease control practices and methods as they apply to food animals  
and horses. Includes theory and use of various disease control practices,  
such as vaccination, chemotherapy, and treatments for the various diseases and  
parasites. Students will learn common veterinary practices as applied in animal  
agriculture. 2.0 hours lecture, 3.0 hours laboratory. Formerly ANSC 113.

ANSC 272  Sheep Production and Management 3.0 Fall  
Prerequisites: ANSC 101. 
A study of approved practices in commercial and purebred sheep produc-  
tion with emphasis on production costs, disease, nutrition, genetic selec-  
tion, production records, niche marketing, and contributions of sheep  
to environmental sustainability. 2.0 hours lecture, 3.0 hours laboratory.  
Special fee required; see The Class Schedule. Formerly ANSC 217.

ANSC 273  Swine Production and Management 3.0 Spring  
Prerequisites: ANSC 101. 
A study of approved practices in commercial and purebred swine produc-  
tion with emphasis on production costs, disease, reproduction, nutrition, genetic selec-  
tion, production records and niche marketing. Formerly ANSC 216.

ANSC 301  Intermediate Animal Systems 3.0 Fa/Spr  
Prerequisites: ANSC 101. 
An overview of world and United States animal production systems, empha-  
sizing the scientific principles and management of large and small ruminants  
(beef, dairy, sheep, goats), monogastrics (swine, equine), and well as meat,  
poultry, and aquaculture. 2.0 hours lecture, 3.0 hours laboratory. Special  
fee required; see The Class Schedule. Formerly ANSC 100.

ANSC 320  Advanced Livestock Selection and Carcass Evaluation 3.0 Fall  
Develops skills in quality grading and yield grading animals both live and  
on the rail. Improve skills in selecting animals in pasture conditions and  
develop ability to explain decisions and be able to accurately describe  
their reasons. Numerous field trips to farms and ranches will be required.  
2.0 hours lecture, 3.0 hours laboratory. Formerly ANSC 112.

ANSC 330  Animal Nutrition 3.0 Spring  
Prerequisites: ANSC 101 or BIOL 210. ANSC 230. 
A study of the nutritive requirements of animals for maintenance, growth,  
lactation, reproduction and other bodily functions. Intermediary metabo-  
lism of nutrients, chemical and animal analysis of feedstuffs, design and  
implementation of nutrition studies and writing of a scientific paper.  
2.0 hours seminar, 3.0 hours laboratory. Formerly ANSC 121.

ANSC 340  Reproductive Physiology of Domestic Animals 3.0 Fall  
Prerequisites: ANSC 101 or BIOL 210. 
A study of the nutritive requirements of reproduction in domestic animal species.  
Principles of reproductive anatomy, gamete formation, endocrinology,  
cyclus and parturition. The laboratory experience will emphasize theory  
learned in lecture and will include uses of reproductive technology to  
maximize reproductive efficiency and fertility. 2.0 hours seminar, 3.0  
hours laboratory. Formerly ANSC 123.

ANSC 350  Meat and the Consumer 3.0 Fa/Spr  
Muscle growth and composition, nutritional and health concerns, meat  
safety and advances in product development, preparation and storage;  
2.0 hours lecture, 3.0 hours laboratory. Formerly ANSC 019.

ANSC 360  Animal Health and Disease 3.0 Spring  
Prerequisites: ANSC 101 or BIOL 210. 
A study of disease processes in livestock. Principles of disease organisms  
and the physiology of infection. Mechanisms in which the body combats  
infections, i.e., immune response. Feed health considerations for prevent- 
ion and treatment. 2.0 hours seminar, 2.0 hours activity. Formerly ANSC 122.

ANSC 375  Advanced Horse Science 3.0 Fall  
Prerequisites: ANSC 175, ANSC 230, faculty permission. 
Advanced topics in the study of horses. Advanced studies will include  
breeding, genetics, nutrition, disease and parasite control, exercise physi-  
ology, and management practices of the modern horse enterprise. Formu-  
lation of least-cost rations and planning in the horse industry are studied.  
Formerly ANSC 116.

ANSC 389  Internship in Animal Science 1.0-3.0 Fa/Spr  
Prerequisites: Prior approval of academic goals by the Internship Coordinator.  
This course is an internship offered for 1.0-3.0 units. You must register di-  
rectly with a supervising faculty member. Work experience with selected  
livestock operations is to be completed and supervised by faculty and staff of  
cooperating livestock ranch. You may take this course more than once for a  
maximum of 15.0 units. Credit/no credit grading only. Formerly ANSC 189.

ANSC 398  Special Topics 1.0-3.0 Fa/Spr  
This course is for special topics offered for 1.0-3.0 units. Typically the  
topic is offered on a one-time-only basis and may vary from term to  
term and be different for different sections. See The Class Schedule  
for the specific topic being offered. Formerly ANSC 198.

ANSC 399  Special Problems 1.0-3.0 Fa/Spr  
Prerequisites: Upper-division standing. 
This course is an independent study of a topic or problem and is offered  
for 1.0-3.0 units. Students must register with a supervising faculty mem-  
ber. Study/research in animal science under direct supervision of a fac-  
ulty member. You may take this course more than once for a maximum of  
6.0 units. Credit/no credit grading only. Formerly ANSC 199.

ANSC 440  Anatomy and Physiology of Domestic Animals 4.0 Spring  
Prerequisites: ANSC 101 or BIOL 101; CHEM 107. CHEM 108 is recommended.  
Comparative study of anatomy and physiology of organ systems, with  
major emphasis on farm animals. 3.0 hours lecture, 3.0 hours laboratory.  
Formerly ANSC 110.

ANSC 450  Food Sanitation and Quality Control 3.0 Inquire  
Prerequisites: ANSC 110; CHEM 107 or CHEM 111. 
This course is intended for students involved in producing, selling,  
and handling food products who are interested in a course on principles  
of food sanitation and quality control from a management standpoint.  
Formerly ANSC 124.

ANSC 470  Livestock Production Problems 1.0 Fa/Spr  
Prerequisites: Senior standing or faculty permission. 
Investigation of current and specific problems in the various areas of  
animal production. You may take this course more than once for a  
maximum of 6.0 units. Formerly ANSC 214.
Agriculture

ANSC 471  Beef Production and Management  3.0 Spring
Prerequisites: ANSC 101.
An overview of world and United States beef production systems. Investigation of the segmentation of the beef industry, including seedstock, commercial cow-calf, stocker, feederlot, packer, retailer and consumer. Integrated beef production systems will be evaluated based on consideration of genetics, nutrition, health, reproduction, and product, forage management and marketing. 2.0 hours seminar, 3.0 hours laboratory. Formerly ANSC 215.

ANSC 474  Dairy Production and Management  3.0 Fall
Prerequisites: ANSC 101.
A comprehensive study of large dairy management with emphasis placed on efficient reproduction and nutrition and their profit. Additional studies include evaluation of replacement heifer development scenarios, cow comfort, and record keeping systems. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see The Class Schedule. Formerly ANSC 218.

Plant and Soil Science Course Offerings

PSSC 101  Introduction to Plant Science  3.0 Fa/Spr
Plant structure, growth, reproduction, and responses to the environment. How humans modify plants and environment to grow crops. This is an approved General Education course. Special fee required; see The Class Schedule. Formerly PSSC 002.

PSSC 160  West Coast Crop Production  1.0 Fa/Spr
A study of people, careers, crops, and systems related to crop industries in the area. An opportunity to meet with professionals and learn about the skills required for research, management, and services that support agriculture production. Meets the second half of the semester. Credit/no credit grading only. Formerly PSSC 060.

PSSC 250  Introduction to Soil Science  3.0 Fa/Spr
Prerequisites: CHEM 107 or CHEM 111.
Soil biology, fertility, chemistry, physical properties, taxonomy and their applications to agricultural management and environmental enhancement. Relationships of soils to the world food supply and population. Special fee required; see The Class Schedule. Formerly PSSC 050.

PSSC 274  Greenhouse Management  3.0 OddSp
Greenhouse construction, environment, and management practices, including heating and cooling, irrigation, fertilization, and pest control. Formerly PSSC 174.

PSSC 305  Introduction to Wines  3.0 Fall
Prerequisites: At least junior standing.
Grape-growing, and winemaking in California wine types. Wine and food matching. Sensory evaluation. Special fee required; see The Class Schedule. Formerly PSSC 195.

PSSC 309A  Directed Work in Field and Row Crops  2.0 Fall
Directed work and discussion on all fall aspects of field and row crop production practices applicable to Northern California. Students are encouraged to enroll in PSSC 309B after this course. You may take this course more than once for a maximum of 4.0 units. Formerly PSSC 109A.

PSSC 309B  Directed Work in Field and Row Crops  2.0 Spring
Prerequisites: PSSC 309A or faculty permission.
Directed work and discussion on all spring aspects of field and row crop production practices applicable to Northern California. You may take this course more than once for a maximum of 4.0 units. Formerly PSSC 109B.

PSSC 310A  Directed Work in Orchard Crops  2.0 Spring
Prerequisites: PSSC 101.
Weekly discussions of orchard projects. Group problems and individual instruction emphasizing fruit set and growth. You may take this course more than once for a maximum of 4.0 units. Formerly PSSC 110A.

PSSC 310B  Directed Work in Orchard Crops  2.0 Fall
Prerequisites: PSSC 101.
Weekly discussions of orchard projects. Group problems and individual instruction emphasizing harvesting and transport, marketing, pruning, and training systems. You may take this course more than once for a maximum of 4.0 units. Formerly PSSC 110B.

PSSC 312  Directed Work in Greenhouse Production  2.0 Fa/Spr
Directed work and discussion on all aspects of plant production in the greenhouse environment. Plant species may include ornamentals, crops, and California wildland natives. You may take this course more than once for a maximum of 4.0 units. Formerly PSSC 112.

PSSC 330  Rangeland Resources and Management  3.0 Fall
A survey of North American rangeland resources and the principles of their use and management, including basic plant-animal-soil relationships and multiple use. Formerly PSSC 130.

PSSC 331  Grasses and Grasslands of the Western US  3.0 OddSp
Prerequisites: BIOL 209 or PSSC 101. PSSC 330 is recommended.

PSSC 332  Range Plant Identification  1.0 Inquire
Identification of the 200 most important North American rangeland plants (grasses, forbs, shrubs, trees) in all phenological stages. Participation in statewide and international competition. Formerly PSSC 234.

PSSC 334  Wetland and Riparian Resources and Management  3.0 OddFa
Prerequisites: Completion of lower-division core. History of alteration and loss of wetland and riparian resources. Classification, description, and functions of meadows, marshes, lakes, rivers, and riparian corridors. Principal uses, impacts, and values. Inventory, monitoring, and management of riparian resources. Special fee required; see The Class Schedule. Formerly PSSC 134.

PSSC 340  Economic Entomology  3.0 OddFa
A survey of the structure and function of insects, leading to a fundamental understanding of applied insect ecology and taxonomy. Particular emphasis is placed on arthropod species of economic importance to humans. Special fee required; see The Class Schedule. Formerly PSSC 140.

PSSC 342  Plant Pathology  3.0 EvnFa
Prerequisites: PSSC 101.
Major diseases of agricultural crops; their symptoms, causal agents, and control methods. Consideration of the roles of environment, cultural practices, and genetics on their development. Formerly PSSC 142.

PSSC 343  Introduction to Weed Science  3.0 OddSp
Prerequisites: AGRI 331.
Identification, modes of spread, and population ecology of weeds and other invasive plant species. Biological, cultural, mechanical, and chemical control of weeds and invasive species. Methods of crop/vegetation management to control and reduce weed populations. Special fee required; see The Class Schedule. Formerly PSSC 143.

PSSC 353  Agrichemicals  3.0 OddFa
Prerequisites: CHEM 107 or CHEM 111; PSSC 250.
Laws and regulations, safety, application, properties, mode of action, toxicology, and environmental impacts of pesticides, fertilizers, and other chemicals used in agriculture. Fertilizers are also discussed in relation to plant nutrition and production. Formerly PSSC 153.

PSSC 354  Soil Physical Properties and Production Practices  3.0 Inquire
Prerequisites: PSSC 101, PSSC 250.
The physical properties of texture, structure, density, porosity, and consistency will be examined from a production aspect. Measurement of and changes in these properties will be studied, with interest in the modifications made on the soil by tillage. Recommended for agriculture majors. Formerly PSSC 154.

PSSC 356  Soil Quality and Health  3.0 EvenSp
Prerequisites: PSSC 250 or instructor permission.
Course examines the capacity of the soil to function within natural and managed ecosystems to sustain plant/animal productivity, maintain or enhance water and air quality, and support human health and habitation. Soil quality factors include biological, physical, and chemical soil properties. Special fee required; see The Class Schedule. Formerly PSSC 156.

PSSC 360  Ecology of Crop Production  3.0 EvenSp
Prerequisites: AGRI 331.
Ecological processes governing the structure and behavior of cultivated ecosystems. Emphasis on mechanistic and systems views of the physical and biological environment, photosynthetic productivity, competition, adaptation, nutrient cycling, and energy relations. Special fee required; see The Class Schedule. Formerly PSSC 160.

PSSC 361  Production of Annual Crops  3.0 Fall
This course covers the requirements and cultural practices needed for maximizing yields of annual field crops. Principles affecting growth development and management will be covered. Field experience; students are advised to enroll in PSSC 309A/PSSC 309B. Formerly PSSC 161.

PSSC 363  Forage Crops  3.0 Inquire
Prerequisites: BIOL 209 or PSSC 101 or PSSC 330.
Grasses and legumes; their production and management for irrigated pastures, hay, silage, and seed. Plant characteristics and adaptation. Formerly PSSC 163.
PSSC 364  Seed Production  3.0 EvnFa
Prerequisites: BIOL 209 or PSSC 101 or faculty permission.
Principles and practices of seed-crop production. Federal, state, and
county seed laws. Certified seed program. Seed testing and laboratory
analysis; seed-borne diseases and seed treatments. Special fee required;
see The Class Schedule. Formerly PSSC 144.

PSSC 366  Fruit and Nut Production  3.0 Spring
Prerequisites: Upper-division standing.
Managing and optimizing the fruit and nut production system. Selection
of planting sites and varieties, tree training and pruning, pollination, thin-
n ing, irrigation, mineral nutrition, and pest management are included.
Special fee required; see The Class Schedule. Formerly PSSC 176.

PSSC 389  Internship  1.0-6.0 Fa/Spr
Prerequisites: Upper-division standing, faculty permission.
This course is an internship offered for 1.0-6.0 units. You must register
directly with a supervising faculty member. Internship with private indus-
try, state, federal, international, or non-profit organization. One unit of
credit will be given for every 100 hours of work. Selected topic must be
in a Plant and Soil Science Option area. You may take this course more
than once for a maximum of 15.0 units. Credit/no credit grading only.
Formerly PSSC 189.

PSSC 390  Food Forever: Comparisons of Sustainable  3.0 Fa/Spr
Food Production Systems
How ecological factors, technology, and human values interact to deter-
mine available choices of food and its production. Consequences of these
choices in terms of community structures, resource allocations, and stabili-
ty of agro-ecosystems. This course is designed to be a component of the
Upper-Division Theme on Cross-Cultural Exploration. Not intended for
majors, but open to them. This is an approved General Education course.
This is an approved Non-Western course. Formerly PSSC 100.

PSSC 392  World Food and Fiber Systems  3.0 Fa/Spr
A study and analysis of various world agriculture systems that provide
food and fiber. Environmental, technological, socio-economic, and politi-
cal factors. This is an approved General Education course. This is an ap-
proved Non-Western course. Formerly PSSC 192.

PSSC 398  Special Topics  1.0-3.0 Fa/Spr
This course is for special topics offered for 1.0-3.0 units. Typically the
topic is offered on a one-time-only basis and may vary from term to
term and be different for different sections. See The Class Schedule
for the specific topic being offered. Formerly PSSC 198.

PSSC 399  Special Problems  1.0-3.0 Fa/Spr
This course is an independent study of a topic or problem and is offered
for 1.0-3.0 units. Students must register with a supervising faculty mem-
er. Study/research in plant science/soil science/land stewardship under
direct supervision of a faculty member. You may take this course more
than once for a maximum of 6.0 units. Credit/no credit grading only.
Formerly PSSC 199.

PSSC 433  Wildland Vegetation Ecology  3.0 EvnFa
Prerequisites: PSSC 330 and completion of lower-division core.
Vegetation ecology with special reference to grassland, shrubland, and
woodland communities and ecosystems. Special fee required; see The
Class Schedule. Formerly PSSC 233.

PSSC 436  Vegetation Dynamics and Management  3.0 OddSp
Prerequisites: PSSC 330 and completion of lower-division core.
Dynamics of selected vegetation types of the arid and western U.S., role
and impact of herbivory and fire. Use of grazing and fire in vegetation
management. Formerly PSSC 236.

PSSC 437  Wildland Classification and Inventory  3.0 EvenSp
Prerequisites: PSSC 330 and completion of lower-division core.
Quantitative approaches, methods, and field techniques for the classifica-
tion, description, and inventory of grasslands, shrublands, woodlands,
and forestlands. Special fee required; see The Class Schedule. Formerly
PSSC 237.

PSSC 438  Landscape Ecology  3.0 OddFa
Prerequisites: PSSC 330 and completion of the lower-division core.
Nature and impact of continuity and patchiness, of plant and animal
movement and of material flow on the structure and dynamics of
wildland and agrarian landscapes. Special fee required; see The Class
Schedule. Formerly PSSC 238.

PSSC 441  Principles of Integrated Pest Management  3.0 EvenSp
Prerequisites: AGRI 311, PSSC 340 or PSSC 342 or PSSC 344.
An introduction to the principles and mechanisms of integrated management
of insect pests, plant pathogenes, and weeds, dealing with such areas as the
agro-ecosystem, population dynamics, and specific approaches to pest man-
gagement. Special fee required; see The Class Schedule. Formerly PSSC 241.

PSSC 451  Soil Genesis and Classification  3.0 OddFa
Prerequisites: PSSC 250 or faculty permission.
A study of soils, their development, and classification. A study of soil
properties, including mineralogy, texture, structure, and biological
activity. Special fee required; see The Class Schedule. Formerly PSSC 251.

PSSC 452  Computer Application in Irrigation and Soils  2.0 Inquire
Prerequisites: AGET 360 or PSSC 250.
Computer applications in soils and irrigation, emphasizing hands-on use of
various application programs, including irrigation scheduling, soil salinity,
systems, and land-leveling. Formerly PSSC 252.

PSSC 453  Soil Fertility and Plant Nutrition  3.0 EvnFa
Prerequisites: PSSC 250.
Properties of soils, fertilizers, and plant materials. Soil amendments and
soil reaction effects on plants. Fertilizer usage. Special fee required; see
The Class Schedule. Formerly PSSC 253.

PSSC 456  Water Quality, Saline Soils  3.0 Inquire
Prerequisites: AGET 360 or faculty permission.
Irrigation water quality, soil salinity, and drainage as related to yield
reduction in agricultural production. Special fee required; see The Class
Schedule. Formerly PSSC 256.

PSSC 458  Irrigation Systems  3.0 Inquire
Prerequisites: AGET 360 or faculty permission.
Design of sprinkler, drip, furrow, and surface irrigation systems.
Includes pump, pipeline, and economics. Formerly PSSC 258.

PSSC 464  Plant Reproduction Systems  3.0 OddSp
Prerequisites: AGET 380 or faculty permission.
Principles and practices of sexual and asexual reproduction. Physiologi-
cal, environmental, and industry requirements for quality seed produc-
tion, certification. Asexual propagation through cuttings, grafting, bud-
ging, micro-propagation, somatic embryogenesis. Special fee required;
see The Class Schedule. Formerly PSSC 244.

PSSC 478  Plant Tissue Culture  3.0 Inquire
Prerequisites: BIOL 414.
Principles of tissue culture and related methods. Use in research, plant
breeding, and propagation of ornamental, vegetable, agronomic, and fruit
crops. Laboratory organization, media, and current research. Special fee
required; see The Class Schedule. Formerly PSSC 278.

PSSC 489  Internship  1.0-3.0 Fa/Spr
Prerequisites: PSSC 389, senior/graduate standing, faculty permission.
Eight-week or equivalent internship with private industry, state, federal,
in-ternational, or non-profit organization. Selected topic must be in a PSSC
option area. You may take this course more than once for a maximum of
15.0 units. Credit/no credit grading only. Formerly PSSC 289.

PSSC 498  Special Topics  1.0-3.0 Fa/Spr
This course is for special topics offered for 1.0-3.0 units. Typically the
topic is offered on a one-time-only basis and may vary from term to
term and be different for different sections. See The Class Schedule
for the specific topic being offered. Formerly PSSC 298.