Program
BS in Agriculture
Options in:
   Agricultural Science and Education
   Animal Science
   Crops, Horticulture, and Land
   Resource Management
BS in Agricultural Business
BS in Animal Science
Minor in Agriculture
Minor in Agricultural Business
Certificate in Plant Protection
Pre-professional Advising:
   Veterinary Medicine
Teaching Credentials:
   Single Subject in Agriculture
   Agriculture Specialist Instruction

Agriculture is and 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 theoretical knowledge and practical experience—both very necessary in becoming the future leaders of this important economic sector. Students learn through an integrated 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 science; and crops, horticulture, and land resource management. 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 University Farm, also known as 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 provide 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 variety of crops are grown at the University Farm. It has excellent orchards and croplands, and is stocked with many head of registered animals.

Barns, shops, greenhouses, orchards and laboratories at the University Farm, 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 conducted by faculty and staff.

Career Outlook
Career opportunities appear excellent. 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.

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, agrochemical 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 advisor or view it and other current advising information at http://em.csuchico.edu/aapp/ProgramSearch.

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.

Diversity Course Requirements: 6 units
See “Diversity Requirement” in the University Catalog. Most courses taken to satisfy these requirements may also apply to General Education.

U.S. History, Constitution, and American Ideals: 6 units
See “U.S. History, Constitution, and American Ideals” under “Bachelor’s Degree Requirements”. For this major, this requirement is normally fulfilled by completing HIST 130 and POLS 155 or approved equivalents. For this major, HIST 130 may also be applied to General Education Breadth Area C1, C2, or C3, and POLS 155 may also be applied to General Education Breadth Area D1, D2, or D3.

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 to receive WP credit. See the Class Schedule for the designated WP courses for each semester. You must pass ENGL 130 (or its equivalent) with a C- or better before you may register for a WP course.

Course Requirements for the Major: 82-83 units
Completion of 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 major core program requirements.

Major Core Program: 43 units
Lower-Division Core: 33 units
2 courses required:
AGRI 180 The University Experience 1.0 FS
MATH 105 Statistics 3.0 FS*
Prerequisites: Completion of ELM requirement.
1 course selected from:
CHEM 107 Gen Chem for Applied Sciences 4.0 FS*
Prerequisites: Intermediate Algebra.
CHEM 111 General Chemistry 4.0 FS*
Prerequisites: Second-year high school algebra; one year high school chemistry. (One year of high school physics and one year of high school mathematics past Algebra II are recommended.)
1 course selected from:
CHEM 108 Organic Chem for Applied Sci 4.0 FS
Prerequisites: CHEM 107 or CHEM 111 or equivalent.
CHEM 112 General Chemistry 4.0 FS
Prerequisites: CHEM 111 with a grade of C- or higher.
1 course selected from:
ABUS 101 Intro to Ag Business/Economics 3.0 FS*
ABUS 261 Farm Accounting 3.0 FS
1 course selected from:
AGET 120 Intro to Ag Mechanics 3.0 FA
AGET 150 Agricultural Machine Systems 3.0 FS

Students selecting the Option in Agricultural Science and Education must complete both AGET 120 and AGET 150. The additional course counts toward elective units.

1 course selected from:
AGRI 301 Introduction to Animal Science 3.0 FS*
AGRI 330 Animal Nutrition 3.0 FS
Prerequisites: Completion of ELM requirement.

1 course selected from:
PSSC 101 Introduction to Plant Science 3.0 FS*
PSSC 250 Introduction to Soil Science 3.0 FS
Prerequisites: CHEM 107 or CHEM 111.

Note: Students selecting the Option in Animal Science must complete both ANSC 101 and ANSC 230. The additional course counts toward elective units. Students selecting the Option in Agricultural Science and Education must complete ANSC 101.

1 course selected from:
PSSC 101 Introduction to Plant Science 3.0 FS*
PSSC 250 Introduction to Soil Science 3.0 FS
Prerequisites: CHEM 107 or CHEM 111.

Note: Students selecting the Option in Crops, Horticulture, and Land Resource Management must complete both PSSC 101 and PSSC 250. The additional course counts toward elective units.

9 units selected from:
Any combination of lower division courses in Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant Science (PSSC), and Agricultural Business (ABUS). All courses must be approved by your advisor.

Upper-Division Core: 10 units
3 courses required:
AGRI 331 Agricultural Ecology 3.0 FS
AGRI 482 Agricultural Issues 3.0 FS WP
Prerequisites: CHEM 111 or (its equivalent) with a grade of C- or higher.
AGRI 490 Agricultural Experimental Res 4.0 FS
Prerequisites: AGRI 331.

Major Option Course Requirements: 39-40 units
The following courses, or their approved transfer equivalents, are required depending upon the option chosen. Students must select one of the following options for completion of the major course requirements.

The Option in Agricultural Science and Education: 40 units
This option prepares students for careers in the broad field of agriculture or for careers in teaching at the secondary level. The option consists, therefore, of two parallel advising patterns: Agricultural Science and Agricultural Education. The Agricultural Science area of study prepares students for diverse careers in agricultural production where the integration of animal, plant, and agribusiness knowledge and skills is required. The Agricultural Education area of study prepares students to receive a secondary teaching credential in agriculture.

Option Core: 25 units
Genetics
1 course required:
AGRI 305 Agri Genetics & Biotechnology 4.0 SP
Prerequisites: ANSC 101 or PSSC 101; CHEM 107 or CHEM 111.

Animal Science
2 courses selected from:
ANSC 101 Intermediate Animal Systems 3.0 FS
Prerequisites: ANSC 101.
ANSC 330 Animal Nutrition 3.0 FS
Prerequisites: ANSC 101, ANSC 230.
ANSC 340 Repro Physiol Domestic Animals 3.0 FA
Prerequisites: ANSC 101.
ANSC 360 Animal Health and Disease 3.0 SP
Prerequisites: ANSC 101.

Plant and Soil Science
2 courses selected from:
PSSC 274 Greenhouse Management 3.0 FA
Prerequisites: CHEM 107 or CHEM 111; PSSC 250.
PSSC 356 Soil Quality and Health 3.0 S2
Prerequisites: PSSC 250 or instructor permission.
PSSC 360 Ecology of Crop Production 3.0 S2
Prerequisites: AGRI 331 or PSSC 101.
PSSC 361 Production of Annual Crops 3.0 FA
Prerequisites: PSSC 101.
PSSC 366 Fruit and Nut Production 3.0 SP
Prerequisites: PSSC 101.

Agricultural Engineering Technology
1 course selected from:
AGET 340 GPS/GIS in Ag/Nat Res Mgmt 3.0 FA
Prerequisites: PSSC 101 or PSSC 250 or faculty permission.

Agricultural Business
1 course selected from:
ABUS 321 Agribusiness Management 3.0 FS
Prerequisites: ABUS 101 or equivalent.
1 course selected from:

AGRI 432 Holistic Management 3.0 F2
PSSC 330 Rangeland Resources/Management 3.0 FA
PSSC 334 Wetland/Riparian Res and Mgmt 3.0 F1

Prerequisites: Completion of lower-division core or faculty permission.

Area of Study: 15 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 core requirements. Courses must be approved in advance by the academic advisor.

Agricultural Science Area of Study: 15 units
15 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: 15 units
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 Agriculture. 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 420 Tech in Vocational Ag Instructor 2.0 SP
AGRI 421 Curric/Method Tch Ag Mechanics 3.0 SP
AGET 120 Intro to Agricultural Education 3.0 SP

1 course selected from:

AGRI 321 Agribusiness Management 3.0 FS
AGRI 331 Ag Markets and Pricing 3.0 FS
AGRI 332 Agricultural Mgmt Info Systems 3.0 FS

Area of Study: 14-15 units
14-15 units selected from:
Courses must be selected in advance and approved by the advisor. 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
3 courses required:
ABUS 321 Agribusines Management 3.0 FS
Prerequisites: ABUS 101 or equivalent.
ANSC 320 Advanced Livestock Selection 3.0 FA
Prerequisites: ANSC 101.
ANSC 350 Meat and the Consumer 3.0 FS
Prerequisites: ANSC 101.

1 course selected from:
PSSC 330 Rangeland Resources/Management 3.0 FA
Prerequisites: ANSC 101 or PSSC 101.
PSSC 363 Forage Crops 3.0 Inq
Prerequisites: PSSC 101 or PSSC 330.

3 units selected from:
Select an additional 3 units in consultation with your advisor.

Animal Industry Area of Study: 15 units
4 courses required:
ABUS 211 Ag Selling & Consulting 3.0 SP
Prerequisites: ABUS 101.
ABUS 311 Ag Markets and Pricing 3.0 FS
Prerequisites: ABUS 101.
ABUS 321 Agribusiness Management 3.0 FS
Prerequisites: ABUS 101 or equivalent.
ABUS 331 Agricultural Mgmt Info Systems 3.0 FS

Area of Study: 14-15 units
14-15 units selected from:
Courses must be selected in advance and approved by the advisor. 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
3 courses required:
ABUS 321 Agribusines Management 3.0 FS
Prerequisites: ABUS 101 or equivalent.
ANSC 320 Advanced Livestock Selection 3.0 FA
Prerequisites: ANSC 101.
ANSC 350 Meat and the Consumer 3.0 FS
Prerequisites: ANSC 101.

1 course selected from:
PSSC 330 Rangeland Resources/Management 3.0 FA
Prerequisites: ANSC 101 or PSSC 101.
PSSC 363 Forage Crops 3.0 Inq
Prerequisites: PSSC 101 or PSSC 330.

3 units selected from:
Select an additional 3 units in consultation with your advisor.

Food Animal Veterinary Medicine Area of Study: 14-15 units
3 courses required:
BIOL 151 Prin of Cell and Molec Biology 4.0 FS
Prerequisites: Recommend CHEM 111 or concurrent enrollment.
CHEM 270 Organic Chemistry 4.0 FS
CHEM 370 Organic Chemistry 3.0 FS
Prerequisites: CHEM 270 with a grade of C- or higher.

1 course selected from:
BIOL 152 Prin Ecol, Evol, Org Biology 4.0 SP
Prerequisites: BIOL 151 or faculty permission; recommend CHEM 112 or concurrent enrollment.
BIOL 370 Advanced Zoology 3.0 FS
Prerequisites: BIOL 151, BIOL 152, and BIOL 153, or faculty permission.

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 PHYHS 202A, PHYHS 202B, and CHEM 451. 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 Crops, Horticulture, and Land Resource Management: 39-40 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 production practices. Career opportunities may be found in the agricultural production industry, in agricultural research, and in agricultural consulting, assistance, and regulation.

Option Core: 12 units
1 course selected from:
PSSC 356 Soil Quality and Health 3.0 S2
Prerequisites: PSSC 250 or instructor permission.
PSSC 453 Soil Fert & Plant Nutrition 3.0 F2
Prerequisites: PSSC 250.

1 course selected from:
BIOL 414 Plant Physiolog 4.0 FS
Prerequisites: BIOL 108 or BIOL 153; CHEM 108 or CHEM 270; or faculty permission.
BIOL 448 Plant Diversity/Identification 4.0 SP
Prerequisites: BIOL 152 or faculty permission.

1 course selected from:
ABUS 321 Agribusiness Management 3.0 FS
Prerequisites: ABUS 101 or equivalent.

The Option in Crops, Horticulture, and Land Resource Management: 39-40 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 production practices. Career opportunities may be found in the agricultural production industry, in agricultural research, and in agricultural consulting, assistance, and regulation.

Option Core: 12 units
1 course selected from:
PSSC 356 Soil Quality and Health 3.0 S2
Prerequisites: PSSC 250 or instructor permission.
PSSC 453 Soil Fert & Plant Nutrition 3.0 F2
Prerequisites: PSSC 250.

1 course selected from:
BIOL 414 Plant Physiolog 4.0 FS
Prerequisites: BIOL 108 or BIOL 153; CHEM 108 or CHEM 270; or faculty permission.
BIOL 448 Plant Diversity/Identification 4.0 SP
Prerequisites: BIOL 152 or faculty permission.

1 course selected from:
ABUS 321 Agribusiness Management 3.0 FS
Prerequisites: ABUS 101 or equivalent.
1. You must take 6 units of Honors in the Major course work. All 6 units must be upper division. Some common features of Honors in the Major program are:

- **6 units of Honors in the Major course work:** All 6 units must be upper division.
- **Students must complete the 6 units of course work over the two semesters of their senior year.**
- **Your cumulative GPA should be at least 3.5 or within the top 5% of majors in your department.**
- **Your GPA must be at least 3.5 or within the top 5% of majors in your department.**
- **Most students apply for or are invited to participate in Honors in the Major during the second semester of their junior year.**
- **You must complete the 6 units of course work over the two semesters of their senior year.**
- **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 advisor to apply.

**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 advisor or view it and other current advising information at http://em.csuchico.edu/aap/ProgramSearch.

**Please see the General Education, 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 to receive WP credit. See the Class Schedule for the designated WP courses for each semester. You must pass ENGL 130 (or its equivalent) with a C- or better before you may register for a WP course.

Course Requirements for the Major: 83-84 units

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

Lower-Division Requirements: 32-33 units

<table>
<thead>
<tr>
<th>6 courses required:</th>
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</thead>
<tbody>
<tr>
<td>ABUS 101 Intro to Ag Business/Economics</td>
<td>3.0 FS *</td>
</tr>
<tr>
<td>ABUS 261 Farm Accounting</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>ABUS 262 Agric Accounting for Ag</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: ABUS 261 or ACCT 201</td>
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<tr>
<td>AGRI 180 The University Experience</td>
<td>1.0 FS</td>
</tr>
<tr>
<td>CHEM 107 Gen Chem for Applied Sciences</td>
<td>4.0 FS *</td>
</tr>
<tr>
<td>Prerequisites: Intermediate Algebra</td>
<td></td>
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<tr>
<td>ECON 102 Principles of Macro Analysis</td>
<td>3.0 FS *</td>
</tr>
<tr>
<td>2 courses selected from:</td>
<td></td>
</tr>
<tr>
<td>ANSC 101 Introduction to Animal Science</td>
<td>3.0 FS *</td>
</tr>
<tr>
<td>PSSC 101 Introduction to Plant Science</td>
<td>3.0 FS *</td>
</tr>
<tr>
<td>PSSC 250 Introduction to Soil Science</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: CHEM 107 or CHEM 111</td>
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<tr>
<td>1 course selected from:</td>
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<tr>
<td>MATH 105 Statistics</td>
<td>3.0 FS *</td>
</tr>
<tr>
<td>Prerequisites: Completion of ELM requirement.</td>
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</tr>
<tr>
<td>MATH 105H Statistics - Honors</td>
<td>3.0 FA *</td>
</tr>
<tr>
<td>Prerequisites: Completion of ELM requirement, acceptance into the Honors in General Education Program.</td>
<td></td>
</tr>
<tr>
<td>MATH 109 Survey of Calculus</td>
<td>4.0 FS *</td>
</tr>
<tr>
<td>Prerequisites: Completion of ELM requirement; MATH 118, MATH 119 (or High School equivalents).</td>
<td></td>
</tr>
<tr>
<td>MATH 119 Precalculus Mathematics</td>
<td>4.0 FS *</td>
</tr>
<tr>
<td>Prerequisites: Completion of ELM requirement, and either 1/2 year of high school trigonometry or MATH 118.</td>
<td></td>
</tr>
<tr>
<td>MATH 120 Analytic Geometry and Calculus</td>
<td>4.0 FS *</td>
</tr>
<tr>
<td>Prerequisites: Completion of ELM requirement; both MATH 118 and MATH 119 (or high school equivalent); a score that meets department guidelines on a department administered calculus readiness exam.</td>
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<tr>
<td>6 units selected from:</td>
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<tr>
<td>Any lower-division Agricultural Business (ABUS), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant and Soil Science (PSSC), or Agriculture (AGRI) course.</td>
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</tr>
</tbody>
</table>

Upper-Division Requirements: 51 units

<table>
<thead>
<tr>
<th>11 courses required:</th>
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</thead>
<tbody>
<tr>
<td>ABUS 301 Ag Production Econ Analysis</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: ABUS 101 or ECON 103</td>
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<tr>
<td>ABUS 311 Ag Markets and Pricing</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: ABUS 311</td>
<td></td>
</tr>
<tr>
<td>ABUS 321 Agribusiness Management</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: ABUS 321</td>
<td></td>
</tr>
<tr>
<td>ABUS 331 Agricultural Mgmt Info Systems</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>ABUS 415 Agricultural Price Analysis</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: ABUS 301 and MATH 105.</td>
<td></td>
</tr>
<tr>
<td>ABUS 421 Advanced Agribusiness Mgmt</td>
<td>3.0 SP</td>
</tr>
<tr>
<td>Prerequisites: ABUS 301, ABUS 321.</td>
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<tr>
<td>ABUS 451 Agricultural Policy</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: Senior standing, ABUS 101, ECON 102.</td>
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<tr>
<td>ABUS 465 Agricultural Finance</td>
<td>3.0 SP</td>
</tr>
<tr>
<td>Prerequisites: ABUS 101 and ABUS 261.</td>
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<tr>
<td>AGRI 331 Agricultural Ecology</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: PSSC 101 or PSSC 250.</td>
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<tr>
<td>AGRI 482 Agricultural Issues</td>
<td>3.0 FS WP</td>
</tr>
<tr>
<td>Prerequisites: ENGL 130 (or its equivalent) with a grade of C- or higher.</td>
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<tr>
<td>BLAW 302 Managing the Legal Environment</td>
<td>3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: At least junior standing.</td>
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<tr>
<td>1 course selected from:</td>
<td></td>
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<tr>
<td>ABUS 389 Internship in Agribusiness</td>
<td>1.0-3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: Permission of Internship Coordinator.</td>
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<tr>
<td>AGET 389 Internship</td>
<td>1.0-3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: Prior approval of academic goals by the Internship Coordinator.</td>
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<tr>
<td>ANSC 389 Internship in ANSC</td>
<td>1.0-3.0 FS</td>
</tr>
<tr>
<td>Prerequisites: Prior approval of academic goals by the Internship Coordinator.</td>
<td></td>
</tr>
<tr>
<td>PSSC 389 Internship</td>
<td>1.0-6.0 FS</td>
</tr>
<tr>
<td>Prerequisites: Junior standing, faculty permission.</td>
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<tr>
<td>3 units selected from:</td>
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<tr>
<td>Any upper-division College of Agriculture courses selected with approval of your advisor. Nine of the 12 units should be Agricultural Business courses.</td>
<td></td>
</tr>
</tbody>
</table>

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 advisor 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 advisor 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 requires 6 units of honors course work completed over two semesters. 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 academic competition. Such experience is valuable for graduate school and professional life. 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.

Some common features of Honors in the Major program are:

1. You must take 6 units of Honors in the Major course work. All 6 units are honors classes (marked by a suffix of H), and at least 3 of these units are independent study (399H, 499H, 599H) 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 for your major 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% of majors in your department.
4. Your GPA in your major should be at least 3.5 or within the top 5% 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 junior 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 advisor to apply.

The Bachelor of Science in Animal Science

This academic program was approved effective Fall 2009.

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.
Agriculture

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 advisor or view it and other current advising information at http://em.csuchico.edu/aap/ProgramSearch.

Please see the General Education, 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 to receive WP credit. See the Class Schedule for the designated WP courses for each semester. You must pass ENGL 130 (or its equivalent) with a C- or better before you may register for a WP course.

Course Requirements for the Major: 83 units
Completion of the following courses, or their approved transfer equivalents, are required of all candidates for this degree.

Lower-Division Requirements: 33 units

2 courses required:
AGRI 180 The University Experience 1.0 FS
MATH 105 Statistics 3.0 FS
Prerequisites: Completion of ELM requirement.

1 course selected from:
CHEM 107 Gen Chem for Applied Sciences 4.0 FS
Prerequisites: Intermediate Algebra.
CHEM 111 General Chemistry 4.0 FS
Prerequisites: Second-year high school algebra; one year high school chemistry. (One year of high school physics and one year of high school mathematics past Algebra II are recommended.)

1 course selected from:
CHEM 108 Organic Chem for Applied Science 4.0 FS
Prerequisites: CHEM 107 or CHEM 111 or equivalent.
CHEM 112 General Chemistry 4.0 FS
Prerequisites: CHEM 111 with a grade of C- or higher.

2 courses required:
ANSC 101 Introduction to Animal Science 3.0 FS
ANSC 230 Animal Feeds and Nutrition 3.0 FS

1 course selected from:
ABUS 101 Intro to Ag Business/Economics 3.0 FS
ABUS 261 Farm Accounting 3.0 FS

1 course selected from:
AGET 120 Intro to Ag Mechanics 3.0 FA
AGET 150 Agricultural Machine Systems 3.0 FS

1 course selected from:
PSSC 101 Introduction to Plant Science 3.0 FS
PSSC 250 Introduction to Soil Science 3.0 FS
Prerequisites: CHEM 107 or CHEM 111.

6 units selected from:
Any combination of lower division courses in Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant Science (PSSC), Agricultural Business (ABUS), Biology (BIOL), and Chemistry (CHEM). All courses must be approved by your advisor.

Upper-Division Requirements: 50 units

9 courses required:
AGRI 305 Agri Genetics & Biotechnology 4.0 SP
Prerequisites: ANSC 101 or PSSC 101; CHEM 107 or CHEM 111.
AGRI 331 Agricultural Ecology 3.0 FS
Prerequisites: PSSC 101 or PSSC 250.
AGRI 482 Agricultural Issues 3.0 FS WP
Prerequisites: ENGL 130 (or its equivalent) with a grade of C- or higher.
AGRI 490 Agricultural Experimental Res 4.0 FS
Prerequisites: AGRI 331.
ANSC 301 Intermediate Animal Systems 3.0 FS
Prerequisites: ANSC 101.
ANSC 330 Animal Nutrition 3.0 FS
Prerequisites: ANSC 101. ANSC 230 is a recommended prerequisite.
ANSC 340 Repro Physiol Domestic Animals 3.0 FA
Prerequisites: ANSC 101.
ANSC 360 Animal Health and Disease 3.0 SP
Prerequisites: ANSC 101.
ANSC 440 Anat/Physiol Domestic Animals 3.0 FS
Prerequisites: ANSC 101,CHEM 107. CHEM 108 is recommended.

2 courses selected from:
ANSC 350 Meat and the Consumer 3.0 FS
Prerequisites: ANSC 101.
ANSC 471 Beef Production & Management 3.0 SP
Prerequisites: ANSC 101.
ANSC 474 Dairy Production & Management 3.0 FA
Prerequisites: ANSC 101.

15 units selected from:
Any combination of upper division courses in Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant Science (PSSC), Agricultural Business (ABUS), Biology (BIOL), and Chemistry (CHEM). All courses must be approved by your advisor. A minimum of three UD ABUS units are recommended.

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 advisor 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 advisor 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 requires 6 units of honors course work completed over two semesters. 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 academic competition. Such experience is valuable for graduate school and professional life. 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.

Some common features of Honors in the Major program are:
1. You must take 6 units of Honors in the Major course work. All 6 units are honors classes (marked by a suffix of H), and at least 3 of these units are independent study (399H, 499H, 599H) 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 for your major 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% of majors in your department.
4. Your GPA in your major should be at least 3.5 or within the top 5% 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 junior 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 advisor to apply.

The Minor in Agriculture
Course Requirements for the Minor: 24 units
The following courses, or their approved transfer equivalents, are required of all candidates for this minor.
The Minor in Agricultural Business

Course Requirements for the Minor: 27 units

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

2 courses required:
- ABUS 465 Agricultural Finance 3.0 SP
  Prerequisites: ABUS 101 and ABUS 261.
- MATH 105 Statistics 3.0 FS *
  Prerequisites: Completion of ELM requirement.

1 course selected from:
- ANSC 101 Introduction to Animal Science 3.0 FS *
- PSSC 101 Introduction to Plant Science 3.0 FS *
- PSSC 250 Principles of Micro Analysis 3.0 FS *

1 course selected from:
- ABUS 465 Agricultural Finance 3.0 SP
  Prerequisites: ABUS 101 and ABUS 261.
- MATH 105 Statistics 3.0 FS *
  Prerequisites: Completion of ELM requirement.

1 course selected from:
- ANSC 101 Introduction to Animal Science 3.0 FS *
- PSSC 101 Introduction to Plant Science 3.0 FS *
- PSSC 250 Principles of Micro Analysis 3.0 FS *

12 units selected from:
- Any upper-division courses in AGRI, ANSC, or PSSC.

Written Notice

Departmental approval is required before you begin course work for this minor. Approval can be obtained by providing written notice of your intention to declare this minor to the department office.

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 *
  Prerequisites: Intermediate Algebra
- CHEM 111 General Chemistry 4.0 FS *
  Prerequisites: Second-year high school algebra, one year high school chemistry, 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
  Prerequisites: PSSC 101 or PSSC 250.
- PSSC 101 Introduction to Soil Science 3.0 FS *
- PSSC 250 Introduction to Plant Science 3.0 FS *

Factors Affecting Crop Health: 12 units

4 courses selected from:
- BIOL 341 Agri Entomology/Insect Control 3.0 SP
  Prerequisites: BIOL 101 or BIOL 108.
- PSSC 340 Economic Entomology 3.0 FA
  Prerequisites: PSSC 101.
- PSSC 342 Plant Pathology 3.0 F2
  Prerequisites: PSSC 101.
- PSSC 343 Introduction to Weed Sci 3.0 SP
  Prerequisites: AGRI 331 or PSSC 101.
- PSSC 453 Soil Test & Plant Nutrition 3.0 F2
  Prerequisites: PSSC 250.

Pest Management Systems and Methods: 9 units

3 courses selected from:
- AGRI 432 Holistic Management 3.0 F2
- PSSC 353 Plant Protection Materials 3.0 FA
  Prerequisites: CHEM 107 or CHEM 111; PSSC 250.
- PSSC 356 Soil Quality and Health 3.0 S2
  Prerequisites: PSSC 250 or instructor permission.

Production Systems: 12 units

12 units selected from:
- AGET 360 Irrigation 3.0 SP
  Prerequisites: PSSC 101 or PSSC 250 or faculty permission.
- PSSC 274 Greenhouse Management 3.0 FA
- PSSC 309A Dir Work in Field/Row Crops 2.0 FA
  Prerequisites: PSSC 101.
- PSSC 309B Dir Work in Field/Row Crops 2.0 SP
  Prerequisites: PSSC 101 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 101.
- PSSC 312 Dir Work in Greenhouse Prod 2.0 FS
  Prerequisites: PSSC 101.
- PSSC 330 Rangeland Resources/Management 3.0 FA
  Prerequisites: ANSC 101 or PSSC 101.
- PSSC 361 Production of Annual Crops 3.0 FA
  Prerequisites: PSSC 101.
- PSSC 366 Fruit and Nut Production 3.0 SP
  Prerequisites: PSSC 101.

The Single Subject Matter Preparation Program in Agriculture and the Specialist Teaching Credential in Agriculture

There are two credentials available for students who wish to pursue a career as an agricultural education teacher in California: the Single Subject Teaching Credential and the Agriculture Specialist Instruction Credential. The Single Subject Teaching Credential in Agriculture authorizes the holder to teach in the classroom. Candidates who fulfill the requirements for the Agriculture Specialist Instruction Credential are prepared to teach in out-of-classroom settings such as serving as an FFA advisor 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. Candidates may also demonstrate subject matter competence by successfully passing the appropriate California Subject examinations for Teachers (CSET). The subject matter preparation advisor 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 471, 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 Agriculture Specialist Instruction Credential
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 experi-
ence required for the Single Subject Teaching Credential in Agriculture.
If you are interested in obtaining your credentials, confer with the ap-
propriate credential advisor(s) early in your university career. Credential
advisors 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.
Mollie Aschenbrener, 2008, Lecturer, PhD, U Missouri.
Elizabeth A. Boyd, 2008, Assist Professor, PhD, UC Riverside.
Clay Carlson, 2000, Lecturer, MS, U Arizona.
Kuo-Liang (Matt) Chang, 2007, Assist Professor, PhD, U Utah.
Cynthia A. Daley, 1998, Professor, PhD, UC Davis.
David A. Daley, 1990, Coordinator, Professor, PhD, Colorado State U.
Bradley W. Dodson, 2000, Coordinator, Assoc Professor, PhD, Texas A&M U.
Stephen P. Doyle, 2003, Assist Professor, PhD, Colorado State U.
Mitchell M. Johns, 1998, Assoc Professor, PhD, Montana State U.
Celina R. Johnson, 2005, Assist Professor, PhD, Oklahoma State U.
Carrie Monlux, 2003, Lecturer, PhD, Texas A&M U.
Richard C. Rosecrance, 1998, Assoc Professor, PhD, UC Davis.
Jennifer A. Ryder Fox, 2006, Dean, Professor, PhD, New Mexico State U.
Westley Schager, 2004, Lecturer, PhD, Washington State U.
Baohui Song, 2007, Assist Professor, PhD, U Kentucky.
Michael Spiees, 2003, Assoc Professor, EdD, UC Davis.

Emeritus Faculty
Marian W. Baldy, 1971, Professor Emerita, PhD, UC Davis.
Richard W. Baldy, 1970, Professor Emeritus, PhD, UC Davis.
Ronald C. Borge, 1974, Pr Voc Ins Emeritus, MS, Ohio State U.
A. Charles Crabb, 1999, Professor Emeritus, PhD, UC Davis.
Henricus C. Jansen, 1976, Professor Emeritus, PhD, UC Berkeley.
Westley R. Patton, 1969, Professor Emeritus, PhD, Oregon State U.
Lal Singh, 1969, Professor Emeritus, EdD, Oklahoma State U.
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 credit units. All
courses are lecture and discussion and employ letter grading unless oth-
erwise 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 oppor-
tunities 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. (000198)

AGRI 181 Coordinating Group Agricultural Activities 1.0–2.0 Fa/Spr
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 units. Credit/no credit grading only.
(000190)

AGRI 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 spe-
cific topic being offered. (000202)

AGRI 201 Introduction to Agricultural Education 3.0 Fall
Objectives, nature, and scope of teaching vocational agriculture. Types of
programs and career opportunities in vocational education. Special fee
required; see the Class Schedule. (000203)

AGRI 210 Directed Field Experience Agricultural Education 2.0 Fall
An individualized class in gaining teaching experience through observa-
tion and critique of high school students and teachers in the classroom, at
FFA events, and in supervised occupational experiences. (000204)

AGRI 305 Agricultural Genetics and Biotechnology 4.0 Spring
Prerequisites: ANSC 101 or PSSC 101; CHEM 107 or CHEM 111.
Mendelian inheritance, gene structure and action, sex-related inheritance,
linkage and mapping, aneuploidy, polyploidy, population and quantita-
tive inheritance, inbreeding and heterosis. Activities feature techniques in
biotechnology with agricultural applications. Activities feature techniques
in biotechnology with agricultural applications. 2.0 hours activity, 3.0
hours lecture. (000211)

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, organiza-
tion, 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. (000220)

AGRI 331 Agricultural Ecology 3.0 Fa/Spr
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. (000206)

AGRI 380A Fair Management and Age 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. (000216)

AGRI 380B Agricultural Leadership and Fair Management 3.0 Spring
Prerequisites: AGRI 380A or permission of the instructor.
Development of communication and organizational skills needed to plan
and conduct agricultural educational events, 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. (000217)

AGRI 389 Internship in Agriculture 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
agricultural enterprises is supervised by faculty and staff of a cooperating
enterprise. You may take this course more than once for a maximum of
15.0 units. Credit/no credit grading only. (000215)

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 spe-
cific topic being offered. (000218)

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 mem-
ber. 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. (000219)

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. (000208)

AGRI 421 Curriculum and Methods in Teaching Agricultural Mechanics 3.0 Spring
Prerequisites: AGET 120. Recommended: AGET 150.
Curriculum development and methods of teaching and motivating stu-
dents in agricultural Mechanics. 2.0 hours seminar, 3.0 hours laboratory.
(000230)
AGRI 422  Curriculum and Methods in Teaching Horticulture  3.0 OddSp
Prerequisites: PSYC 101 or equivalent.
This course is designed to educate and motivate students in the daily organization of teaching high school and college community horticulture students. Curriculum development, teaching methods, and lab safety are emphasized, along with contextual learning and learning horticulture and agriscience through inquiry. (020987)

AGRI 432  Holistic Management  3.0 EvnFa
Prerequisites: AGRI 331 or faculty permission.
A study of sustainable management practices in the context of agricultural land stewardship. The development of practical skills and understanding paramount to leadership and management of personal and professional activities. The focus is on identifying available resources, clarifying goals, developing action plans, and promoting communication, savvy monitoring, and decision making that expedite progress toward a thriving enterprise and contribute to a sustainable community. Case studies, community activities, and discussion explore the impact of management decisions on progress toward desired goals. (000225)

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. (000229)

AGRI 490  Agricultural Experimental Research  4.0 Fa/Spr
Prerequisites: AGRI 331.
Students will design and execute 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 laboratory, 3.0 hours lecture. Special fee required; see the Class Schedule. (000223)

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. (000224)

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. (000231)

AGRI 499H  Honors Research in Agriculture  6.0 Fa/Spr
An intensive 6-unit, one-year course in agricultural research. See College 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. (000233)

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 campus obligations. (000221)

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. (000222)

Agricultural Business Course Offerings

ABUS 101  Introduction to Agricultural Business and Economics  3.0 Fa/Spr
The role of agricultural business in the economy. Introductory economic and business principles and their application to the solution of agricultural problems. This is an approved General Education course. (000014)

ABUS 211  Agricultural Selling and Consulting  3.0 Spring
Application of selling and consulting techniques for agribusiness firms. (015808)

ABUS 261  Farm Accounting  3.0 Fa/Spr
Introduction to the principles of farm accounting, farm business record keeping, agribusiness management, financial analysis, and enterprise budgeting. (000020)

ABUS 262  Management Accounting for Agriculture  3.0 Fa/Spr
Prerequisites: ABUS 261 or ACCT 201.
Cost concepts as a management tool in agriculture are explored. Budgeting techniques for planning and control and for long-term projects are developed. 2.0 hours activity, 2.0 hours lecture. (015011)

ABUS 298  Special Topics  1.0–3.0 Inquire
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. (000022)

ABUS 300  Agricultural Business Competition  1.0 Fa/Spr
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. (015866)

ABUS 301  Agricultural Production Economics and Quantitative Analysis  3.0 Fa/Spr
Prerequisites: ABUS 101 or ECON 101.
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. (000024)

ABUS 311  Agricultural Markets and Pricing  3.0 Fa/Spr
Prerequisites: ABUS 101.
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. (000026)

ABUS 312  Wholesaling and Retailing Food Products  3.0 Fall
Prerequisites: ABUS 311.
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. (015010)

ABUS 321  Agribusiness Management  3.0 Fa/Spr
Prerequisites: ABUS 101 or equivalent.
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. (000027)

ABUS 327  Agricultural Business Seminar  1.0–2.0 Inquire
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 4.0 units. (000037)

ABUS 331  Agricultural Management Information Systems  3.0 Fa/Spr
Survey of microcomputer applications for agribusiness management, emphasizing personnel productivity software, including database manager, advanced spreadsheet, and electronic communication software. (000025)

ABUS 341  Natural Resource Economics  3.0 Inquire
Prerequisites: ABUS 101 or faculty permission.
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. (015981)

ABUS 350  International Agricultural Business Practices  3.0 Spring
The goal of this course is to have students develop their analytical, decision-making, and communication skills related to marketing and management of food systems in the world economy. Focusing on the unique aspects of the food and fiber trade-physical attributes, storage practices, phytosanitary criteria, and food safety concerns. (020799)

Highlighted text indicates a change from the original publication.
ABUS 389  Internship in Agribusiness  1.0–3.0 Fa/Spr
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. (000332)

ABUS 390  World Food and Hunger Issues  3.0 Fa/Spr
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 Global Cultures course. (015535)

ABUS 398  Special Topics  1.0–3.0 Inquire
Prerequisites: Faculty permission. 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. (000344)

ABUS 399  Special Problems  1.0–3.0 Fa/Spr
Prerequisites: Faculty permission. This course is an independent study of special problems and is offered for 1.0-3.0 units. You may take this course more than once for a maximum of 6.0 units. (000355)

AGET 350  Seminar in Agricultural and Food Marketing Planning  3.0 Fall
Prerequisites: ABUS 311 or faculty permission. 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. (000492)

ABUS 415  Agricultural Price Analysis  3.0 Fa/Spr
Prerequisites: ABUS 301 and MATH 105. Analysis of price-determining factors for agricultural products. Business conditions and changes in supply and demand for domestic and international agricultural commodities. Study of structure, conduct, and performance of agricultural markets. Monopolistic practices and relative efficiency of markets. (000400)

AGET 421  Advanced Agribusiness Management  3.0 Spring
Prerequisites: ABUS 301, ABUS 312. Agribusiness organization and management. Budgeting, input-output relationships, and enterprise analysis in decision making. Application of economic and management principles. Human resource management. 2.0 hours activity, 2.0 hours lecture. Special fee required; see the Class Schedule. (000411)

ABUS 425  Cooperatives Seminar  3.0 Fall
Prerequisites: ABUS 101, ABUS 311, senior standing. 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. (000667)

ABUS 426  Farm Labor  3.0 Inquire
Prerequisites: 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. (000059)

ABUS 437  Computers in Agriculture Seminar  3.0 Inquire
Prerequisites: ABUS 331 or equivalent. An advanced study of microcomputer applications for agribusiness management. Students are trained in advanced uses of a data base manager, an electronic spreadsheet, and various applications software for cost accounting, production management, and planning. (000065)

ABUS 451  Agricultural Policy  3.0 Fa/Spr
Prerequisites: Senior standing, ABUS 301, ICON 102. Domestic and international issues in U.S. agricultural food policy. A study of the major problems confronting agriculture, the process by which government formulates agricultural policy, and the socio-economic impact of current government programs. (000029)

ABUS 453  Agricultural Law  3.0 Spring
Prerequisites: BLAW 302, senior standing. An examination of the rules of contract, tort, property, and other laws of practical concern to agricultural business operations. Emphasis will be on applications relevant to the California farm sector and will focus on business organization, finance, estate planning, and the evolution of California law on land and water use, labor relations, and environmental protection. (000066)

ABUS 464  Farm and Ranch Appraisal  3.0 Fall
Prerequisites: ABUS 101. Principles and techniques of farm and ranch appraisal. Valuation of farm and rural resources. 2.0 hours lecture, 3.0 hours laboratory. (000081)

ABUS 465  Agricultural Finance  3.0 Spring
Prerequisites: ABUS 101 and ABUS 261. Financing of agricultural enterprises. Principles, methods, and institutions involved in financing farming enterprises and related agricultural industries. Coordinated financial statements. Capital budgeting, 2.0 hours activity, 2.0 hours discussion. (000030)

ABUS 487  Risk Management Strategies: Personnel and Equipment  3.0 Spring
Prerequisites: Faculty permission. Study of risk management strategies in agriculture, including workplace safety, risk, and regulations. Equipment selection, maintenance, trends, and economics. Determining equipment requirements and costs. Systems for recording parts, services, and maintenance. (000179)

ABUS 498  Special Topics  1.0–3.0 Inquire
This course is for special topics offered for 1.0-3.0 units respectively. 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. (000694)

ABUS 499H  Honors Independent Study in Agribusiness  6.0 Fa/Spr
Prerequisites: Faculty permission. An intensive 6-unit, one-year investigation of a research topic in agricultural business. See College office for details. Open to students with at least a 3.0 GPA in the major. Course consists of a faculty-supervised research project, a thesis, and a public presentation. (000072)

Agricultural Engineering Technology

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. You may take this course more than once for a maximum of 4.0 units. (000157)

AGET 120  Introduction to Agricultural Mechanics  3.0 Fall
Prerequisites: ABUS 301. 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. Special fee required; see the Class Schedule. (000166)

AGET 150  Agricultural Machine Systems  3.0 Fa/Spr
Prerequisites: ABUS 301. 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. Special fee required; see the Class Schedule. (000164)

AGET 340  GPS & GIS in Agriculture and Natural Resource Management  3.0 Fall
Prerequisites: ABUS 301. 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 and time specific data for agriculture and natural resource management and monitoring. 2.0 hours lecture, 3.0 hours laboratory. (000168)

AGET 350  Energy Alternatives in Agriculture  3.0 Inquire
Prerequisites: ABUS 301 or PSSC 250. A study of energy alternatives currently used in agriculture, including solar, biomass, wind, and water. Emphasis on biomass conversions, including anaerobic digestion, fermentation, gasification, and direct combustion. (000172)

AGET 360  Irrigation  3.0 Spring
Prerequisites: PSSC 101 or PSSC 250. Principles, design, and evaluation of irrigation systems for efficient water use. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (000070)
Internship in Agricultural Engineering

Directed Work Experience in Animal Sciences

1.0–3.0 Fa/Spr

Swine Production and Management

Principles of Livestock - Sheep

3.0 Fall

2.0 Fa/Spr

Principles of Livestock - Dairy

Reproductive Physiology of Domestic Animals

Special Topics

3.0 Fa/Spr

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. (000439)

ANSC 172 Principles of Livestock - Sheep

1.0 Inquire

Principles and practices used in the production of commercial flocks of sheep. General husbandry, breeding, feeding, selection, housing, marketing, and records keeping. Eight weeks only. (000440)

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. (000441)

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. (000442)

ANSC 175 Basic Horse Science

3.0 Spring

Principles and practices used in the horse industry. An introduction to feeding, breeding, selection, housing, health, use, handling, training, tack, and basic equitation. Special fee required; see the Class Schedule. (000444)

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. See the Class Schedule for the specific topic being offered. (000454)

ANSC 230 Animal Feeds and Nutrition

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 activity, 2.0 hours lecture. Special fee required; see the Class Schedule. (000434)

ANSC 250 Live Animal and Carcass Evaluation

3.0 OddSp

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 reference to factors determining carcass value. 2.0 hours activity, 2.0 hours seminar. (000445)

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 sanitation, vaccination, 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. (000458)

ANSC 272 Sheep Production and Management

3.0 Fall

Prerequisites: ANSC 101.

A study of approved practices in commercial and purebred sheep production, with emphasis on production costs, disease, nutrition, genetic selection, 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. (000462)

ANSC 273 Swine Production and Management

3.0 Spring

Prerequisites: ANSC 101.

A study of approved practices in commercial and purebred swine production, with emphasis on production costs, disease, reproduction, nutrition, genetic selection, production records and niche marketing. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (015865)

ANSC 275 Special Studies

3.0 Fa/Spr

Prerequisites: ANSC 101.

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. (000446)

ANSC 289 Internship in Agricultural Engineering Technology

Directed Work Experience in Animal Sciences

Technology

1.0–3.0 Fa/Spr

Technology

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 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. (000174)

ANSC 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. (000177)

ANSC 440 Agricultural Control Systems

3.0 Fall

Prerequisites: ANSC 120.

A study of agricultural equipment (harvesters, 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 activity, 2.0 hours lecture. (000183)
ANSC 360 Animal Health and Disease 3.0 Spring
Prerequisites: ANSC 101.
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. Herd health considerations for disease prevention and treatment. 2.0 hours activity, 2.0 hours seminar. (000466)

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 physiology, and management practices of the modern horse enterprise. Formulation of least-cost feed rations and planning in the horse industry are studied. (000461)

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 directly 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. (000472)

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. See the Class Schedule for the specific topic being offered. (000473)

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 member. Study/research in animal science 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. (000474)

ANSC 440 Anatomy and Physiology of Domestic Animals 3.0 Fa/Spr
Prerequisites: ANSC 101, CHEM 107. CHEM 108 is recommended.
Comparative study of anatomy and physiology of organ systems, with major emphasis on farm animals. (000456)

ANSC 450 Food Sanitation and Quality Control 3.0 Spring
Prerequisites: ANSC 101; 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. (000475)

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. (000476)

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 segment of the beef industry, including seedstock, commercial cow-calf, stocker, feeder, packer, retailer and consumer. Integrated beef production systems will be evaluated based on consideration of genomics, nutrition, health, reproduction, and product, forage management and marketing. 2.0 hours seminar, 3.0 hours laboratory. Special fee required; see the Class Schedule. (000459)

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. 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. (000463)

ANSC 499H Honors Ind Study Animal Sci 6.0 Inquire
Prerequisites: Faculty Permission
This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. (020208)

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 the environment to grow crops. 2.0 hours lecture, 3.0 hours laboratory. This is an approved General Education course. Special fee required; see the Class Schedule. (007765)

PSSC 160 West Coast Crop Production 1.0 Fall
A study of people, crops, systems, 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 agricultural production. Meets the second half of the semester. Credit/no credit grading only. (007779)

PSSC 250 Introduction to Soil Science 3.0 Fa/Spr
Prerequisites: CHEM 107 or CHEM 111.
Soil science; fertility, physical properties, taxonomy and their applications to agricultural management and environmental enhancement. Relationships of soils to the world food supply and population. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (007776)

PSSC 274 Greenhouse Management 3.0 Fall
Greenhouse construction, environment, and management practices, including heating and cooling, irrigation, fertilization, and pest control. 2.0 hours lecture, 3.0 hours laboratory. (007818)

PSSC 305 Introduction to Wines 3.0 Fall
Prerequisites: At least 21 years of age.
Grape-growing, and winemaking in California wine regions. Wine and food matching. Sensory evaluation. 1.0 hours discussion, 2.0 hours lecture. Special fee required; see the Class Schedule. (007781)

PSSC 309A Directed Work in Field and Row Crops 2.0 Fall
Prerequisites: PSSC 101.
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. 1.0 hours discussion, 2.0 hours activity. You may take this course more than once for a maximum of 4.0 units. (007773)

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. 1.0 hours discussion, 2.0 hours activity. You may take this course more than once for a maximum of 4.0 units. (007788)

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. 1.0 hours discussion, 2.0 hours activity. You may take this course more than once for a maximum of 4.0 units. (007789)

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. 1.0 hours discussion, 2.0 hours activity. You may take this course more than once for a maximum of 4.0 units. (007790)

PSSC 312 Directed Work in Greenhouse Production 2.0 Fa/Spr
Prerequisites: PSSC 101.
Directed work and discussion on all aspects of plant production in the greenhouse environment. Plant species may include ornamentals, crops, and California wildland natives. 1.0 hours discussion, 2.0 hours activity. You may take this course more than once for a maximum of 4.0 units. (007791)

PSSC 330 Rangeland Resources and Management 3.0 Fall
Prerequisites: ANSC 101 or PSSC 101.
A survey of North American rangeland resources and the principles of their use and management, including basic plant-animal-soil relationships and multiple use. (007775)

PSSC 331 Grasses and Grasslands of the Western US 3.0 OddSp
Prerequisites: PSSC 101. PSSC 330 is recommended.
Physical and biological environments of North American grasslands. Vegetative communities, dynamics, and principal species. Systematic study and identification of native and introduced species. 2.0 hours lecture, 3.0 hours laboratory. (007830)

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. (007829)
PSSC 334  Wetland and Riparian Resources and Management  3.0 OddFa/Sp
Prerequisites: Completion of lower-division core or faculty permission. 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. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (007792)

PSSC 340  Economic Entomology  3.0 Fall
Prerequisites: PSSC 101. 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. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (007797)

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 crop development. 2.0 hours lecture, 3.0 hours laboratory. (007800)

PSSC 343  Introduction to Weed Science  3.0 Spring
Prerequisites: AGRI 331 or PSSC 101. 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. 2.0 hours lecture, 3.0 hours laboratory. (007801)

PSSC 353  Plant Protection Materials  3.0 Fall
Prerequisites: CHEM 107 or CHEM 111; PSSC 250. An examination of materials and application methods used for protecting the health of plants in a manner that is safe for the environment, applicator, and consumer. Comprises the laws and regulations, safety, application, properties, mode of action, toxicology, and environmental impacts of pesticides, fertilizers, and other materials used in agriculture. 2.0 hours lecture, 3.0 hours laboratory. (007806)

PSSC 354  Soil Physical Properties and Production  3.0 Inquire Practices
Prerequisites: PSSC 101, PSSC 250. The physical properties of soil, structure, density, porosity, and consistence will be examined from a production aspect. Measurement and changes in these properties will be studied, with interest in the modifications made on the soil by tillage. Recommended for agriculture majors. 2.0 hours lecture, 3.0 hours laboratory. (007807)

PSSC 356  Soil Quality and Health  3.0 EvnSp
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. 2.0 hours activity, 2.0 hours lecture. Special fee required; see the Class Schedule. (007808)

PSSC 360  Ecology of Crop Production  3.0 EvnSp
Prerequisites: AGRI 331 or PSSC 101. 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. 2.0 hours discussion, 3.0 hours laboratory. (007809)

PSSC 361  Production of Annual Crops  3.0 Fall
Prerequisites: PSSC 101. 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. For field experience, students are advised to enroll in PSSC 309A/PSSC 309B. (007810)

PSSC 363  Forage Crops  3.0 Inquire
Prerequisites: PSSC 101 or PSSC 330. Grasses and legumes; their production and management for irrigated pastures, hay, silage, and seed. Plant characteristics and adaptation. 2.0 hours lecture, 3.0 hours laboratory. (007812)

PSSC 364  Seed Production  3.0 EvnFa
Prerequisites: 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. 2.0 hours lecture, 3.0 hours laboratory. (007802)

PSSC 366  Fruit and Nut Production  3.0 Spring
Prerequisites: PSSC 101. Managing and optimizing the fruit and nut production system. Selection of planting sites and varieties, tree training and pruning, pollination, thinning, irrigation, mineral nutrition, and pest management are included. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (007820)

PSSC 389  Internship  1.0–6.0 Fa/Spr
Prerequisites: Junior 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 industry, state, federal, international, or non-profit organization. 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. (007824)

PSSC 390  Food Forever: Comparisons of Sustainable Food Production Systems  3.0 Fa/Spr
Prerequisites: Completion of a Plant and Soil Science Option. 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 Global Cultures course. (004874)

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 political factors. This is an approved General Education course. This is an approved Global Cultures course. (000068)

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. See the Class Schedule for the specific topic being offered. (007827)

PSSC 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 plant science and soil science 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. (007828)

PSSC 433  Wildland Vegetation Ecology  3.0 EvnFa
Prerequisites: PSSC 130 and completion of lower-division core. Vegetation ecology with special reference to grassland, shrubland, and woodland communities and ecosystems. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (007793)

PSSC 436  Vegetation Dynamics and Management  3.0 OddSp
Prerequisites: PSSC 130 and completion of lower-division core. Dynamics of selected vegetation types of the arid western U.S. Role and impact of herbivory and fire. Use of grazing and fire in vegetation management. (007831)

PSSC 437  Wildland Classification and Inventory  3.0 EvnSp
Prerequisites: PSSC 130 and completion of lower-division core. Quantitative approaches, methods, and field techniques for the classification, description, and inventory of grasslands, shrublands, woodlands, and forestlands. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (007832)

PSSC 438  Landscape Ecology  3.0 OddFa
Prerequisites: PSSC 130 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 agricultural landscapes. Special fee required; see the Class Schedule. (007833)
PSSC 441 Principles of Integrated Pest Management 3.0 Spring
Prerequisites: AGRI 331; PSSC 340 or PSSC 342 or PSSC 343.
An introduction to the principles and mechanisms of integrated management of insect pests, plant pathogens, and weeds, dealing with such areas as the agro-ecosystem, population dynamics, and specific approaches to pest management. (007834)

PSSC 451 Soil Genesis and Classification 3.0 OddFa
Prerequisites: PSSC 250 or faculty permission.
An examination of the factors of soil formation, criteria and systems of soil classification. The laboratory consists of five all-day field trips. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (007837)

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. (007838)

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. 2.0 hours lecture, 3.0 hours laboratory. Special fee required; see the Class Schedule. (007840)

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. 2.0 hours lecture, 3.0 hours laboratory. (007842)

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. 2.0 hours seminar, 3.0 hours laboratory. (007843)

PSSC 464 Plant Reproduction Systems 3.0 OddSp
Prerequisites: PSSC 101; AGRI 305, or faculty permission.
Principles and practices of sexual and asexual reproduction. Physiological, environmental, and industry requirements for quality seed production, certification. Asexual propagation through cuttings, grafting, budding, micro-propagation, somatic embryogenesis. 2.0 hours lecture, 3.0 hours laboratory. (007836)

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. 2.0 hours lecture, 3.0 hours laboratory. (007854)

PSSC 489 Internship 1.0–3.0 Fa/Spr
Prerequisites: PSSC 389, senior/graduate standing, faculty permission.
Internship with private industry, state, federal, international, 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. (007861)

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. (007864)