
AGRICULTURE

COLLEGE OF AGRICULTURE

www.csupomona.edu/~agri

Donald O. Straney, Interim Dean
Lester C. Young, Associate Dean
Rhonda L. Ostrowski, Recruitment Coordinator

Instruction in the College of Agriculture is offered in 8 majors and 7 subplans leading to the Bachelor of Science degree. There are five Master of Science subplans offered in Agricultural Science, Animal Science, Nutrition and Food Science, Plant Science and Irrigation Science.

The College of Agriculture prepares students for careers in a wide variety of positions throughout the agricultural, food, apparel/textile industries, environment, science and healthcare fields. Careers can be found in business, industry, education, conservation, recreation, specialized services, governmental work, as well as production. Positions can vary from technical and analytical to creative and entrepreneurial. Career opportunities for men and women are numerous with many being relatively unknown a few years ago. Challenging occupations exist at both the domestic and international level, especially for individuals with dual language skills. Students from rural and urban communities will find a broad spectrum of opportunities that suit their interests and abilities.

THE AGRICULTURE INDUSTRY

The agri-food industry serves the State by generating food for the U.S. and the world. While less than two percent of California's population now lives and works on the farm, approximately 80,000 farming businesses produce food worth $31.2 billion and over $100 billion in processing, packaging and distribution of the food supply. Agriculture graduates find careers in areas such as production, research, biotechnology, governmental regulation, environment and natural resource management, water management, golf course management, and education.

THE FOOD INDUSTRY

The Southern California food industry provides an ever increasing number of job opportunities for graduates. Careers can be found in areas such as nutrition science, dietetics, food chemistry, food processing, sensory evaluation, product development, food management, food marketing, food safety and culinology. Nutrition science and dietetics is a pathway for many students pursuing graduate programs in the medical and healthcare fields.

THE APPAREL INDUSTRY

The California apparel sector is the largest and most dynamic in the United States. Los Angeles is a major international fashion hub, containing many top apparel brands and retail groups. Career opportunities are diverse, embracing buying, designing, product development, production, visual merchandising, store operations management, and brand marketing. Employers vary from global corporations to young entrepreneurial businesses, drawn from across the manufacturing, retailing, textile, and design technology/consulting services sectors of the industry.

Facilities for Animal Science, Animal Health Science and Plant Science

Facilities on or near the campus make possible practical laboratories for the various majors. The university farm consists of fertile soils typical of the southern California area with enough variation in soil type and climate to give students broad experience. Over 700 acres of university-owned land are available for pastures, crops, groves, and ornamental plantings. Animal production flocks and herds are maintained for undergraduate instruction and graduate research.

Facilities for Nutrition, Dietetics and Food Science and Technology

Classrooms and laboratories are housed in Building 7 on campus. Laboratories include sophisticated testing and research equipment for numerous faculty and student research and projects in nutrition and product development.

Facilities for Apparel Merchandising and Management

Classrooms and laboratories are housed in Building 45. Laboratory space includes computer labs with apparel industry specific software in patternmaking, product development and retail buying. A senior production lab and a senior retail showroom are used for the production students AM^2 line of clothing and the retail activity ApparelScapes.

ACADEMIC PROGRAMS

Majors

Agricultural Science (Education) B.S.
Animal Health Science B.S.
Animal Science B.S.
with subplans in Animal Industries/Business Management, Equine Industries track; Animal Industries/Business Management, Animal Agribusiness track; and Pre-Veterinary Science/Graduate School
Apparel Merchandising and Management B.S.
with subplans in Apparel Production and Fashion Retailing
Food Marketing and Agribusiness Management B.S.
Foods and Nutrition B.S.
with subplans in Dietetics, and Nutrition Science
Food Science and Technology B.S.
Plant Science B.S.

Minors

Agricultural Business Management
Agronomy
Animal Science
Culinology®
Environmental Health Specialist
Fashion Merchandising
Food Science and Technology
Foods and Nutrition
International Agricultural Business Management
Landscape Irrigation Design
Ornamental Horticulture
Pest Management
Soil Science

Certificates

Landscape Irrigation Design

Credentials

Agricultural Specialist, Agriculture Single Subject

Master of Science in Agriculture

With subplans in Agricultural Science (Agricultural Education), Animal Science, Nutrition and Food Science, Plant Science, and Irrigation Science

DEPARTMENTS

Dean's Office
Building 2, Room 216
(909) 869-2200
(909) 869-4454 and 869-4074 fax
(888) 2DAYS AG (toll free)
E-mail: agriculture@csupomona.edu
www.csupomona.edu/~agri

Graduate Programs
Building 2, Room 210
(909) 869-2095
Broc Sandelin, College Graduate Programs Coordinator

Development Office
Building 2, Room 201A
(909) 869-5390

Recruitment Office
Building 2, Room 114
(909) 869-2869
Rhonda Ostrowski, Recruitment and Retention Coordinator

Agricultural Science (Education)
Building 2, Room 215
(909) 869-2212
Alex Hess, Program Coordinator and Graduate Coordinator

Animal and Veterinary Sciences
Building 2, Room 123
(909) 869-2216
Edward S. Fonda, Interim Chair

Apparel Merchandising and Management
Building 45, Room 104
(909) 869-3377
Peter Kilduff, Chair

Food Marketing and Agribusiness Management
Building 2, Room 123
(909) 869-2270
Nancy Merlino, Program Director

Human Nutrition and Food Science
Building 7, Room 110
(909) 869-2226
Douglas Lewis, Chair and Graduate Coordinator

Plant Science
Building 2, Room 209
(909) 869-2214
Dan Hostetler, Chair

CENTERS

AGRIscapes

AGRIscapes is an education and demonstration center devoted to food, agriculture, and the urban environment. The Farm Store at Kellogg Ranch serves as the major marketing outlet for Cal Poly Pomona produced fruits, vegetables, nursery products and meats. This 40-acre complex provides educational opportunities for students within the College of Agriculture in the areas of marketing, production, merchandising and promotion of agricultural products. It also provides the campus and surrounding community with a valuable educational tool to learn about agricultural products and their impact on daily lives.

Apparel Technology and Research Center (ATRC)

The Apparel Technology and Research Center (ATRC) provides outreach services for apparel and related businesses, and professional and government organizations. The Center offers applied research and technology transfer services, as well as on-line education, consulting and information services through the ATRC website <atrc.ag.csupomona.edu/> The ATRC is a self-supporting center funded by industry.

Center for Turf, Irrigation and Landscape Technology (CTILT)

CTILT provides a focal point for teaching, research and testing, and industry outreach in the areas of turfgrass, ornamental plant materials, landscape irrigation technology, water management, landscape operations, sports turf and golf course management. Industry sponsored research projects on irrigation system component development, PVC pipe systems, WICK irrigation, water management, and fertilizer trials are on going. Industry sponsored short courses on landscape irrigation design, water management and landscape management are offered.

Equine Research Center

The Equine Research Center, founded in 1980, complements the programs of the W.K. Kellogg Arabian Horse Center. The Research Center, unlike the Kellogg Center, deals with all horse breeds and not only the Arabian. The Research Center conducts investigations in the areas of equine nutrition, physiology, and management. The Research Center is a self-supported center funded through private donations with the major contributor being the Oak Tree Racing Association.

W.K. Kellogg Arabian Horse Center

The Center continues the tradition of the Kellogg Ranch, which has been one of the world's outstanding Arabian horse breeding farms, perpetuating the Arabian and making valuable blood lines available to the public. The Arabians are utilized in the animal science courses related to the ever-expanding field of light horse production, research and training. Public performances are given on the first Sunday of the month, October through June, at 2p.m. In July 1989, the University established an equine outreach program to serve the interest of all breeds and horse audiences. The primary objective of this program was to develop educational opportunities and programs that would address the needs and challenges of the horse industry.

Responsibilities of the equine educational program include providing educational programs to the horse public and addressing the specialized needs of the commercial equine industry. Programs are also developed to meet the needs of specialized clientele.

SPECIAL PROGRAMS

Ag Recruitment

The College of Agriculture has developed an ongoing outreach program for prospective students from both high schools and community colleges. Students, faculty and staff regularly visit southern California schools to talk to students, parents and teachers about attending college, studying a wide range of programs offered by the College and attending Cal Poly Pomona. Our Ag Recruitment Office also provides campus tours and pre-admission

counseling, as well as serving as a contact point for new and prospective students. For assistance, please call Ag Recruitment at (909) 869-2869.

Agricultural Educational Enhancement Services (AGREES)

AGREES is a college-based program designed to improve the retention and graduation rate of students enrolled in the College of Agriculture. AGREES provides faculty and peer interaction as well as a variety of support services to assist students in their academic pursuits at Cal Poly Pomona.

Agricultural Research Initiative (ARI)

The College of Agriculture is an active participant in the State's Agricultural Research Initiative (ARI). The program provides public funds that are matched "dollar for dollar" with industry and governmental agency resources to support food and agricultural research. Using university facilities, the faculty, technical staff, and students are able to conduct funded research targeted to improve the economic efficiency, productivity, profitability, and sustainability of California agriculture and allied industries.

California Agricultural Leadership Program

Cal Poly Pomona, through the College of Agriculture, is one of four universities in the state which participate in the California Agricultural Leadership Program. Under the auspices of the Agricultural Education Foundation, the Program consists of a series of seminars and travel experiences designed to broaden the perspectives of selected mid-career agricultural professionals who have demonstrated leadership potential. Participants complete the program with a greater capacity to accept leadership responsibility in any part of society. For more information, contact the Dean of the College of Agriculture.

Cooperative Education

The College of Agriculture commenced a cooperative education program with industry, business and government during the fall quarter, 1978. This program is designed to provide alternating periods of full-time study and full-time work. It is expected that each student in the co-op education program will spend a total of four quarters over a three-year period gaining work experience. For these four quarters of experience the student will receive 16 units of academic credit.

The co-op education program will:

1. Provide the opportunity for the student to gain experience in agri-food, agribusiness, agricultural production and/or government. This experience should stimulate the student's interest in those areas of academic instruction that relate to the newly acquired experience.
2. Provide students with the opportunity to evaluate alternative careers.
3. Provide an opportunity for students to earn a salary which will enable them to attend school full-time during alternating quarters.
4. Provide an opportunity for prospective employers to get acquainted with co-op students.

More information may be obtained from the Office of the Dean of Agriculture and/or the University's Career Center.

Interdisciplinary General Education (IGE)

Students majoring in the various programs in Agriculture are encouraged to take part of their General Education requirements through IGE. This IGE program is specially designed to meet the needs of Agriculture students particularly in the areas of writing, critical thinking, humanities and the social sciences.

Student Enterprise Projects

Students in the College of Agriculture are provided an opportunity to learn the interrelated skills involved in the production of a crop or animal project by means of the Student Enterprise Project experience. This supervised work program allows the student to utilize College of Agriculture facilities and equipment, along with financing provided through the Cal Poly Pomona Foundation. All aspects of project design, initiation and completion are developed by the student in consultation with the supervising faculty member. In addition to valuable experiential learning, the student is able to share in the profits generated by the project. Interested students should see their department chair for further information.

STUDENT ORGANIZATIONS AND ACTIVITIES

Students in the College of Agriculture have the opportunity to become involved with many different types of student organizations, whether it be for a specific major or for a team that competes intercollegiately. Organizations offer students the opportunity to meet informally with students and faculty outside of the class room and to network with alumni and industry representatives. Students are encouraged to broaden their college experience by joining one of the following student organizations: Ag Ambassadors, Agricultural Biology Club, Agricultural Council, Agricultural Education Club, Agricultural Engineering Club, Animal Health Science and Technology Association, Animal Science Academic Quadrathalon Team, Apparel Merchandising & Management Association, Block and Bridle, Equine Drill Team, Foods and Nutrition Forum, Intercollegiate Equestrian Team, Landscape Irrigation Science Club, Crops, Livestock, and Soils Judging Teams, Livestock Show Teams, Los Rancheros, Los Robles, National Agri-Marketing Association, Phi, Upsilon Omicron, Pre-Vet Club and Rodeo Club. In addition to student organizations, there are many opportunities for students to work or volunteer for the farm, livestock units, nursery, farm store, and horse center.

COLLEGE OF AGRICULTURE ORIENTATION PROFICIENCY

All students majoring in academic programs offered by the College of Agriculture must be acquainted with program opportunities, academic skills and proficiencies, and knowledge of academic support entities which are necessary for a successful college career. All new students entering the College of Agriculture can demonstrate these abilities by either completing AG 100 or by having completed 36 quarter units, prior to admission, of college level course work from an accredited college or university. New students entering the College of Agriculture with less than 36 quarter units completed, must enroll in AG 100 within three quarters of college residency. New students are encouraged to take AG 100 their first quarter of residency.

COURSE DESCRIPTIONS

AG 100 Orientation to the College of Agriculture (1)

Mandatory fall quarter course for entering freshmen. Strategies to assist students with the successful transition to and completion of their college career in the College of Agriculture and their individual major. Topics covered include: campus student support services, career planning, time management, academic planning, study/note/test skills, learning styles, navigating the college and university, professional development, extracurricular activities, and others. Open to non-majors. 1 lecture. Graded only on a credit/no credit basis.

AG 101 Agriculture and the Modern World (4)

An introduction to the history of modern agriculture, its integration into social, economic and political institutions, the biological systems of which it is a part, the causes and impact of world hunger, and the

implications of future changes and innovations in the production of food and fiber. The course will emphasize critical analysis of current agriculture and food issues. 4 lectures. Open to all majors. Required of all agriculture majors.

AG 128/128L Computer Applications in Agriculture (2/1)

A course requiring the student to utilize computer applications such as word processing, spreadsheet, database management systems, presentation managers, and communications to solve problems and increase productivity in their professional career. The transfer of data between applications and computer platforms will be explored. The students will learn to search the Internet for information and use e-mail for communication. 2 lectures, 1 three-hour laboratory. Concurrent enrollment required.

AG 200 Special Study for Lower Division Students (1–2)

Individual or group investigation, research, studies or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter.

AG 400 Special Study for Upper Division Students (1–2)

Individual or group investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter.

AG 401 Ethical Issues in Food, Agricultural, and Apparel Industries (4)

Socio-economic and scientific issues in the Food, Agricultural, and Apparel Systems within a framework of moral philosophy and ethical reasoning. Analysis of topics in biotechnology in agricultural production and food processing, intellectual and physical property rights in a market based economy, human nutrition problems, the treatment of animals and the environment, worker rights in a global food and apparel marketplace, and America's role in reducing world hunger and malnutrition. 4 hours lecture/discussion. Fulfills GE Area C4 or D4. Prerequisites: Completion of GE Area A and sub-areas C2, C3, D2, and D3.

AG 464 Development of Leadership Skills (3)

The exploration of professional growth and leadership development in the context of food and agriculture careers. 2 seminar-discussions. Prerequisite: senior standing.

AG 470, 471, 472, 473 Cooperative Education (2–4) (2–4) (2–4) (2–4)

On-the-job experience for all majors in the College of Agriculture. Students alternate one or more quarters of full-time studies in their major with an equal number of quarters of relevant full-time work for pay. Prerequisite: consent of instructor and junior standing. (Courses must be taken in ascending sequence.)

AG/BUS/EGR/SCI 481, 482 Project Design Principles and Applications (2) (2)

Selection and completion of scientific/technological synthesis application project under faculty supervision. Multidisciplinary team project. Projects which graduates solve in discipline of practice. Both formal written and oral reports. Minimum time commitment: 120 hours. Prerequisites: One GE course from each of the following Sub-areas: A1, A2, A3 and B1, B2, B4 and upper division standing. GE Synthesis course for Sub-area B5.

AGRICULTURAL SCIENCE (AG EDUCATION)

www.csupomona.edu/~agsci

Alexander J. Hess, Coordinator, Agricultural Education and
Graduate Coordinator, M.S. in Agriculture, Agricultural Science Subplan

The primary function of the Agricultural Education Program is the preparation of teachers of agricultural education for the public secondary schools of California. Specialized preprofessional and professional courses are offered for undergraduate and graduate (fifth year) students. Technological, scientific, and broad general education course work for agriculture teaching candidates is offered throughout the College of Agriculture and other Colleges including the College of Education and Integrative Studies.

Students with an interest in becoming agriculture teachers are advised to enroll in the agricultural science major and obtain a B.S. degree, or they may complete a B.S. degree in one of the other approved majors in the College of Agriculture. Agricultural Science majors and all students who wish teacher certification are required to show competency in four areas of agriculture. This can be accomplished by completing the subject matter program in agriculture or receiving a passing score on the CSET for Agriculture.

In addition to coursework in four areas of agriculture, students who plan to teach agriculture must have two years of practical experience in agriculture and must complete an Agricultural Specialist Credential. The Agricultural Specialist Credential requires a minimum of 45 additional units beyond the B.S. degree. Some of the graduate work may be applied towards a Master of Science in Agriculture, Agricultural Science subplan.

Enrollment in a Single Subjects Credential program is required in order to qualify for student teaching. Candidates for the Single Subjects teaching credential who are not agricultural science majors are advised to wisely use the electives available in their major in order to complete required teaching credential courses which are not normally specified in their undergraduate major. Because of the wide range of variables involved, all candidates for teaching certification are urged to consult the Agricultural Education Program Coordinator as early as possible in their college careers.

For students wishing to obtain a Master of Science in Agriculture, such a degree has been approved with a subplan in Agricultural Science.

CORE COURSES FOR MAJOR

Required of all students. A 2.0 cumulative GPA is required in core courses including subplan courses for the major in order to receive a degree in the major. Students interested in teaching should see the Teacher Preparation section for additional secondary education requirements.

Orientation to the College of Agriculture	AG	100	(1)
Agriculture and the Modern World	AG	101	(4)
Development of Leadership Skills	AG	464	(3)
Development of Competitive Activities	AGS	250	(2)
Introduction to Agricultural Education Programs	AGS	300	(3)
Agriculture Skills and Facilities	AGS	420/420A	(3)
Field Experiences in Agriculture Education	AGS	441	(4)
Senior Project	AGS	461	(2)
Senior Project	AGS	462	(2)
Feeds and Feeding	AVS	101/101L	(4)
Animal Science I	AVS	112	(4)
Animal Science I Laboratory	AVS	114	(1)
Animal Science II	AVS	113	(4)
Animal Science II Laboratory	AVS	115	(1)
Principles of Market Animal Evaluation	AVS	240/240L	(2/1)
Companion Animal Care	AHS	128/128L	(3/1)
Accounting for Agribusiness	FMA	324	(4)
Agribusiness Enterprise Management	FMA	328	(4)
Horticulture Principles and Practices	PLT	131/131L	(4)
Agronomic Principles and Practices	PLT	220/220L	(4)
Basic Soil Science	PLT	231/231L	(4)

Select mechanized agriculture courses . . . . . (11)

Select 3 courses from among the following: 10-12

Pesticides and Hazardous Materials Laws	PLT	303	(3)
Urban Pest Management	PLT	324/324L	(4)
Weeds and Weed Control	PLT	331/331L	(3)
Crop Ecology	PLT	401	(4)
Environmentally Sustainable Agriculture	PLT	437/437L	(4)
Landscape Management	PLT	443/443L	(4)

Select 2 courses from among the following: 7-8

Horticultural Principles and Practice	PLT	131/131L	(4)
Plant Propagation	PLT	132/132L	(3)
Agricultural Cropping Systems	PLT	133/133L	(4)
Subtropical Fruits	PLT	202/202L	(4)
Culinary Produce Technology	PLT	222	(4)
Vegetable Crop Systems	PLT	226/226L	(4)
Basic Soil Science	PLT	231/231L	(4)
Introduction to Arthropods	PLT	233/233L	(4)

SUPPORT AND ELECTIVE COURSES

School Health Education	KIN	441	(3)
Fundamentals of Physics	PHY	102	(4)
Child Psychology for Educators	PSY	202	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Public Speaking (A1)	COM	100	(4)
Freshman English (A2)	ENG	104	(4)
Critical Thinking (A3)	PHL	202	(4)
General Chemistry (B1, B3)	CHM	121/121L	(4)
Basic Biology (B2, B3)	BIO	115/L	(5)
Statistics with Applications (B4)	STA	120	(4)
The Animal Industry and Society (B5)	AVS	311	(4)
or Plants and Civilization (B5)	PLT	311	(4)
History of Garden Art (C1)	PLT	214	(4)
Ethics (C2)	PHL	204	(4)
Elementary Spanish (C3)	FL	151	(4)
Organizational Communication Theory (C4)	COM	314	(4)
Introduction to American Government (D1a)	PLS	201	(4)
and United States History (D1b)	HST	202	(4)
Global Resources for Food (D2)	IA	101	(4)
or United States History (D2)	HST	201	(4)
Culture, People, and Dress (D3)	AMM	108	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (D4)	AG	401	(4)
General Psychology (E)	PSY	201	(4)

UNRESTRICTED ELECTIVES

Unrestricted Electives . . . . . (3-6)
Select a sufficient number of courses so that the total from Elective Core, Unrestricted Electives, and GE is at least 102 units.

GENERAL EDUCATION REQUIREMENTS

Students should consult the catalog website www.csupomona.edu/~academic/catalog/ for current information regarding this requirement. Unless specific courses are stated under Support Courses, see the list of approved courses under General Education Requirements, Areas A through E.

Area A, Communication and Critical Thinking (12 units)

1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Mathematics and Natural Sciences (16 units)

1. Physical Science
2. Biological Science
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Humanities (16 units)

1. Fine and Performing Arts
2. Philosophy and Civilization
3. Literature and Foreign Languages
4. Humanities Synthesis

Area D. Social Sciences (20 units)

1. U.S. History, Constitution, and American Ideals
2. History, Economics, and Political Science
3. Sociology, Anthropology, Ethnic and Gender Studies
4. Social Science Synthesis

Area E. Lifelong Understanding and Self-development (4 units)

SINGLE SUBJECTS TEACHING CREDENTIAL

Subject Matter Program

In order to qualify for a credential through course work rather than the CSET, candidates must complete the following:

18 units in Animal and/or Veterinary Science

18 units in Agricultural Mechanics, Agricultural Engineering, or Landscape Irrigation

8 units in Agricultural Business Management and/or Farm Management/ Agricultural Economics

26 units in a combination of courses in Agronomy, Plant Science, Soils, and Ornamental Horticulture, and Agricultural Biology.

Students who are Agricultural Science majors automatically meet this requirement as a part of their degree requirements.

Others should consult with the Agricultural Education Coordinator. In addition to a B.S. in Agriculture, students preparing to student teach must complete requirements for the Single Subjects Credential. The courses to be taken are required of all teaching credential candidates regardless of subject matter area.

AGRICULTURAL SPECIALIST CREDENTIAL

In addition to a B.S. in Agriculture, students preparing to teach agriculture must complete the requirements for the Single Subject credential and the requirements for the Agricultural Specialist Credential. The courses include:

Introduction to Agricultural Education Programs	AGS	300	(3)
Special Study	AGS	400	(2)
Agriculture Skills and Facilities	AGS	420/420A	(3)
Program Planning and Development	AGS	430	(3)
Teaching Methods in Agriculture	AGS	440	(4)
Early Field Experience in Ag Ed	AGS	441	(4)
Youth and Adult Leadership Programs	AGS	505/505A	(3)

Students are also required to have a concentration of 27 units, including 12 upper division, in one area of agriculture. This is generally completed as an undergraduate. A minimum of two years of verified work experience in agriculture is also required. A total of 45 graduate credit units are required for the Agricultural Specialist Credential.

Students may complete the requirements for both the Single Subject and the Agricultural Specialist Credentials concurrently. A limited number of courses may be taken at the undergraduate level. Students should consult with the Agricultural Education program coordinator prior to enrolling in any courses to be used for credentialing purposes.

Course Descriptions

AGS 250 Development of Competitive Agricultural Activities (2)

The philosophy and development of competitive activities for students of agriculture. Selection of contest officials, development of contest patterns, scoring of placing cards, and publications of results. Use of the California Curricular Code. Practical application of this class will occur with the operation of Agriculture Field Day. 2 lectures.

AGS 299/299A/299L Special Topics for Lower Division Students (1–4)

Group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination. Prerequisite: permission of instructor.

AGS 300 Introduction to Agricultural Education Programs (3)

Overview of agriculture programs including goals and purposes. Qualifications essential to success in agricultural education. Programs of studies to meet requirements for instruction in agriculture. 3 lecture discussions.

AGS 400 Special Study for Upper Division Students (1–2)

Individual or group investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter.

AGS 420/420A Agriculture Skills and Facilities (2/1)

Development, operation, and management of agriculture facilities. Skills necessary for classroom, laboratory, and school farm instruction in agricultural education will be demonstrated. Emphasis will be on facility management and individual skills development and assessments. 2 lectures, 1 activity. Concurrent enrollment required.

AGS 430 Program Planning and Development (3)

Study of career opportunities in agriculture. Program development in such areas as the Future Farmers of America, and other youth groups. Supervised practice including cooperative work experience in agriculture. Development of up-to-date approaches in an integrated program. Operating policies and procedures. 3 lectures/problem-solving.

AGS 440/440A Procedures in Agricultural Education (2/2)

Approaches to the learning process and development of daily and unit plans as well as the utilization of resources. Class demonstration in teaching procedures with emphasis being given to J.I.T., micro-teaching, and the development of pedagogical skills including development analysis and evaluation. 2 lectures, 2 activity periods. Concurrent enrollment required.

AGS 441 Field Experiences in Agricultural Education (4)

An overview of Agricultural Education in the public schools. Professional type experience new to the student so that a valuable contribution toward career development results. Supervised, focused observation/participation at the secondary school level. Written reports necessary.

AGS 450/450A Field Practices and Supervision (1/2)

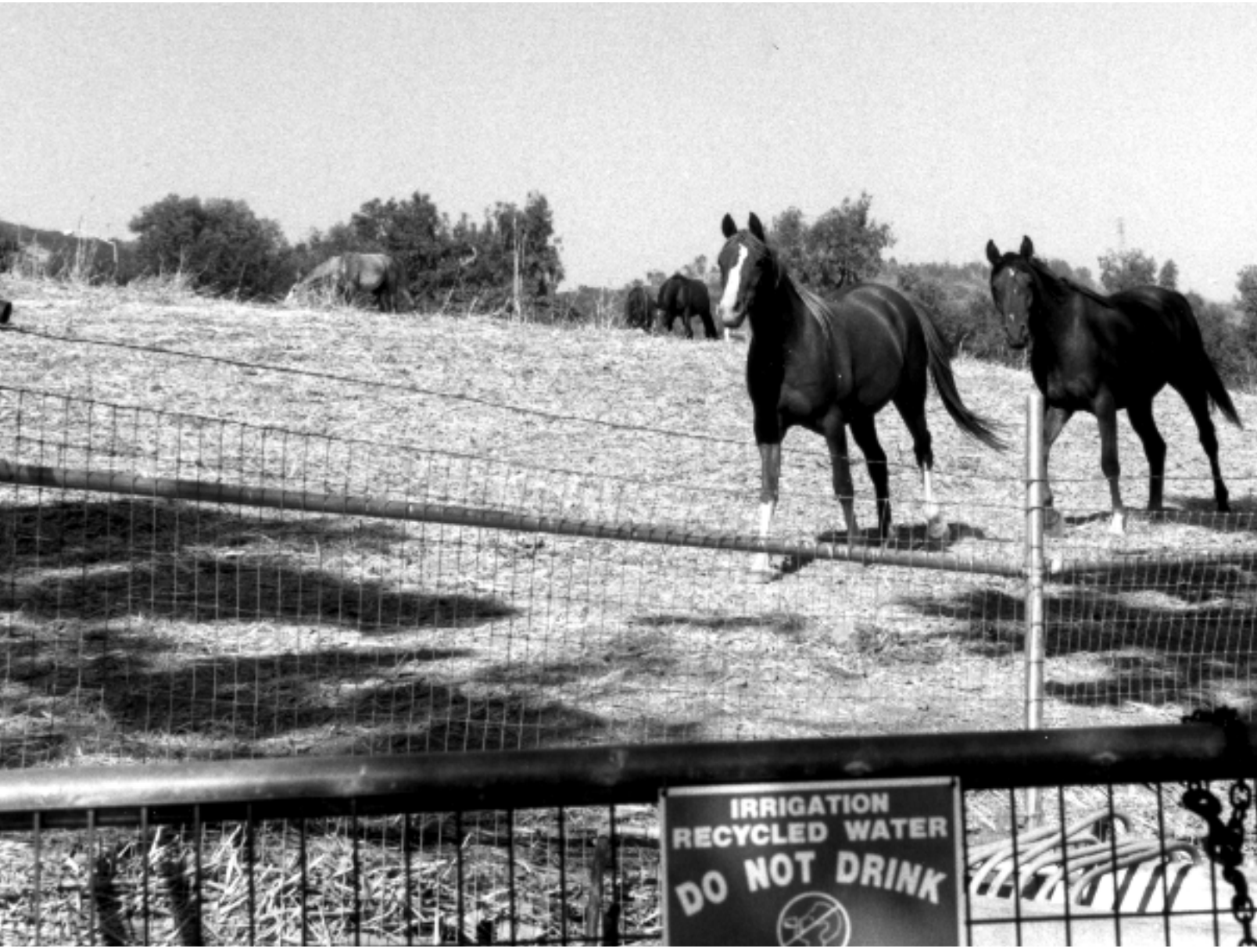
Organization and implementation of an instructional program in agricultural education. Field application of Future Farmers of America, supervised practice, and classroom instruction. 1 lecture, 2 activity. Concurrent enrollment required.

AGS 461, 462 Senior Project (2) (2)

Selection and completion of a project under faculty supervision. Projects typical of problems which graduates must solve in their fields of employment. Project results are presented in a formal report. Minimum 120 hours total.

AGS 499/499A/499L Special Topics for Upper Division Students (1–4)

Group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, or a combination of both. Graduate courses are listed in the graduate section of this catalog. Prerequisite: permission of instructor.



ANIMAL HEALTH SCIENCE

www.csupomona.edu/~vettech

James C. Alderson, Program Director

Gerald E. Hackett
Michelle E. Rash
Sherri Reichardt

The Animal Health Science major is a four-year curriculum, which is fully accredited by the American Veterinary Medical Association (AVMA) leading to a Bachelor of Science Degree in Animal Health Science. Students choose a business or science track in their major. Course work includes biology, chemistry, animal anatomy and physiology, animal nutrition, reproduction and computer training with specialized training in radiography, pharmacology, anesthesiology and surgical assisting. The care, nutritional requirements and diseases of companion animals and food animals is covered as well as the care and management of laboratory animals, exotics and animal facilities.

Four distinctive externships are required which provide training in animal health services allied to the veterinary profession. The Human-Animal bond is explored through the Pet Assisted Activities and Therapy Program, providing community service experience and 'Hands-On" participation.

The program is designed: (1) to train undergraduate students for careers which provide technical and supervisory support to the technological, business and/or educational aspects of animal health care under research and clinical environments such as private veterinary hospitals, laboratory animal facilities, pharmaceutical companies, research laboratories, diagnostic facilities, government services, zoos, and meat packing facilities, (2) to provide sufficient education and experience to enable all graduates to pass the California State Board Registered Veterinary Technician examination as well as the Veterinary Technician National Examination (VTNE) in order to qualify for employment in the veterinary technology profession, (3) to provide a broad university education by participating in the University's general education; English, mathematics, social sciences, and humanities, as well as biological and agricultural sciences, (4) to provide opportunities for continuing education for employed veterinary technologists and laboratory animal technicians.

CORE COURSES

Orientation to the College of Agriculture	AG	100	(1)
Orientation and Careers in AHS	AHS	104	(2)
Clinical Nutrition	AHS	110/110L	(5)
Animal Science I – Food Animal Science	AVS	112	(4)
Companion Animal Care	AHS	128	(3)
Companion Animal Nursing Skills Lab	AHS	128L	(1)
Animal Handling and Restraint	AHS	129/129L	(4)
Clinical Anatomy and Physiology for Veterinary Technicians	AHS	202/202L	(5)
Veterinary Radiology and Ultrasound	AHS	208/208L	(4)
Veterinary Terminology and Law	AHS	210	(3)
Laboratory Procedures for Veterinary Technicians	AHS	235/235L	(2)
Work Experience in Animal Health Science	AHS	244	(2)
Clinical Externship	AHS	245	(2)
Surgical Nursing Skills	AHS	263/263L	(2)
Animal Parasitology	AHS	302/302L	(4)
Clinical Pathology and Animal Diseases	AHS	305/305L	(5)
Clinical Biochemistry and Pharmacology	AHS	307/307L	(5)
Laboratory Animal Management Rules and Regulations	AHS	369/369L	(4)
Critical Care, Advanced Surgical Assisting, and Anesthesiology	AHS	407/407L	(4)
Externship in Animal Health Science	AHS	442	(3)
Externship in Animal Health Science	AHS	443	(3)
Veterinary Economics and Hospital Management	AHS	450	(3)
Undergraduate Seminar	AVS	463	(2)
or Development of Leadership Skills	AG	464	(3)

SUPPORT COURSES

Computer Applications in Agriculture	AG	128/128L	(2/1)
Basic Microbiology	MIC	201/201L	(5)
College Chemistry	CHM	122/122L	(4)
Elements of Organic Chemistry	CHM	201/250L	(4)
College Algebra	MAT	105	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

College Chemistry (B1, B3)	CHM	121/121L	(4)
Basic Biology (B2, B3)	BIO	115/115L	(5)
Statistics with Applications (B4)	STA	120	(4)
The Animal Industry and Society (B5)	AVS	311	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (fulfills Area C4 or D4)	AG	401	(4)
Introduction to American Government (D1a)	PLS	201	(4)
United States History (D1b)	HST	202	(4)
Agriculture and the Modern World (D2)	AG	101	(4)
Drugs and Society (E)	AVS	211	(4)

Science Track – Select 16 units

Biology of Cancer	BIO	302	(4)
Genetics	BIO	303	(4)
or Genetics of Domestic Animals	AVS	305	(4)
Cell and Molecular Biology	BIO	310	(4)
Neuroscience	BIO	424	(4)
Molecular Biology Techniques	BIO	451/451L	(3/2)
Medical Mycology	MIC	425/425L	(3/2)
Hematology	MIC	444/444L	(3/1)
Vertebrate Zoology	ZOO	238/238L	(3/2)
Animal Behavior	ZOO	419/419L	(2/1)
Histology	ZOO	422/422L	(2/3)
Herpetology	ZOO	429/429L	(2/2)
Organic Chemistry	CHM	314	(3)
Organic Chemistry	CHM	315	(3)
Organic Chemistry	CHM	316	(3)
Biochemistry	CHM	327	(3)
Biochemistry	CHM	328	(3)
Biochemistry	CHM	329	(3)
Clinical Chemistry	CHM	331/331L	(2/2)

Business Track – Select 16 units

Managerial Accounting for Decision Making	ACC	208/208A	(5)
Principles of Economics	EC	201	(4)
Legal Environment of Business	FRL	201	(4)
Management Information Systems	CIS	310	(4)
Food and Agribusiness Marketing	FMA	304	(4)
Or Principles of Marketing Management	IBM	301	(4)
Data Management for Agribusiness	FMA	375	(4)

Or Managerial Statistics	TOM	302	(4)
Operations Management for Agribusiness	FMA	376	(4)
Or Operations Management	TOM	301	(4)
Managing Agribusiness Organizations	FMA	201	(3)
Or Principles of Management	MHR	301	(4)
Managerial Finance	FRL	300	(3)
Agribusiness Personnel Management	FMA	402	(4)
Or Human Resource Management	MHR	311	(4)

UNRESTRICTED ELECTIVES

Unrestricted Electives . . . . . (2-3)
Select a sufficient number of courses so that the total from Required Core, Unrestricted Electives, and GE is at least 143 units.

GENERAL EDUCATION REQUIREMENTS

Students should consult the catalog website www.csupomona.edu/~academic/catalog/ for current information regarding this requirement. Unless specific courses are stated under Support Courses, see the list of approved courses under General Education Requirements, Areas A through E.

Area A. Communication and Critical Thinking (12 units)

1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Mathematics and Natural Sciences (16 units)

1. Physical Science
2. Biological Science
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Humanities (16 units)

1. Fine and Performing Arts
2. Philosophy and Civilization
3. Literature and Foreign Languages
4. Humanities Synthesis

Area D. Social Sciences (20 units)

1. U.S. History, Constitution, and American Ideals
2. History, Economics, and Political Science
3. Sociology, Anthropology, Ethnic and Gender Studies
4. Social Science Synthesis

Area E. Lifelong Understanding and Self-development (4 units)

ANIMAL HEALTH SCIENCE COURSES

AHS 104 Orientation and Careers in AHS (2)

This course will outline the academic path that students in the AHS major will follow. In particular, expectations and outcomes of the required externships and work experiences will be specified. The essential task list that has been developed by the American Veterinary Medical Association for veterinary technicians will be explained and distributed. Liability and health concerns will be discussed. This course will also discuss the various employment opportunities available for students graduating with this degree. 2 lectures.

*AHS 110/110L Clinical Nutrition (4/1)

Introduction to basic nutrients and nutritional needs of well animals and the ramifications of disease conditions on the nutritional needs and clinical case management. Students will complete the CVTEA required and recommended nutrition tasks for veterinary technologists. 2 lectures, 1 three-hour lab. Concurrent enrollment required. Prerequisites: AHS 104. *Students must receive a C- or better to graduate.

*AHS 128 Companion Animal Care (3)

Nutrition, common diseases, and behavior of companion animals. Dogs and cats will be the primary animals considered. Guest lecturers will present information on exotic animals. 4 lectures. *Students must receive a C- or better to graduate.

*AHS 128L Companion Animal Nursing Skills Lab (1)

An experiential course designed to provide instruction in basic and skilled nursing techniques in companion animal medical care. Classes will be held in on and off campus veterinary or animal facilities as is appropriate. This course is intended for lower division students in the Animal Health Sciences major. 2 three-hour laboratories. Prerequisite: Enrollment in the AHS Major. *Students must receive a C- or better to graduate.

AHS 129/129L Animal Handling and Restraint (2/2)

General concepts of restraint and handling of wild and domestic animals. Emphasis is on physical, chemical and moral/psychological restraint. Discussion of the tools/equipment of restraint, rope work and medical problems that might occur during restraint. 2 lectures, 2 three-hour laboratories. Concurrent enrollment required.

*AHS 202/202L Clinical Anatomy and Physiology for Veterinary Technicians (4/1)

This course provides instruction into the anatomy and physiology of domestic animals. Emphasis will be on those structures and systems critical from a veterinary clinical aspect. 4 hours lecture and 1 three-hour laboratory. Concurrent enrollment required. *Students must receive a C- or better to graduate.

*AHS 208/208L Veterinary Radiology and Ultrasound (2/2)

Instruction in the use of radiological equipment and the development and interpretation of radiographs as well as general principals of ultrasonography and their application in veterinary/clinical practice as used in veterinary clinics. 2 lectures and 2 three-hour laboratories. Concurrent enrollment required. Prerequisites: AHS 202/202L. *Students must receive a C- or better to graduate.

*AHS 210 Veterinary Terminology and Law (3)

Introduction to veterinary terminology and its usage in the veterinary field is covered extensively. The application of rules, guidelines and regulations of federal, state, county, municipal and local governments as well as OSHA/safety requirements, licensing and documentation requirements in the operation of animal health care are discussed. 3 lectures. Prerequisite: AHS 104. *Students must receive a C- or better to graduate.

*AHS 235/235L Laboratory Procedures for Veterinary Technicians (2)

Students will be familiar with the care and use of common laboratory equipment. They will gain experience in the collection and preparation of specimens, as well as skills required to complete common laboratory procedures. These procedures will include; basic hematology, urinalysis and others. 1 lecture, 1 three-hour lab Concurrent enrollment required. *Students must receive a C- or better to graduate.

+AHS 244 Work Experience in Animal Health Sciences (2)

Practical experience working in public or private clinics or laboratories where application of animal health sciences or research takes place.

Experiences should be useful in preparation for state board exams in veterinary technology and/or AAALAC exams for certification in laboratory animal care. This course is intended for lower division students in the Animal Health Sciences major. Prerequisite: AHS 104 and AHS 129L.

AHS 245 Clinical Externship (2)

Practical experience working in public or private clinics, or laboratories where application of animal health sciences or research takes place. Experiences should be useful in preparation for state and national board exams in veterinary technology and/or AAALAC exams for certification in laboratory animal care. Prerequisite: AHS 244.

***AHS 263/263L Surgical Nursing Skills (2)**

Students will gain experience in the skills required to work in the veterinary surgical arena. Presented will be; different types of anesthetics used, surgical equipment, instruments and aseptic technique. Students will be familiarized with the preparation for common surgical procedures. 1 lecture, 1 three-hour lab. Concurrent enrollment required. Prerequisite: AHS 128L. *Students must receive a C- or better to graduate.

***AHS 302/302L Animal Parasitology (3/1)**

The study of animal parasites and their relationship to clinical and subclinical parasitic diseases of livestock, companion animals, laboratory animals and wildlife. Emphasis will be placed on zoonotic parasites and parasites most commonly found in North America. 3 lectures, 1 three-hour laboratory. Concurrent enrollment required. Prerequisite: BIO 115/115L. *Students must receive a C- or better to graduate.

***AHS 305/305L Clinical Pathology and Animal Diseases (3/2)**

An advanced laboratory course providing instruction in hematology, clinical pathology, microbiology, urinalysis and necropsy procedures used to diagnose health problems in veterinary clinics and diagnostic laboratories. 3 lectures and 2 three-hour laboratories. Concurrent enrollment required. Prerequisites: AHS 235/235L, BIO 115/115L, CHM 121/121L. *Students must receive a C- or better to graduate.

***AHS 307/307L Clinical Biochemistry and Pharmacology (4/1)**

The use of clinical chemical procedures, the classification and action of pharmaceuticals, and the dispensing of medications will be studied. Includes conversion and calculation of drugs, prescription writing and routes of administration. 4 lectures, 1 three-hour laboratory. Prerequisites: AHS 305/305L. *Students must receive a C- or better to graduate.

***AHS 369/369L Laboratory Animal Management, Rules and Regulations (3/1)**

Instruction in specific concepts of laboratory animal facility management including; policies and procedures, research models, personnel, quality assurance, animal welfare and the physical plant are discussed. Emphasis is placed on supervisory management and the role of the veterinary technician. 3 lectures, 1 three-hour laboratory. Concurrent enrollment required. Prerequisites: AHS 104, AHS 129/129L. *Students must receive a C- or better to graduate.

***AHS 407/407L Critical Care, Advanced Surgical Assisting and Anesthesiology (2/2)**

Instruction in the specific concepts of intensive care veterinary nursing, surgical assisting in advanced and/or specialized surgical techniques and advanced anesthesia techniques will be mastered. 2 lectures, 2 three-hour laboratories. Prerequisites: AHS 202/202L, AHS 208/208L, AHS 263/263L, AHS 305/305L, AHS 307/307L, and permission of instructor. *Students must receive a C- or better to graduate.

+AHS 442 Externship in Animal Health Sciences I (3)

Practical experience working in public or private clinics or laboratories where application of animal health sciences or research takes place. Experiences should be useful in preparation for state board exams in veterinary technology and/or AAALAC exams for certification in laboratory animal care. This course is intended for upperdivision students in the Animal Health Sciences major. Prerequisite: AHS 245.

+AHS 443 Externship in Animal Health Sciences II (3)

Practical experience working in public or private clinics or laboratories where application of animal health sciences or research takes place. Experiences should be useful in preparation for state board exams in veterinary technology and/or AAALAC exams for certification in laboratory animal care. This course is intended for upper division students in the Animal Health Sciences major. Prerequisite: AHS 442.

AHS 450 Veterinary Economics and Hospital Management (3)

Principles of veterinary economics as they relate to companion animals. Analysis of market and industry conditions that shape veterinary practice and veterinary economics. Study of hospital management strategies, including: administrative, marketing, legal, human resource, client communication, standards of care, inventory control, medical records, practice management software, profitability and hospital design. 3 lectures.

ANIMAL SCIENCE

www.csupomona.edu/~avs

Edward S. Fonda, Interim Chair
James C. Alderson, Assistant Chair

Wayne R. Bidlack
Wei Bidlack
Robert E. Bray
Louis A. Foster
Danilo Franco
Gerald E. Hackett, Jr.
Shelton E. Murinda
Michelle E. Rash
Broc A. Sandelin

A four-year curriculum leading to a Bachelor of Science degree in Animal Science with subplans in preveterinary science/graduate school, animal industries/business management, and equine sciences. Animal health science is also offered by the department as a separate major.

Courses offered by the department are designed to fulfill career needs for men and women in the science and business phases of the animal industry.

Specialized laboratories are provided for meat, wool, and animal production. The department maintains 330 acres of range land and 100 acres of irrigated pasture. Livestock includes a purebred breeding herd of Aberdeen-Angus and Polled Herefords, and commercial feeder cattle; the Kellogg Arabian horses; flocks of purebred Rambouillet and Suffolk sheep, a herd of commercial breeds of swine.

A Master of Science degree in Agriculture with a subplan in animal science is offered. Specializations available within the degree are animal nutrition, animal breeding, meat science, and animal physiology.

Location of the university provides rich opportunities for students to obtain specialized and practical educational experience in production, management, feeding, marketing and processing. Cooperation of prominent local breeders, feeders, producers, marketing organizations and related animal industries offers additional opportunity for field study. Facilities for student-owned and operated livestock projects are made available by the Cal Poly Pomona Foundation. For the student interested in meat science and processing, specialized courses are available. A student may develop a program emphasizing meat science by consulting with the appropriate departmental advisor.

The Preveterinary Science/Graduate School subplan meets requirements for admission to schools of veterinary medicine, related medical technical fields, and for graduate study in animal nutrition, meat science, animal breeding and animal physiology.

The Animal Industries/Business Management subplan, Equine Industries track with emphasis in science or business, is designed to prepare students for employment as managers of equine enterprises and related agribusiness opportunities in the equine industry. The subplan combines course work in equine production, nutrition, breeding, genetics and diseases with studies in the management aspects of an equine enterprise.

The Animal Industries/Business Management subplan, Animal Business track, stresses preparation for management positions in the production and marketing of animal agribusiness products. Particular emphasis is given to animal industries needing animal specialists as part of their management and marketing team. This subplan is also useful for students planning to teach agriculture at the secondary level or to serve in developing countries.

PHYSIOLOGY MINOR

Non-majors may elect to minor in Animal Science by completing a minimum of 32 units, 9 of which must be upper division.

The Physiology minor is an interdisciplinary program which can be elected by students majoring in any field. Its purpose is to improve the training and advising of students in order to facilitate their pursuit of careers in biomedical fields utilizing a knowledge of Physiology. It is particularly appropriate for students majoring in Animal Science.

A full description of the minor is provided in the University Programs section of this catalog.

QUANTITATIVE RESEARCH MINOR

The Quantitative Research minor is an interdisciplinary program which can be taken by students majoring in any field other than Mathematics. Its purpose is to prepare students to conduct quantitative analyses in their chosen discipline. Students acquire practical experience using statistics, principles of experimental design, survey and data analysis techniques. This minor is particularly suited for students majoring in Animal Science. A full description of this minor is included in the University Programs section of this catalog.

CORE COURSES FOR ANIMAL SCIENCE MAJOR

Required of all students. A 2.0 cumulative GPA is required in core courses including subplan courses for the major in order to receive a degree in the major.

Orientation to the College of Agriculture	AG	100	(1)
Feeds and Feeding	AVS	101/101L	(3/1)
Animal Science I: Food Animal Science	AVS	112	(4)
Animal Science II: Companion, Laboratory and Exotic Animal Science	AVS	113	(4)
Animal Science Laboratory I: Food Animal Management Laboratory	AVS	114L	(1)
Animal Science Laboratory II: Companion, Laboratory, and Exotic Animal Science Lab	AVS	115L	(1)
Animal Diseases	AVS	201	(3)
Anatomy and Physiology of Domestic Animals	AVS	350/350L	(5)

REQUIRED SUBPLAN COURSES FOR MAJOR

Required in specific subplans

PRE-VETERINARY SCIENCE/GRADUATE SCHOOL

Animal Parasitology	AHS	302/302L	(4)
Meat Science and Industry	AVS	327/327L	(4)
Applied Animal Feeding	AVS	303/303L	(4)
or Animal Nutrition	AVS	402	(3)
Genetics	BIO	303	(4)
or Genetics of Domestic Animals	AVS	305	(4)
Animal Breeding	AVS	404/404A	(4)
Mammalian Endocrinology	AVS	412	(4)
Physiology of Reproduction and Lactation	AVS	414/414L	(4)
Biotechnology Applications in Animal Science	AVS	430/430L	(4)
Undergraduate Seminar	AVS	463	(2)
or Development of Leadership Skills	AG	464	(3)

Support and Directed Courses

Computer Applications in Agriculture	AG	128/128L	(2/1)
College Chemistry	CHM	122/122L	(4)
College Chemistry	CHM	123/123L	(4)
Organic Chemistry	CHM	314/317L	(4)
Organic Chemistry	CHM	315/318L	(4)
Organic Chemistry	CHM	316	(3)
Elements of Biochemistry	CHM	321/321L	(4)
College Algebra	MAT	105	(4)
Trigonometry	MAT	106	(4)
College Physics	PHY	121/121L	(4)
College Physics	PHY	122/122L	(4)
Basic Microbiology	MIC	201/201L	(5)
Vertebrate Zoology	ZOO	238/238L	(5)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Statistics with Applications (B4)	STA	120	(4)
College Chemistry (B1, B3)	CHM	121/121L	(4)
Basic Biology (B2, B3)	BIO	115/115L	(5)
Introduction to American Government (D1a)	PLS	201	(4)
United States History((D1b)	HST	202	(4)
Agriculture and the Modern World (D2)	AG	101	(4)
The Animal Industry and Society (B5)	AVS	311	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)
Drugs and Society (E)	AVS	211	(4)

UNRESTRICTED ELECTIVES

Unrestricted Electives . . . . . (1-3)
Select a sufficient number of courses so that the total from Required/Subplan Option, Unrestricted Electives, and GE is at least 104 units.

ANIMAL INDUSTRIES/BUSINESS MANAGEMENT – ANIMAL AGRIBUSINESS TRACK

Principles of Market Animal and Carcass Evaluation	AVS	240/240L	(3)
Meat Science and Industry	AVS	327/327L	(4)
Animal Parasitology	AHS	302/302L	(4)
Applied Animal Feeding	AVS	303/303L	(4)
or Animal Nutrition	AVS	402	(3)
Animal Breeding	AVS	404/404A	(4)
or Genetics of Domestic Animals	AVS	305	(4)
Physiology of Reproduction and Lactation	AVS	414/414L	(4)
Biotechnology Applications in Animal Science	AVS	430/430L	(4)
Undergraduate Seminar	AVS	463	(2)
or Development of Leadership Skills	AG	464	(3)
Accounting for Agribusiness	FMA	324	(4)
Or Financial Accounting Decision Making	ACC	207/207A	(5)
Financial Analysis for Agribusiness	FMA	326	(4)
Agricultural Enterprise Management	FMA	328	(4)

Support and Directed Courses

Computer Applications in Agriculture	AG	128/128L	(2/1)
College Algebra	MAT	105	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Statistics with Applications (B4)	STA	120	(4)
College Chemistry (B1, B3)	CHM	121/121L	(4)
Basic Biology (B2, B3)	BIO	115/115L	(5)
The Animal Industry and Society (B5)	AVS	311	(4)
Introduction to American Government (D1a)	PLS	201	(4)
United States History((D1b)	HST	202	(4)
Agriculture and the Modern World (D2)	AG	101	(4)
Drugs and Society (E)	AVS	211	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)

Restricted Electives – Animal Agribusiness Track (36 units)

Principles of Economics	EC	201	(4)
Managerial Accounting for Decision Making	ACC	208/208A	(5)
Legal Environment of Business	FRL	201	(4)
Management Information Systems	CIS	310	(4)
Food and Agribusiness Marketing	FMA	304	(4)
Or Principles of Marketing Management	IBM	301	(4)
Data Management for Agribusiness	FMA	375	(4)
Or Managerial Statistics	TOM	302	(4)
Operations Management for Agribusiness	FMA	376	(4)
Or Operations Management	TOM	301	(4)
Managing Agribusiness Organizations	FMA	201	(3)
Or Principles of Management	MHR	301	(4)
Managerial Finance	FRL	300	(3)
Agribusiness Personnel Management	FMA	402	(4)
Or Human Resource Management	MHR	311	(4)

Unrestricted Electives

Unrestricted Electives . . . . . (2-5)
Select a sufficient number of courses so that the total from Required Track, Unrestricted Electives, and GE is at least 113 units.

ANIMAL INDUSTRIES/BUSINESS MANAGEMENT – EQUINE SCIENCE TRACK

Equine Management Science	AVS	125/125L	(4)
Animal Parasitology	AHS	302/302L	(4)
Animal Nutrition	AVS	402	(3)
or Applied Animal Feeding	AVS	303/303L	(4)
Animal Breeding	AVS	404/404A	(4)
or Genetics of Domestic Animals	AVS	305	(4)
Physiology of Reproduction and Lactation	AVS	414/414L	(4)
Biotechnology Applications in Animal Science	AVS	430/430L	(4)
Undergraduate Seminar	AVS	463	(2)
Or Development of Leadership Skills	AG	464	(3)
Accounting for Agribusiness	FMA	324	(4)
Or Financial Accounting Decision Making	ACC	207/207A	(5)
Financial Analysis for Agribusiness	FMA	326	(4)
Agricultural Enterprise Management	FMA	328	(4)
Equine Enterprise Management	FMA	329	(3)
Equine Investment Management	FMA	429	(3)

Support and Directed Courses

Computer Applications in Agriculture	AG	128/128L	(2/1)
College Algebra	MAT	105	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Statistics with Applications (B4)	STA	120	(4)
College Chemistry (B1, B3)	CHM	121/121L	(4)
Basic Biology (B2, B3)	BIO	115/115L	(5)
The Animal Industry and Society (B5)	AVS	311	(4)
Introduction to American Government (D1a)	PLS	201	(4)
United States History (D1b)	HST	202	(4)
Agriculture and the Modern World (D2)	AG	101	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)
Drugs and Society (E)	AVS	211	(4)

Restricted Electives (30 units)

Farrier Science	AVS	234	(2)
Farrier Science Laboratory	AVS	235L	(2)
Horsemanship	AVS	335L	(2)
Equine Genetics	AVS	345	(3)
Equine Nutrition	AVS	355	(3)
Equine Herd Health and Management	AVS	365/365L	(4)
Equine Exercise Physiology	AVS	435	(3)
Equine Reproduction	AVS	434	(3)
Pasture and Forage Systems	PLT	223/223L	(4)
Soil Science	PLT	231/231L	(4)

UNRESTRICTED ELECTIVES

Unrestricted Electives .....(5-8)
Select a sufficient number of courses so that the total from Required Track, Unrestricted Electives, and GE is at least 119 units.

GENERAL EDUCATION REQUIREMENTS

Students should consult the catalog website www.csupomona.edu/~academic/catalog/ for current information regarding this requirement. Unless specific courses are stated under Support Courses, see the list of approved courses under General Education Requirements, Areas A through E.

Area A, Communication and Critical Thinking (12 units)

1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Mathematics and Natural Sciences (16 units)

1. Physical Science
2. Biological Science
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Humanities (16 units)

1. Fine and Performing Arts
2. Philosophy and Civilization
3. Literature and Foreign Languages
4. Humanities Synthesis

Area D. Social Sciences (20 units)

1. U.S. History, Constitution, and American Ideals
2. History, Economics, and Political Science
3. Sociology, Anthropology, Ethnic and Gender Studies
4. Social Science Synthesis

Area E. Lifelong Understanding and Self-development (4 units)

ANIMAL SCIENCE MINOR COURSES

Feeds and Feeding	AVS	101/101L	(4)
Animal Science I: Food Animal Science	AVS	112	(4)
Animal Science II: Companion, Laboratory and Exotic Animal Science	AVS	113	(4)
Animal Science Laboratory I: Food Animal Management Laboratory	AVS	114L	(1)
Animal Science Laboratory II: Companion, Laboratory and Exotic Animal Science Lab	AVS	115L	(1)
Meat Science and Industry	AVS	327/327L	(4)

Select 12 units of approved upper division courses
Animal Science Electives ..... (12)

COURSE DESCRIPTIONS

CR/NC courses noted with a +

AVS 101/101L Feeds and Feeding (3/1)

A practical, applied course which provides instruction in animal nutrition and the use of the nutritional values of feedstuffs and the nutritional requirements of animals in the formulation of least-cost, balanced rations for domestic farm animals. 3 lecture, 1 three-hour laboratory. Concurrent enrollment required.

AVS 112 Animal Science 1: Food Animal Science (4)

A study of livestock industry and animal management techniques emphasizing the importance of management strategies, equipment and facilities, nutrition, selection, breeding principles and disease control to ensure scientifically based management decisions. 4 lectures.

AVS 113 Animal Science II: Companion, Lab, and Exotic Animal Science (4)

An introductory course in the areas of nutrition, management, prevention of common diseases, behavior and breed identification of dogs, cats, laboratory animals, small mammals and reptiles. Emphasis on animals will be in the order listed. 4 lectures.

AVS 114L Animal Science I: Food Animal Management Laboratory (1)

A study of the commonly applied animal techniques and practices used to scientifically manage livestock in the commercial food animal industry. The lab will emphasize the importance of evaluating business management strategies, equipment and facilities, nutrition, genetics and selection, breeding principles and herd health plans in order to evaluate scientifically based domestic animal livestock management methodologies. 1 three-hour laboratory.

AVS 115L Companion, Lab, and Exotic Animal Science Lab (1)

An introductory laboratory course covering handling and restraint of dogs, cats, horses, birds, laboratory animals, small mammals, and reptiles. Emphasis on animals will be in the order listed. 1 three-hour laboratory.

AVS 124/124A Basic Equitation (1/2)

The fundamentals of the art of equitation. The anatomy of the horse as it pertains to riding. Equipment utilized in training and riding, care of the horse and safety precautions emphasized. 1 lecture, 2 two-hour activities. Concurrent enrollment required.

AVS 125/125L Equine Management Science (3/1)

A study of the horse industry emphasizing the importance of breeds, selection, evaluation, nutrition, breeding principles, disease control, equipment, and facilities to ensure scientifically-based management decisions. 3 lectures, 1 three-hour laboratory. Concurrent enrollment required.

AVS 132/132L Light Horse Halter and Performance Evaluation (1/1)

Visual evaluation of various breeds of light horses at the halter and under saddle. Intensive training for intercollegiate horse judging competition. 1 lecture, 1 three-hour laboratory. Concurrent enrollment required.

+AVS 200 Special Study for Lower Division Students (1–2)

Individual or group investigation, research, studies or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter. Graded only on a CR/NC basis.

AVS 201 Animal Diseases (3)

Study of factors contributing to animal diseases and their control. 3 lectures.

AVS 211 Drugs and Society (4)

An introductory course that identifies and explains the action of different drugs. The compounds discussed include over-the-counter drugs, prescription drugs, social drugs and drugs of abuse. Major emphasis on human pharmacology with some discussion of domestic animals. No prerequisites. Meets General Education Area E requirements. 4 lectures.

AVS 224A Intermediate Equitation (2)

An activity riding class allowing students to develop proficiency in the riding skills they have been exposed to in prior experience. 2 two-hour activity periods.

AVS 234 Farrier Science (2)

Understanding the fundamentals of horseshoeing, anatomy and physiology of the horses foot, pastern and leg. Caring for the horses feet and legs, principles of horseshoeing and introduction to corrective shoeing. 2 lectures.

AVS 235L Farrier Science (2)

Fundamentals of horseshoeing, anatomy and physiology of the horses foot, pastern and leg. Trimming feet, fitting, milling shoes, principles of horseshoeing, an introduction to corrective shoeing. 2 three-hour laboratories. Prerequisite: AVS 234 or concurrent enrollment in AVS 234.

AVS 240/240L Principles of Market Animal and Carcass Evaluation (2/1)

A study of the relationship between live meat animal evaluation and carcass evaluation. Visual appraisal techniques used in the quality and yield grading of live meat-type animals compared to the grading parameters used for carcass evaluation. Incorporates the effect of selection and management on body composition and live animal and carcass value. 2 lectures, 1 three-hour laboratory. Concurrent enrollment required.

AVS 241L Introductory Livestock Evaluation (2)

Instruction in selection of beef cattle, sheep, swine, and horses according to utility, type and breed. 2 three-hour laboratories.

AVS 299/299A/299L Special Topics for Lower Division Students (1–4)

Group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units, with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination.

AVS 300 Animal Issues in Science and Society (4)

This course addresses global issues and ethics relating to animal use in science and society, including the use of animals for food, research and companionship. The impacts of livestock production on environment such as global warming, soil erosion, forestry and rangeland resources, water resources and livestock-wildlife interactions will be considered. 4 lectures.

AVS 303/303L Applied Animal Feeding (3/1)

A study of the nutritional requirements for maintenance, growth, fattening, reproduction and lactation of domestic animals. The use of computerized formulation of rations to satisfy nutritional requirements. 3 lectures, 1 three-hour laboratory. Concurrent enrollment required. Prerequisite: AVS 101/101L.

AVS 304 Avian Health Care and Management (3)

Consideration of the etiology, symptomatology, and control of infectious, nutritional, and parasitic diseases of poultry. 3 lectures.

AVS 305 Genetics of Domestic Animals (4)

An introductory course dealing with genetic principles of all species of livestock and companion animals. Topics covered include: principles of heredity, genetic abnormalities, transmission genetics, Mendelian principles, molecular genetics, population genetics, DNA and RNA structure and function, gene expression, and biotechnology advances in genetics. 4 lectures. Prerequisites: BIO 115/115L or BIO 121/121L.

AVS 311 The Animal Industries and Society (4)

The course analyzes the application of science in the food animal industry and animal production systems, the role and use of food animals and animal products in resolving problems associated with humanity, and the influence of animal agriculture on history, civilization and human values. 4 lecture/discussions. Pre-requisites: one GE course from each of the following Sub-areas: A1, A2, A3 and B1, B2, B4. GE Synthesis course for Sub-area B5.

AVS 327/327L Meat Science and Industry (3/1)

Introduction to processing and utilization of fresh and value-added red meat products. Discussions on identity standards, factors affecting sensory, nutritional, and shelf-life qualities, food safety and inspection, and grading of red meats. 3 lectures, 1 three-hour laboratory. Concurrent enrollment required.

AVS 328/328A Seafood and Poultry Processing Technology (3/1)

Introduction to the processing, marketing and utilization of fresh and value-added seafood and poultry products for the supermarket and food service industries. Examination of classification and standards to identify, marketing channels and forms, grading systems, factors affecting quality, food safety and public health considerations, and processing methods for the respective product types. 3 Lectures, 1 two-hour activity. Concurrent enrollment required.

AVS 333 Feline and Canine Compendium (4)

How the origins and evolution of the domestic dog and cat influence their behavior and unique nutritional requirements, how selection for desired traits leads to breed associated problems, emergency first aid, nutrition, calculation of caloric requirements, common diseases, vaccines and the immune system, zoonotic diseases (diseases transmitted from animals to man), the benefit of pets in society, ethical issues including: euthanasia, pet overpopulation, cosmetic surgery and ownership vs guardianship. Meets General Education Sub Area B-4 requirements. 4 lectures. Pre-requisites: GE Sub Area B, subsection 1,2 and 3.

AVS 335L Horsemanship (2)

Theory and practice of basic training principles and methods. Handling, training, grooming of the young foal and yearling. Instruction in long line training and ground driving. 2 three-hour laboratories. Prerequisite: AVS 125/125L.

AVS 341L Livestock Evaluation (3)

Intensive visual evaluation of breeding and market swine, sheep and beef cattle in preparation for intercollegiate livestock judging competition. Extensive training in the preparation and delivery of oral reasons. 3 three-hour laboratories. Prerequisite: AVS 241L.

AVS 345 Equine Genetics and Breeding Principles (3)

Principles of inheritance for qualitative and quantitative traits. Inheritance of color in the horse. Genetically caused abnormalities; methods of detection of carrier animals. Mare and stallion selection; pedigrees and other types of performance information and their use. 3 lectures. Prerequisites: BIO 115/115L or BIO 121/121L, AVS 125/125L.

AVS 350/350L Anatomy and Physiology of Domestic Animals (4/1)

An integrated approach to the structure and function of animal systems. Topics to be discussed include the cell, the muscular-skeletal system, the nervous system, the cardio-vascular system, the respiratory system, and the excretory system. 4 lectures, 1 three-hour laboratory. Prerequisites: BIO 115/115L and CHM 121/121L. Concurrent enrollment required.

AVS 355 Equine Nutrition (3)

Anatomy of the digestive tract of the horse as it affects feeding practices. Nutrient requirements for maintenance, work, pregnancy, and lactation in the horse. Interpreting National Research Council Nutrient Requirements for Horses. Assessing recent advances in horse nutrition. 3 lectures. Prerequisites: AVS 101/101L, AVS 125/125L.

AVS 365/365L Equine Herd Health Care and Management (3/1)

A study of the etiology, symptomalogy, and control of infectious, nutritional and parasitic diseases of horses. 3 lectures, 1 three-hour laboratory. Prerequisite: AVS 125/125L. Concurrent enrollment required.

+AVS 400 Special Study for Upper Division Students (1–2)

Individual or group investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter. Graded only on a CR/NC basis.

AVS 402 Animal Nutrition (3)

Metabolism of proteins, carbohydrates, fats, minerals, and vitamins. Relationship of proper nutrition to livestock production. 3 lectures. Prerequisites: AVS 101/101L.

AVS 403 Ruminant Nutrition (3)

Implications of recent findings in ruminant nutrition. The physicochemical processes of digestion and absorption. Metabolism and the importance of rumen microflora. Normal metabolism and abnormal metabolic disorders. Modes of action of feed additives. 3 lectures. Prerequisite: AVS 101/101L.

AVS 404/404A Animal Breeding (3/1)

Introduction to the basic principles of applied quantitative genetics and their use in the improvement of livestock. Methods of heritability estimation, selection, and systems of mating. 3 lectures, 1 two-hour recitation. Prerequisite: BIO 303 or AVS 305.

AVS 405/405L Immunological Procedures in Animal Production (3/1)

The application of immunology to disease control in farm animals; the use of immunological techniques in animal research; and potential as a tool in livestock production. 3 lectures, 1 three-hour laboratory. Prerequisite: AVS 350/350L. Concurrent enrollment required.

AVS 412 Mammalian Endocrinology (4)

A general course surveying the glands of internal secretion and their role in development, growth, metabolic regulation, lactation, and reproduction of animals. 4 lectures. Prerequisite: AVS 350/350L or equivalent.

AVS 414/414L Physiology of Reproduction and Lactation (3/1)

A study of the physiological processes of reproduction from gametogenesis to parturition. The reproductive cycles of the food animals and the physiology of milk secretion including factors affecting milk production will be discussed. 3 lecture discussions, 1 three-hour laboratory. Prerequisite: AVS 350/350L or equivalent. Concurrent enrollment required.

AVS 415/415L Applied Reproductive Management of Domestic Animals (3/1)

Fundamentals and techniques used in the manipulation of gametes in the reproductive management of birds, cattle, horses, sheep and swine. Applied physiological aspects of reproductive management, semen cryopreservation, artificial insemination and embryo micromanipulation techniques used in the livestock industry will be evaluated. 3 lectures; 1 three-hour laboratory. Concurrent enrollment required. Prerequisite: AVS 414/414L.

AVS 424L Nutritive Analysis (2)

Laboratory course involving the principles and practices in quantitative analysis of feedstuffs. 2 three-hour laboratories. Prerequisites: instructor approval.

AVS 427/427L Meat Processing and Technology (3/1)

Manufacturing of processed meats, and meat products as related to processing operations, sanitation, product formulation, quality control, and smokehouse operations. 3 lectures, 1 three-hour laboratory. Prerequisite: AVS 327/327L.

AVS 430/430L Biotechnology Applications in Animal Science (3/1)

A study of the principles and applications of biotechnology in Animal Science. Discussion of the implications of genetic engineering, gene transfer, transgenic animals, embryo transfer and embryo manipulation for livestock improvement; present and future importance to the agriculture industry, human and veterinary medicine, ethical issues, patent law and strategies for future problem-solving. 3 lectures, 1 three-hour laboratory. Prerequisites: Management Science Courses, AVS 112 or AVS 113, AVS 350/350L, BIO 303 or AVS 305 or AVS 345.

AVS 431 Avian Physiology (3)

Detailed consideration of the physiology of avian species with emphasis on birds of economic importance to man. 3 lectures.

AVS 432/432A Advanced Animal Breeding (3/1)

Introduction to the theoretical development and principles of quantitative genetics including selection theory and heritability, breed, strain and line formation. 3 lectures, 1 two-hour recitation.

AVS 434 Equine Reproduction (3)

Distance learning course that provides in-depth knowledge of the reproductive physiology, anatomy and endocrinology of the mare and stallion. Emphasis on structure/function relationships as they are applied to improving equine reproductive management and efficiency. 3 lectures.

AVS 435 Equine Exercise Physiology (3)

The basic and applied physiology of the exercising horse. Discussion of muscular respiratory, cardiovascular, nutritional and osmo-regulatory physiology. Includes gait analysis, lameness and pharmacology. 3 lectures. Prerequisite: AVS 350/350L.

AVS 436 Biochemical Adaptations in Animals (3)

A view of how the biochemistry of animals has adapted to the environment. Topics include adaptations to exercise, high altitude, diving, hibernation, desiccation, temperature, lactation. Students are expected to present seminars. 3 lectures. Prerequisites: BIO 115/115L or BIO 121/121L, and junior standing.

+AVS 441 Internship in Animal Science (1–16)

On-the-job training in animal science, providing collegiate level experiences in animal production, agribusiness and related areas. Experiences may be useful for preparation of senior projects. Total credit limited to 16 units. Graded only on a CR/NC basis. Prerequisite: permission of coordinator required in advance.

AVS 461, 462 Undergraduate Research I, II (2) (2)

Selection and completion of a project under minimum supervision. Projects typical of problems which graduates must solve in their fields of employment. Project results are presented in a formal report. Minimum 120 hours total time.

AVS 463 Undergraduate Seminar (2)

New methods and developments, practices, and procedures in the field. 2 lectures. Prerequisite: senior standing.

AVS 472/472L Feed Manufacturing Technology (3/1)

An integration of prior course work to the feed industry including plant design, plant management, materials handling and storage, manufacturing operations, speciality feeds, computer applications, quality assurance, sanitation and pest management, safety, energy requirements, and environmental concerns. 3 lectures/problem-solving, 1 three-hour laboratory. Concurrent enrollment required. Prerequisites: AVS 303/303L or AVS 402/402A or AVS 403.

AVS 473 Clinical Nutrition for Animals (4)

Nutritional considerations for animals with diseases. Emphasis on dogs and cats. A brief review of the pathophysiology of a disease with an emphasis on the nutrients affected. Review of commercial diets available. 4 lectures/problem-solving. Prerequisites: AVS 101 or AHS 110, AVS 201 or AHS 205, AVS 350 or AHS 202.

AVS 499/499A/499L Special Topics for Upper Division Students (1–4)/(1–4)/(1–4)

Group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination.

Graduate courses are listed in the "Graduate Studies" section of the catalog.

APPAREL MERCHANDISING AND MANAGEMENT

www.csupomona.edu/~amm/

Peter Kilduff, Chair

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The apparel production and distribution sector is a major component of the US economy. In addition to apparel manufacturing, international trading, and retailing activities, it embraces many specialist supporting sectors, including the media, logistics, business consulting, textiles, and equipment manufacturing. Southern California is home to a vibrant apparel sector, the largest in the nation. Renowned as a leading international fashion center, the Los Angeles area contains many top apparel brands and retail groups. It is also an incubator for dynamic new apparel companies based on the California lifestyle.

The Apparel Merchandising and Management program prepares students for leadership roles in what is a dynamic and global business sector. Career opportunities are diverse, embracing areas such as design, product development, manufacturing, merchandising, international sourcing, retail buying, visual merchandising, store operations management and brand management.

The Bachelor of Science in Apparel Merchandising and Management has two subplans: Apparel Production and Fashion Retailing. These subplans, similar at the freshman, sophomore and beginning junior levels, diverge in the balance of upper division coursework into one of two areas of specialization. The common core of courses for the two subplans provides graduates with a broad based interdisciplinary educational background in product design and technology as well as in manufacturing and retailing processes. Graduates will have experience in all areas of the apparel business from market research through product development, production, wholesale and retail distribution, and brand marketing. Through a combination of coursework and internship, graduates will be prepared for managerial and executive level career paths.

The apparel curriculum contains a combination of theory and application in both the classroom and on-thejob internships. An Apparel Industry Advisory Board works closely with the apparel faculty in keeping the curriculum current and providing internship opportunities. The Apparel Production subplan is endorsed by the American Apparel and Footwear Association.

Students are actively involved in the apparel industry and utilize actual manufacturing and retailing facilities for first hand knowledge. Fashion Retailing students operate their own micro apparel retail business, ApparelScapes, on campus. Apparel Production students similarly develop and market their own clothing line, labeled AM^2, and sell it through ApparelScapes and the Bronco Bookstore.

Students work closely with their faculty advisors on career counseling, scheduling, and internship placement. They may also participate in the student organization, the Apparel Merchandising and Management Association, as well as many professional organizations and events.

The Apparel Merchandising and Management Department also offers a minor in Fashion Merchandising administered jointly with the International Business and Marketing Department.

For more information, contact the Apparel Merchandising and Management Department in Building 45 Room 152 at (909) 869-3377.

Any student who meets the CSU entrance requirements will be eligible to enter this program. A student who successfully completes the required units as described will be eligible for graduation.

Apparel Technology and Research Center (ATRC)

The Apparel Technology and Research Center (ATRC) provides outreach services for apparel and related businesses, and professional and government organizations. The Center offers applied research and technology transfer services, as well as on-line education, consulting and information services through the ATRC website atrc.ag.csupomona.edu/ The ATRC is a self-supporting center funded by industry.

CORE COURSES

Required of all students. A 2.0 cumulative GPA is required in core courses including subplan courses for the major in order to receive a degree in the major.

Fashion Industry	AMM	101	(4)
Culture, People, and Dress	AMM	108	(4)
Introduction to Textile Science	AMM	160	(3)
Apparel Design Analysis	AMM	210/210A	(2/2)
Fashion Promotion	AMM	230	(4)
Apparel Merchandise and Buying	AMM	250	(4)
Visual Merchandising/Store Design	AMM	270/270A	(2/1)
Fashion Industries Dynamics	AMM	300	(2)
Design and Merchandising Strategies	AMM	310/310A	(2/1)
Apparel Technical Design	AMM	314/314A	(2/2)
Apparel Importing and Exporting	AMM	357	(3)
Textile Specification Buying	AMM	360/360A	(2/2)
Apparel Product Analysis	AMM	380/380L	(2/1)
Apparel Production	AMM	381/381L	(3/1)
Internship/Career Preparation	AMM	441	(1)
Internship	AMM	442	(3)

APPAREL PRODUCTION

Subplan Courses

Apparel Production Laboratory	AMM	180L	(1)
Apparel Product Development	AMM	410/410A	(2/2)
Apparel Pre-Production	AMM	414/414A	(2/2)
Advanced Apparel Production	AMM	481/481L	(3/1)
Apparel Product Development Simulation	AMM	492/492A	(2/2)

Support Courses

Orientation to College of Agriculture	AG	100	(1)
Prod Control/Laboratory	ETP	276/L	(3/1)
or Work Analysis and Design/Laboratory	IME	224/L	(3/1)
Personnel Management	FMA	402	(4)
Industrial Costs and Control	IME	239	(3)
Leadership	MHR	450	(4)
Managerial Statistics	TOM	302	(4)
or Data Management for Agribusiness	FMA	375	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Statistics with Applications (B4)	STA	120	(4)
CHM or PHY (B1)			(4)
ART 110, 212, 213, 214, or 216 (C1)			(4)
FLxxx Spanish or Chinese (C3)			(4)
Ag and the Modern World (D2)	AG	101	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)

Restricted Electives (select 0–22 units)

Special Study for Lower Division Students	AMM	200	(1-2)
Special Topics	AMM	299/499	(1-4)
Retail Planning, Allocating and Forecasting	AMM	350	(4)
Special Study for Upper Division Students	AMM	400	(1-2)
Internship	AMM	431	(1-4)
Field Study	AMM	445	(1-8)
Introduction to Microcomputing	CIS	101	(4)
Principles of Economics	EC	201	(4)
or Principles of Economics	EC	202	(4)
Legal Environment of Business Transactions	FRL	201	(4)
Principles of Management	MHR	301	(4)
Training and Development	MHR	405	(4)
Purchasing Management	TOM	434	(4)
Quality Management	TOM	435	(4)
Additional Recommendations for Product Development:			
Interpersonal Communication	COM	103	(4)
First-line Management	MHR	313	(4)
History of Costume	TH	481	(4)
Additional Recommendations for Manufacturing:			
Applied Quality Management	ETP	300	(3)
or Quality Management	TOM	401	(4)
Foreign Language (Spanish or Chinese)	FL	xxx	(4)
Business Logistics	TOM	309	(4)
Supply Chain Management	IBM	439	(4)
Principles of Productivity Engineering	IE	392	(3)
Operations Management	TOM	301	(4)
Production Management	TOM	432	(4)

Note for Apparel Production Students:

Select a sufficient number of courses so that the total from Required Support, Restricted Electives, and GE is at least 110 units.

FASHION RETAILING

Subplan Courses

Retail Planning, Allocating, and Forecasting	AMM	350	(4)
Apparel Supply Chain Management	AMM	451	(3)
Retail Apparel Sourcing	AMM	455/455A	(2/1)
Apparel Wholesale Operations	AMM	471/471A	(2/1)
Apparel Retail Management Strategies	AMM	496/496A	(2/2)

Support Courses

Orientation to College of Agriculture	AG	100	(1)
Principles of Marketing Management	IBM	301	(4)
Business Logistics	TOM	309	(4)
Industrial Costs and Control	IME	239	(3)
or Financial Accounting	ACC	207	(5)
or Accounting for Agribusiness	FMA	324	(4)
Leadership	MHR	450	(4)
Managerial Statistics	TOM	302	(4)
or Data Management for Agribusiness	FMA	375	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Statistics with Applications (B4)	STA	120	(4)
CHM or PHY (B1)			(4)
ART 110, 212, 213, 214, or 216 (C1)			(4)
FLxxx Spanish or Chinese (C3)			(4)
Ag and the Modern World (D2)	AG	101	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)

Restricted Electives (select 0–22 units)

Financial Accounting	ACC	207	(5)
Special Study for Lower Division Students	AMM	200	(1-2)
Special Topics	AMM	299/499	(1-4)
Special Study for Upper Division Students	AMM	400	(1-2)
Elective Internship	AMM	431	(1-8)
Field Study	AMM	445	(1-8)
Introduction to Microcomputing	CIS	101	(4)
Principles of Economics	EC	201	(4)
or Principles of Economics	EC	202	(4)
Foreign Language (Spanish or Chinese)	FL	XXX	(4)
Operations Management	TOM	301	(4)
Additional Recommendations for Product and Brand Management:			
Marketing Strategy	IBM	302	(4)
Product and Brand Management	IBM	402	(4)
Buyer Behavior	IBM	411	(4)
Additional Recommendations for Store Management/Operations:			
Agribusiness Personnel Management	FMA	402	(4)
Legal Environment of Business Transactions	FRL	201	(4)
Professional Selling	IBM	306	(4)
Retail Management	IBM	308	(4)
Retailing Problems	IBM	447	(4)
Multicultural Organizational Behavior	MHR	318	(4)

Note for Fashion Retailing Students:

Select a sufficient number of courses so that the total from Required Support, Restricted Electives, and GE is at least 110 units.

GENERAL EDUCATION REQUIREMENTS

Students should consult the catalog website www.csupomona.edu/~academic/catalog/ for current information regarding this requirement. Unless specific courses are stated under Support Courses, see the list of approved courses under General Education Requirements, Areas A through E.

Area A. Communication and Critical Thinking (12 units)

1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Mathematics and Natural Sciences (16 units)

1. Physical Science
2. Biological Science
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Humanities (16 units)

1. Fine and Performing Arts
2. Philosophy and Civilization
3. Literature and Foreign Languages
4. Humanities Synthesis

Area D. Social Sciences (20 units)

1. U.S. History, Constitution, and American Ideals
2. History, Economics, and Political Science
3. Sociology, Anthropology, Ethnic and Gender Studies
4. Social Science Synthesis

Area E. Lifelong Understanding and Self-development (4 units)

FASHION MERCHANDISING MINOR

This interdisciplinary minor is designed for students other than AMM majors who seek additional study in the fashion industry. The minor provides students with a background in both fashion as well as business to better prepare them to seek employment in fashion related fields. The minor in Fashion Merchandising is administered jointly by the Departments of Apparel Merchandising and Management and International Business and Marketing.

The attainment of a minor in Fashion Merchandising is accomplished by appropriate selection, timely scheduling, and satisfactory completion of specifically designated courses and electives totaling a minimum of 35 quarter units as outlined below:

Required Courses

Fashion Industry	AMM	101	(4)
Apparel Design Analysis	AMM	210/210A	(4)
Apparel Importing and Exporting	AMM	357	(3)
Principles of Marketing Management	IBM	301	(4)
Marketing Internship	IBM	441/2	(4)
Select two courses from Group A			(8)
Select two courses from Group B or C			(8)

Group A – Select 2 courses from A

Culture, People and Dress	AMM	108	(4)
Fashion Promotion	AMM	230	(4)
Apparel Product Analysis	AMM	380/380A	(2/1)

Group B – Select 2 courses from B or C

Professional Selling	IBM	306	(4)
Retail Management	IBM	308	(4)
Retailing Problems	IBM	447	(4)

Group C

Principles of Global Business	IBM	300	(4)
International Marketing Management	IBM	414	(4)
International Food and Fiber Marketing	IA/FMA	330	(4)
Strategy in International Marketing	IBM	415	(4)

COURSE DESCRIPTIONS

AMM 101 Fashion Industry (4)

Introduction to development and scope of the global fashion pipeline: textile and apparel production, design, retail merchandising, marketing, distribution, and promotion. Understanding of apparel business organizations and planning. Introduction to career opportunities. Oral and written reports on current topics relevant to the fashion industry. 4 lectures/problem-solving.

AMM 108 Culture, People, and Dress (4)

Study of the interrelatedness of socio-psychological, economic and political/religious influences on dress in historical perspective. Cross-cultural analysis and interpretation of Western and non-Western clothing behavior through written analysis papers. 4 lectures.

AMM 120 Introduction to Family Issues (4)

An introduction to family studies covering issues related to family demographics, types of families, living arrangements, paths to family formation, childbearing patterns, changing roles of family members, economic well-being, child care and future outlook for children. Lecture, discussion, case studies, analysis of data sets, and student project related to a current issue. 4 lectures/problem-solving.

AMM 160 Introduction to Textile Science (3)

Introductory study of the chemical and physical properties of textile fibers, yarns, fabric structures, dyes, and finishes. Criteria for selection and evaluation of textile properties, performance, legislation, and care. 3 lectures/problem-solving.

AMM 180L Apparel Production Lab (1)

Basic clothing construction techniques used in the apparel industry. Appropriate methods for quality construction using knits and wovens. May be taken as credit/no credit or credit by exam. 1 three-hour laboratory.

AMM 200 Special Study for Lower Division Students (1–2)

Basic individual or group investigation, research, studies, surveys and projects of selected problems. Specific topics arranged with supervising professor. Total credit limited to 4 units, with a maximum of 2 units per quarter.

AMM 210/210A Apparel Design Analysis (2/2)

Analysis of apparel designs for formal, expressive, and symbolic qualities. Use of design elements and principles as applied to clothing design and human body forms. Application of a computer-aided illustration program. Written and computer illustration projects. Corequisites: AMM 210/210A. 2 lectures/problem-solving, 2 two-hour activities.

AMM 230 Fashion Promotion (4)

Principles and techniques of advertising and promoting apparel wholesale and retail products. Emphasis placed on promotional mix, trend and forecast research, branding, special events, integrated marketing and communication strategy. Written analysis and presentation. 4 lectures/problem-solving.

AMM 245 Consumerism: Impact and Issues (4)

Analysis of the role of consumption in economic systems. The consumer movement past, present and future viewed as a response to economic and social conditions. Contemporary consumer issues, information sources, legislation and protection. 4 lectures/problem-solving hours.

AMM 250 Apparel Merchandise Buying (4)

An introduction to and application of merchandise buying principles and procedures. Role of buyer and planner in wholesale and retail management. Analysis of buying organizations, purchasing, inventory control, apparel profitability, and seasonal plans. Use of computer spreadsheets to calculate merchandise mix and assortment plans. Written and computer projects. 4 lectures/problem-solving. Prerequisite: STA 120 and College of Business computer proficiency requirement.

AMM 270/270A Visual Merchandising/Store Design I (2/1)

Understanding of design principles, color theory, space, and lighting in relation to display areas and interior design of stores. Analysis of their use in merchandising of goods and customer appeal. Written and oral projects. Application of a computer graphics program. Concurrent enrollment required. 2 lectures/problem-solving, 1 two-hour activity. Prerequisite AMM 210/210A or equivalent.

AMM 299/299A/299L Special Topics for Lower Division Students (1–4)

Basic group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units, with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination.

AMM 300 Fashion Industries Dynamics (2)

Detailed investigation of the textile and apparel supply chain's fashion career opportunities. Emphasis on understanding different careers within the apparel supply chain architecture and organizational structure. Evaluation of fashion careers, industry speakers, and job shadowing. Development and review of student electronic portfolio that identifies the student's skills and aptitudes for their selected career direction. 2 seminar hours.

AMM 310/310A Design and Merchandising Strategies (2/1)

Planning, developing, and presenting apparel product lines. Analysis of goals, merchandising strategies and product line constraints. Interrelationship of fashion information between fashion services, apparel suppliers and consumers to develop apparel products. Application of computer-aided illustration program. Written and oral projects. 2 lectures/problem solving, 1 two-hour activity. Corequisites: AMM 310/310A.

AMM 314/314A Apparel Technical Design (2/2)

Principles and methods of developing apparel designs. Evaluation of pattern blocks for garment sizing, analysis of desired aesthetics, pattern fit, and construction. Visual and written projects. Concurrent enrollment required. 2 lectures/problem solving, 2-two hour activities. Prerequisite AMM 310/310A

AMM 350 Retail Planning, Allocating and Forecasting (4)

Advanced study of apparel buying processes, strategic positioning, assortment and seasonal plans, and purchase order management for multiple apparel retail tiers. Develop strong analytical skills. Written analysis of competition market share strategy and sales forecasting. Written, computer, and oral analysis projects. 4 lecture-problem solving hours. Prerequisite: AMM 250 or equivalent.

AMM 357 Apparel Importing and Exporting (3)

Fundamentals of apparel importing and exporting processes. Industry and product classification systems used in international trade, US Trade Administration and US trade agreements in textiles and apparel. Political-legal, cultural and financial issues related to apparel importing and exporting. Overview of apparel transportation and logistics services. Written and oral reports required. 4 hours lecture/problem solving. Prerequisite: AMM 300.

AMM 360/360A Textile Specification Buying (2/2)

Principles and practices in specification buying of textile, trim, and findings products. Performance and appearance testing, labeling and certification requirements. Color approval processes. Sourcing practices and procedures including vendor selection and vendor contracts. Corequisites: AMM 360/360A. 2 lectures/problem-solving, 2 two-hour activities. Prerequisite: AMM 380/380L.

AMM 380/380L Apparel Product Analysis (2/1)

Analysis and comparison of features in ready-to-wear apparel construction that make a difference in quality and price. Use of industrial equipment to analyze construction methods and problems. Creation of specifications/technical packages using CAD and spreadsheet programs. Visual and written projects. Concurrent enrollment required. 3 lectures/problem solving, 1 three-hour laboratory. Prerequisite AMM 300.

AMM 381/381L Apparel Production (3/1)

Introduction to apparel manufacturing from cut order planning through production/contracting. Emphasis on understanding the pre-production process of materials requirement planning, contractor agreements, and compliance. A comparison of cost and methods engineering for the primary production processes for cutting, assembly, and inspection. Corequisites: AMM 381/381L. 3 lectures/problem-solving, 1 three-hour laboratory. Prerequisite: IME 239 or ACC 207 and AMM 360/360A.

AMM 400 Special Study for Upper Division Students (1–2)

Advanced individual or group investigation, research, studies, surveys and projects of selected problems. Specific topics arranged with supervising professor. Total credit limited to 4 units, with a maximum of 2 units per quarter.

AMM 410/410A Apparel Product Development (2/2)

Beginning of capstone experience for senior production students. Development of patterns, prototypes, and samples. Use of CAD technology in development of pattern blocks and first patterns. Application of pattern theory for fit and pattern verification. Application of apparel industry pattern marking and assembly. Evaluation of standard and custom fit. Concurrent enrollment required. 2 hours lecture/problem solving. 2 two-hour activities. Prerequisite: AMM 314/314A.

AMM 414/414A Apparel Pre-production (2/2)

Continuation of capstone experience for senior production students. Comprehend process of problem solving with principles, procedures and practices in developing the AM2 apparel line. Use of statistics in quality management for creating AM2 apparel product line to meet consumer needs. Develop actual product line from design through prototype creation, and review. Evaluate fit for specific end use. Written, computer, and oral projects. Concurrent enrollment required. 2 lectures/problem-solving, 2 two-hour activities. Prerequisite: AMM 410/410A

AMM 431 Elective Internship (1–8)

AMM 431 units are for elective credit only. New, on-the-job professional experience related to apparel production or fashion retailing. Students must obtain instructor approval of the Internship experience prior to hours worked. One unit of credit is given for each 40 hours of approved internship experience. Written documentation of the internship experience is required. Prerequisite: Permission of Instructor.

AMM 441 Internship/Career Preparation (1)

Students must enroll in AMM 441 (1) the quarter prior to the quarter they will work their required Internship hours (AMM 442 for 3 units). This is a scheduled weekly class that includes: resumes, cover letters, portfolios, interviewing techniques, professional etiquette, networking and locating approved Internship site. Completion of electronic portfolio and career exploration activity. 1 hour lecture/problem solving.

AMM 442 Internship (1–4)

Students will enroll in AMM 442 (3) the quarter immediately following AMM 441 (1) and work their required hours (160 hours). New, on-the-job professional experience related to apparel production or fashion retailing. Students must obtain instructor approval of the Internship experience priors to hours worked. Extensive written reports required. Prerequisite: AMM 441.

AMM 445 Field Study (1–8)

Tours of cities such as New York and countries such as England, France, China and Mexico to study the apparel industry. Visits and presentations of historic and present day fashion industries such as museums, design houses, textile mills, manufacturers, publishing companies and retail stores. Units dependent upon length and focus of trip. May be repeated for no more than 8 units. Preference given to AMM majors.

AMM 451 Apparel Supply Chain Management (3)

Beginning of senior retail capstone experience. Supply chain and logistics management for the apparel and textile complex related to vendors of fabrics and findings. Understanding management of soft goods related to inventory and logistics from factory to stores. Understanding of physical and book inventory, retail shrinkage, and charge-backs. Use of computer supply chain management software programs related to Continuous Planning, Forecasting and Replenishment, and Efficient Consumer Response systems. Written, computer, and oral projects. Concurrent enrollment required. 3 lectures/problem-solving. Prerequisite: AMM 300 and AMM 350.

AMM 455/455A Retail Apparel Sourcing (2/1)

Continuing senior retail capstone experience. An analysis of how fashion retail buyers source product from multiple vendors, and how they negotiate terms with international and domestic suppliers. Write ApparelScapes wholesale orders at MAGIC apparel trade show negotiating product availability, terms, and pricing. Use of computer inventory software program. Written and oral projects. 2 lectures/problem-solving, 1 two-hour activity. Prerequisite: AMM 350, 357, and AMM 451. Corequisite: AMM 455/455A.

AMM 457 Dynamics of the Global Apparel Complex

The economic, competitive, technological and market dynamics of the international apparel and textile production and retail sectors. Patterns of change at the global, regional, national, and company level are explained with reference to models from economic and business policy literature. The outlook for the apparel complex is considered. Prerequisite: AMM 300 and AMM 357.

AMM 471/471A Apparel Wholesale Operations (2/1)

Continuing senior retail student capstone experience focusing on apparel wholesale sales. Understanding the complete apparel wholesale process of order entry, invoicing of purchase orders, customer service, and order management. Calculation of retail discounts and terms. Use of apparel industry computer software program to process orders for ApparelScapes and retail private label products/customers. Written and oral projects. Concurrent enrollment required. 2 lecture-problem solving hours, 1 two-hour activity. Prerequisite: AMM 451.

AMM 481/481L Advanced Apparel Production (3 / 1)

In-depth apparel manufacturing processes of methods engineering, capacity planning, set-up time reduction, equipment investment, scheduling, and quality control. On-site problem solving of apparel manufacturing business practices including literature review, process documentation, and process improvement. Corequisites: AMM 481/481L. 3 lectures, problem solving, 1 three-hour laboratory. Prerequisite: AMM 381/381L.

AMM 492/492A Apparel Product Development Simulation (2/2)

The capstone course in the senior production experience that completes AM2 product line in an on-site industry production setting. Creation of AM2 technical package, garment construction sequence, production patterns, grading, markers, and send-outs. Analyze prototypes for construction sequence and fabric performance. Creation of grade rules for garment fit and fabric constraints. Synthesize marker systems, marker creation, efficiency, parameters, and material utilization. Supervision of AM2 production. Concurrent enrollment required. 2 lectures/problem-solving, 1 three-hour laboratory. Prerequisite: AMM 414/414A.

AMM 496/496A Apparel Retail Management Strategies (2/2)

The capstone course in the senior retail experience. Management strategies related to apparel e-tailing, store and direct operations, retail location and design, internal systems, and displaying merchandise. Employee hiring, managing, training, and legal responsibilities, financial liability and inventory. Field study of various apparel retail structures. Case analysis and discussion of problems in apparel retail store operations. Updating ApparelScapes website and promoting AM2 apparel line. 2 lecture-problem solving hours, 2-two hour activities. Written and computer projects. Concurrent enrollment required. Prerequisite: AMM 471/471A.

AMM 499/499A/499L Special Topics for Upper Division Students (1–4)

Advanced group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units, with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination.

FOOD MARKETING and AGRIBUSINESS MANAGEMENT

www.csupomona.edu/~fmamaged

Two career tracks are offered within the major: Agribusiness or Food Industry and Animal Industry or Equine Industry.

Edward S Fonda, Interim Chair
Nancy Merlino, Program Director

William C. Hughes
Marvin L. Klein
Rick Mathias
Jon C. Phillips

The Food Marketing and Agribusiness Management major teaches the application of business concepts to the future agricultural industry leader. This major offers a wide selection of course offerings and a broad range of occupational choices are available to the graduate. These choices include careers in farm and ranch management, food management, sales and marketing positions, federal, state and county government units, agricultural communications, equine management, commodity and produce brokerage, international trade, finance area, packing house management and supermarket management.

The core curriculum is designed to provide students with an understanding of the basic business functions, application, theory and practice. The career tracks allow the student to design a curriculum that is more closely in tune with the student's career goals. As a supplement to classroom meetings, activities such as field trips are promoted to off-campus locations such as: distribution centers, production areas, and other related industries within agriculture as part of the learning process. Frequent visits by guest speakers from leading agricultural firms further ensure that students gain practical, current knowledge. As a junior and senior, the student is encouraged to take part in industry internships.

CORE COURSES FOR MAJOR

Required of all students. A 2.0 cumulative GPA is required in core courses, including subplan courses, in order to receive a degree in the major.

Orientation to the College of Agriculture	AG	100	(1)
Agriculture and the Modern World	AG	101	(4)
Global Resources for Food	IA	101	(4)
Computer Applications in Agriculture	AG	128/128L	(2/1)
or Introduction to Microcomputing	CIS	101	(4)
Managing Agribusiness Organizations	FMA	201	(3)
Food and Agribusiness Marketing	FMA	304	(4)
Wholesaling and Retailing of Food Products	FMA	306	(4)
Sales and Advertising Management	FMA	309	(4)
Applied Economics for Agribusiness	FMA	311	(4)
Politics of Food and Agriculture	FMA	313	(3)
Accounting for Agribusiness	FMA	324	(4)
Financial Analysis for Agribusiness	FMA	326	(4)
Agribusiness Enterprise Management	FMA	328	(4)
Data Management for Agribusiness	FMA	375	(4)
Agribusiness Personnel Management	FMA	402	(4)
Development of Leadership Skills	AG	464	(3)

SUPPORT AND ELECTIVE COURSES

Food Laws and Regulations	FST	322	(4)
or Legal Environment of Business Transactions	FRL	201	(4)
Internship in Food Marketing and Agribusiness	FMA	441	(3)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Freshman English I (A2)	ENG	104	(4)
Statistics with Applications (B4)	STA	120	(4)
Nutrition, Science and Health (B5)	FN	305	(4)
or Animal Industries and Society (B5)	AVS	311	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4)	AG	401	(4)
Introduction to American Government (D1a)	PLS	201	(4)
and United States History (D1b)	HST	202	(4)
Principles of Economics (D2)	EC	201	(4)
Food and Culture (D3)	FN	228	(4)

Career track (see advisor) . . . . . (44)
Unrestricted Electives . . . . . (4)

Note for FMAM Students:

Select a sufficient number of courses so that the total from Core, Unrestricted Electives, and GE is at least 129 units.

GENERAL EDUCATION REQUIREMENTS

Students should consult the catalog website www.csupomona.edu/~academic/catalog/ for current information regarding this requirement. Unless specific courses are stated under Support Courses, see the list of approved courses under General Education Requirements, Areas A through E.

Area A. Communication and Critical Thinking (12 units)

1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Mathematics and Natural Sciences (16 units)

1. Physical Science
2. Biological Science
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Humanities (16 units)

1. Fine and Performing Arts
2. Philosophy and Civilization
3. Literature and Foreign Languages
4. Humanities Synthesis

Area D. Social Sciences (20 units)

1. U.S. History, Constitution, and American Ideals
2. History, Economics, and Political Science
3. Sociology, Anthropology, Ethnic and Gender Studies
4. Social Science Synthesis

Area E. Lifelong Understanding and Self-development (4 units)

AGRICULTURAL BUSINESS MANAGEMENT MINOR

Accounting for Agribusiness	FMA	324	(4)
Financial Analysis for Agribusiness I	FMA	326	(4)
Agribusiness Enterprise Management	FMA	328	(4)

Select 20 units from the following:

Global Resources for Food	IA	101	(4)
Managing Agribusiness Organizations	FMA	201	(3)

Food and Agribusiness Marketing	FMA	304	(4)
Agricultural Commodity and Futures Trading	FMA	305	(3)
Wholesaling and Retailing of Food	FMA	306	(4)
Sales and Advertising Management	FMA	309	(4)
Seminar in Food and Agribusiness Management	FMA	310	(3)
Applied Economics for Agribusiness	FMA	311	(4)
The Politics of Food and Agriculture	FMA	313	(3)
Equine Enterprise Management	FMA	329	(3)
International Food and Agribusiness Marketing	FMA	330	(4)
Data Management for Agribusiness	FMA	375	(4)
Operations Management for Agribusiness	FMA	376	(4)
Agribusiness Personnel Management	FMA	402	(4)
Food and Agricultural Marketing Applications	FMA	405	(4)
Real Property Appraisal and Acquisition	FMA	406	(4)
Isssues in California and World Agriculture	FMA	410	(3)
Equine Investment Management	FMA	429	(3)
Equine Appraisal and Evaluation	FMA	430	(3)
Total Units			32

INTERNATIONAL AGRICULTURAL BUSINESS MANAGEMENT MINOR

Global Resources for Food	IA	101	(4)
International Food and Agribusiness Marketing	FMA	330	(3)
Agricultural Policy in Developing Nations	IA	362	(4)
Food and Agricultural Marketing Applications	FMA	405	(4)
Issues in California and World Agriculture	FMA	410	(3)
Assessing International Agrimarketing Opportunities	FMA	431	(4)
Internship in Agricultural Business Management	FMA	441	(3)
Select two courses*			(6-8)
Total Units			30-33

*1. College of Agriculture majors can take either

a. Two FMA courses or

b. Two internationally-oriented College of Business courses or

c. One of each

2. Non-College of Agriculture majors must take two non-FMA College of Agriculture courses to provide technical expertise.

COURSE DESCRIPTIONS

All Departmental offerings may be taken on a CR/NC basis except for majors in the department.

FMA 200 Special Study for Lower Division Students (1-2)

Individual or group investigation, research, studies or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter.

FMA 201 Managing Agribusiness Organizations (3)

A comprehensive overview of management fundamentals emphasizing the study of management and business organizations in the contemporary food and agricultural system. Includes various management theories, approaches and techniques and how they might be applied to organizations within the food and agricultural system. The conflict between organizational and personal values will also be covered. 3 lectures.

FMA 299/299A/299L Special Topics for Lower Division Students (1-4)

Group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units, with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination.

FMA 304 Food and Agribusiness Marketing (4)

Economic aspects of marketing agricultural products. Problems and alternative solutions of various marketing institutions. Current trends and developments in California product marketing. 4 lectures. Prerequisite: EC 201 or permission of the instructor.

FMA 305 Agricultural Commodity Marketing and Futures Trading (3)

Principles of marketing agricultural commodities. Understanding the operation of commodity markets, developing marketing strategies and learning the mechanics of futures trading. Application for specific commodities. 3 lectures.

FMA 306 Wholesaling and Retailing of Food Products (4)

Principles and practices of distributing food products from producer to consumer; buying, assembling, transporting, handling, receiving and merchandising. Functions of wholesalers and intermediate handlers, chain stores, food brokers, jobbers. Operating costs of retail stores; site selection; scheduling; management of store personnel; pricing, inventory control. 4 lectures.

FMA 309 Sales and Advertising Management (4)

Industry-sponsored agricultural advertising programs; tools of publicity, merchandising and public relations. Detailed examination of local types of advertising media, and rates for short, seasonal promotions. Advertising provisions of marketing orders. Seminar type discussions and guest speakers. 4 lecture discussions. Prerequisite: FMA 304.

FMA 310 Seminar in Food and Agribusiness Management (3)

Seminar on special problems encountered in food and agribusiness management with an emphasis on the food consumer. Economic, social, cultural and demographic factors influencing consumer behavior and consumption patterns covered. Market surveillance techniques used by managers will also be discussed. 3 lecture discussions. Prerequisite: Junior status or food/agribusiness industry experience, FMA 309.

FMA 311 Applied Economics for Agribusiness (4)

Intermediate micro-economic theory applied to production and marketing problems in agriculture. 4 lectures/problem-solving. Prerequisite: EC 201 or consent of instructor.

FMA 313 Politics of Food and Agriculture (3)

The political framework affecting the food and agricultural system. Federal and state laws and regulations impacting agribusiness. Contemporary development and economic analysis of public programs and policies. Current policies and programs as well as alternate policies evaluated. Seminar discussions. Policy case studies. 3 lecture discussions. Prerequisite: EC 201 or consent of instructor.

FMA 324 Accounting for Agribusiness (4)

Emphasis on the practical applications of accounting information for managers of food marketing and agribusiness management. Analysis of accounting data and its meaning for management and financial decisions. Includes the basics of recording transactions as well as accounting for assets, liabilities, owner's equity and net income, and the interpretation of this information. 4 lectures/ problem-solving.

FMA 326 Financial Analysis for Agribusiness I (4)

Techniques of financial analysis. To include capital budgeting, sources of loans for agribusiness, analysis of financial statements, credit instruments, risk and insurance for agriculture, farm credit system. 4 lectures/problem-solving. Prerequisite: FMA 324.

FMA 327 Financial Analysis for Agribusiness II (3)

Continuation of FMA 326. Financial forecasting, leverage and growth, further topics in the time value of money, working capital management, financing operations. 3 lectures. Prerequisite: FMA 326.

FMA 328 Agribusiness Enterprise Management (4)

Criteria for decision making involving food and agribusiness enterprises. Case studies used. Budgeting processes, credit use, and feasibility analysis. Source of economic information. Introduction to simulation of management process. Seminar discussions and feasibility study prepared. 4 lectures.

FMA 329 Equine Enterprise Management (3)

Equine enterprise analysis with emphasis on capital acquisition, leasing, land acquisition, legal problems and labor problems. 3 lectures. Prerequisites: FMA 328, AVS 125/125L.

FMA 330 International Food and Agribusiness Marketing (4)

Marketing of food, fiber and horticultural products in foreign markets. Special emphasis on selecting export markets, procedures for establishing contacts, promotion, financing, insuring, shipping tariffs, customs, regulations and other matters related to food and fiber products. Management practices and problems of firms involved in exporting and importing textiles and garments, livestock, fruits, vegetables, grains and other food and fiber products. 4 lecture/discussions.

FMA 350 Water and Civilization (4)

Water and its relationship to civilization from ancient history to modern developments. Survey of global water resources and current issues of distribution, relationship to economic development, and the environment. Analysis of state and regional water supplies, water districts. Determination of water requirements for agriculture in arid and humid regions.

FMA/IA 360 Agricultural Cooperatives (4)

Structure, management and organization of the Agricultural Cooperative with emphasis upon current management practice. Includes comparison of cooperative with other business forms, ideals, history, and progress of the cooperative movement, problems in establishing a new cooperative, financing and membership problems. 4 lecture discussions.

FMA 375 Data Management for Agribusiness (4)

Principles and procedures involved in analysis of agricultural data for management. Includes single two-sample hypothesis testing for means and proportions. Chi-square, simple and multiple regression and correlation. Microcomputer applications. 4 lectures/problem-solving. Prerequisite: STA 120 or equivalent.

FMA 376 Operations Management for Agribusiness (4)

Application of statistical and other quantitative techniques employed in agricultural economic and operations analysis. Areas covered include statistical forecasting, resource allocation, break-even analysis, project management, inventory control, total quality management (TQM), and quality control. 4 lectures/problem-solving. Prerequisite: FMA 375.

FMA 400 Special Study for Upper Division Students (1–2)

Individual or group investigation, research, studies or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter.

FMA 402 Agribusiness Personnel Management (4)

Management-employee relations and theory; employee motivation; union and management relations; recruitment and selection; performance appraisal; communications; individual and group incentive systems; employee counseling; labor legislation; wage determination and salary systems; employment and unemployment. Case studies analyzed. Seminar discussions held, role playing emphasized, guest speakers. 4 lectures.

FMA 405 Food and Agricultural Marketing Applications (4)

An application of theories, principles and procedures involved in developing a marketing strategy. Students will work as a team to develop a marketing plan for an agricultural product. Topics covered will include all aspects of food and fiber market strategy planning such as identifying a target market, analyzing market opportunities, developing a marketing mix, and completing a budget for the plan. 4 lecture discussions. Prerequisite: FMA 310.

FMA 406 Real Property Appraisal and Acquisition (4)

Principles, methods and techniques of appraising agricultural real property for loans, purchase and sale, tax assessments, condemnations, and other purposes. 3 lecture discussions.

FMA 410 Issues in California and World Agriculture (3)

Discussion and analyses of contemporary issues of the food and agricultural system in California and the world. Overview of principles and issues such as the resource base, environmental and health consequences of production and marketing, international trade and free trade agreements, and designing an economically and environmentally sustainable food and agricultural system for California and the world. 3 lecture discussions. Prerequisites: IA 101, FMA 304, FMA 311, FMA 313.

FMA 429 Equine Investment Management (3)

In-depth analysis of equine investments. Emphasis on capital acquisition, equine tax law, limited partnerships, joint ventures, and stallion or mare syndications. 3 lectures.

FMA 430 Equine Appraisal and Evaluation (3)

Principles of equine evaluation and appraisal. The student will perform an actual appraisal and be required to prepare an appraisal report. 3 lectures.

FMA 431 Assessing International Agrimarketing Opportunities (4)

Comparative agribusiness systems and methods to assess international agribusiness trade and foreign investment opportunities. Analyzes the international forces with which the international agribusiness firm must contend and potential responses. Includes integration of foreign food and agricultural marketing, natural resource and production policies with impact on private sector responses. Term project on a product and country required. 4 lecture discussions. Prerequisites: IA 101, FMA 300 or IA 362 or equivalents.

FMA 441, 442 Internship in Food Marketing and Agribusiness (1–4) (1–4)

On-the-job training in agricultural business management providing collegiate level experience in food distribution, agricultural management. One unit credit for each 120 hours of experience and training. No more than 6 units of credit can be earned. Useful for preparation of senior project. Application to coordinator required during the quarter prior to the internship.

FMA/IA 450 Agricultural Water Resource Management (4)

Water resource management applied to current issues. Water delivery systems in the U.S. and California, survey of water rights, water pollution, water conservation, food and agricultural system water use, and efficient water management. Includes water problems in developing nations. 4 lecture discussions.

FMA 461, 462 Senior Project (2)

Selection and completion of a project under faculty supervision. Projects typical of problems which graduates must solve in their fields of employment. Project results are presented in a formal report. Must be taken in sequence, not concurrently. Prerequisites: FMA 311, 324, 326, 375.

FMA 463 Undergraduate Seminar (2)

New methods and developments, practices, and procedures in the field. 1 meeting. Prerequisite: senior project completed.

FMA 490 Senior Feasibility Study (3)

Selection and completion of a major feasibility study under faculty supervision. Prerequisites: FMA 311, 324, 376.

FMA 491 Senior Seminar I (2)

The first course in the capstone series for majors. Panel discussions and debates on current topics. Also includes career-related activities involving interviews with industry representatives and resume writing. 2 seminars. Prerequisite: FMA 490.

FMA 492 Senior Seminar II (2)

The second course in the capstone series for majors. Includes debates on current topics, case studies monitored by faculty in various specialties as well as industry representatives. Students will give video-taped presentation. 2 seminars. Prerequisite: FMA 491.

FMA 499/499A/499L Special Topics for Upper Division Students (1–4)

Group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units, with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination of lecture and laboratory or activity.

FMA 503 Agriculture in Development (4)

Survey of food production and marketing systerns as well as issues in agricultural development. Examination of attitudes and approaches for rural development practitioners. Understanding of interrelationships among nutrition, agricultural, environmental, economic, political, social, and gender factors. 4 lectures.

FMA 562 Rural Development Project. Analysis (4)

Principles of rural development projects in developing countries to increase nutritional status, primarily in rural areas. Involves case studies, project analysis and systems application to total project development. 4 lectures.

FMA 575 Statistics for Agriculture (4)

A summary of statistical tools and techniques used in agriculture. Includes hypothesis testing, Chi Square, ANOVA, correlation, as well as simple and multiple regression. Application of computer to selected statistical techniques. Review of statistical literature from various fields of agriculture. Open to graduate students only. 4 lectures/problem-solving. Prerequisite: STA 120 or equivalent.

FMA 695 Research Project (2–4)

A written research project concerning a significant problem in the agribusiness or food industries. Directed by a committee of graduate faculty members. Total credit limited to 4 units.

FOODS AND NUTRITION

www.csupomona.edu/~hnfs

The Foods and Nutrition major offered in the Department of Human Nutrition and Food Science has two subplans. These are: Dietetics and Nutrition Science.

Douglas Lewis, Chair and Graduate Coordinator
Mark S. Meskin, Didactic Program Director
Kara Caldwell-Freeman, Dietetic Internship Director
Martin F. Sancho-Madriz, FST Program Director

Wayne R. Bidlack
Ann Marie Craig
Lisa Kessler
Maria Botero Omary
Sharonda Wallace
Bonny Burns-Whitmore

A Bachelor of Science degree with a major in foods and nutrition prepares students for challenging and rewarding careers and provides a strong academic background for graduate study and research.

High school students planning to major in foods and nutrition are advised to build a background in chemistry, mathematics, and biology. Community college students should concentrate courses which articulate to CHM 121, 122, and 201 with laboratories, on biology 115/115L, physiology (ZOO 235/235L), foods (FN 121/121L), nutrition (FN 235), statistics (STA 120), communication (COM 204), and general education course requirements.

The curriculum, facilities, and faculty reflect the Human Nutrition and Food Science Department's commitment to a strong, up-to-date, science-based undergraduate program that provides the types of skills and knowledge needed by graduates to meet professional goals. Career options offered within the major are the following:

Dietetics Subplan

The Didactic Program in Dietetics is accredited by the Commission on Accreditation for Dietetic Education. Students pursuing career goals in the dietetic field qualify for post-graduate dietetic internships, and/or graduate programs. The department offers a post-baccalaureate Dietetic Internship Program which is accredited by the Commission on Accreditation for Dietetic Education. A minimum GPA of 2.8 overall and 3.0 in major courses is required for application to the Cal Poly Pomona Dietetic internship. Upon completion of a dietetic internship, graduates are eligible to take the registration examination to become registered dietitians. Students requesting transcript evaluation in order to determine needed coursework for dietetic internship eligibility will be required to pay an extra fee of $25. A culinary science or physiology minor may be included in this career option with a few additional courses. Dietitians are members of the professional health care team and serve as facilitators who translate scientific knowledge into practical applications so that consumers can make informed decisions about their diet.

Dietitians are employed in hospitals, out-patient and and long-term care facilities, community and government agencies, schools, the private sector, or are self-employed. Administrative dietitians supervise food service in hospitals, extended care facilities, restaurants, colleges, schools, and businesses.

Nutrition Science Subplan

The subplan in Nutrition Science provides students a science based education emphasizing nutrition as preparation for post-graduate study in medical, veterinary, dental, pharmacy, physical therapy and physician assistant programs. Many students graduating with the Nutrition Science subplan will choose to pursue Master of Science and PhD degrees in nutrition and nutrition related fields including food science, toxicology, pharmacology, epidemiology and public health. Nutrition Science is a biological science that requires a strong background in chemistry and biology, along with calculus and physics. The subplan focuses on nutrient biochemistry, nutrient requirements, the roles of nutrients in prevention and treatment of diseases and nutrition-related policy and public health issues. Students also acquire a strong background in scientific methodology when they choose 15 units from any of the following emphasis areas: Molecular and Cellular, Analytical, Biochemical and Clinical, Food Science and Technology, Community Nutrition, Animal Nutrition, or Kinesiology.

CORE COURSES FOR MAJOR

Required of all students. A 2.0 cumulative GPA is required in core courses including subplan (option) courses for the major in order to receive a degree in the major.

Orientation to the College of Agriculture	AG	100	(1)
Introduction to the Professions	FN	100	(1)
Nutrition	FN	235	(4)
Introduction to Research Methods	FN	263	(4)

Professional Subplans (all students must complete the required courses in one of the following options)

Dietetics Subplan Core

Introduction to Foods	FN	121/121L	(2/2)
Experimental Food Science	FST	321/321L	(3/1)
Food Safety and Current Issues	FST	325	(4)
Culture and Meal Patterns	FN	328/328L	(2/2)
Nutrition Through the Life Cycle	FN	335	(4)
Nutrient-Drug Interactions	FN	343	(2)
Nutrition Education	FN	345/345L	(3/1)
Community Nutrition	FN	346/346L	(3/1)
Food Service Systems I	FN	357/357L	(2/2)
Food Service Systems II	FN	358/358L	(2/2)
Food Service Systems III	FN	359/359L	(2/2)
Advanced Nutrient Metabolism I	FN	433	(4)
Advanced Nutrient Metabolism II	FN	434	(4)
Advanced Nutrient Metabolism III	FN	435	(4)
Medical Nutrition Therapy I	FN	443/443L	(3/1)
Medical Nutrition Therapy II	FN	444/444L	(3/1)

Nutrition Science Subplan Core

Introduction to Food Science	FST	125	(4)
Nutrition Through the Life Cycle	FN	335	(4)
Nutrient Drug Interactions	FN	343	(2)
Advanced Nutrient Metabolism I	FN	433	(4)
Advanced Nutrient Metabolism II	FN	434	(4)
Advanced Nutrient Metabolism III	FN	435	(4)
Medical Nutrition Therapy I	FN	443/443L	(3/1)
Medical Nutrition Therapy II	FN	444/444L	(3/1)

Emphasis Areas in Nutrition Science Subplan

Select 16 units form one or more of the following emphasis areas:

Molecular and Cellular

Biology of Cancer	BIO	302	(4)
Genetics	BIO	303	(4)
Advanced Genetics	BIO	421	(3)

Cell, Molecular and Developmental Biology	BIO	310	(4)
Cellular Physiology	BIO	428/428L	3/2
Neuroscience	BIO	424	(3)

Analytical, Biochemical and Clinical

Quantitative Analysis	CHM	221/221L	(4)
Biochemistry	CHM	328/328L	(4)
Biochemistry	CHM	329/329L	(4)
Clinical Chemistry	CHM	331/331L	(2/2)
Spectroscopic Methods	CHM	342/342L	(2/2)
or Separation Methods	CHM	343/343L	(2/2)
or Electroanalytical Methods	CHM	344/344L	(2/2)
Bioanalytical Chemistry	CHM	450	(4)
Recombinant DNA Biochem	CHM	453	(3)

Food Science and Technology

Meat Science and Industry	AVS	327/327L	(3/1)
Seafood and Poultry Processing	AVS	328/328L	(3/1)
Meat Processing	AVS	427/427L	(3/1)
Food Laws and Regulation	FST	322	(4)
Food Safety and Current Issues	FST	325	(4)
Sensory Analysis	FST	318/318L	(2/2)
Food Chemistry I	FST	420/420L	(2/2)
Food Chemistry II	FST	426/426L	(3/1)
Food Packaging	FST	319/319L	(3/1)
Food Product Development	FST	421/421L	(2/2)
Food Analysis	FST	422/422L	(2/2)
Food Microbiology	MIC	320/320L	(3/1)

Community Nutrition and Dietetics

Introduction to Foods	FN	121/121L	(2/2)
Experimental Food Science	FST	321/321L	(3/1)
Culture and Meal Patterns	FN	328/328L	(2/2)
Nutrition Education	FN	345/345L	(3/1)
Community Nutrition	FN	346/346L	(3/1)
Food Service Systems Management I	FN	357/357L	(3/1)
Food Service Systems Management II	FN	358/358L	(3/1)
Food Service Systems Management III	FN	359/359L	(3/1)
Nutrition/Int'l Development	FN/IA	445	(4)

Animal Nutrition

Intro to Animal Nutrition	AVS	100	(3)
Feeds and Feeding	AVS	101/101L	(1/1)
Equine Mgmt Science	AVS	125/125L	(3/1)
Equine Nutrition	AVS	355	(3)
Applied Animal Feeding	AVS	303/303L	(3/1)
Animal Nutrition	AVS	402	(3)
Ruminant Nutrition	AVS	403	(3)
Nutritive Analysis	AVS	424L	(2)

Kinesiology

Foundations of Exercise Science	KIN	301/301L	(3/1)
Physiology of Exercise	KIN	303/303L	(3/1)
Physiology of Exercise II	KIN	403/403L	(3/1)
Science of Physical Aging	KIN	365	(4)
Sports Medicine	KIN	455	(4)
Exercise and Weight Control	KIN	456	(3)

SUPPORT AND ELECTIVE COURSES

Dietetics Subplan

College Chemistry	CHM	122/122L	(3/1)
Elements of Organic Chemistry	CHM	201/250L	(3/1)
Basic Microbiology	MIC	201/201L	(3/2)
Human Physiology	ZOO	235/235L	(3/1)
Accounting for Agribusiness	FMA	324	(4)
Elements of Biochemistry	CHM	321/321L	(3/1)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Advocacy and Argument (A1)	COM	204	(4)
Freshman English I (A2)	ENG	104	(4)
Freshman English II (A3)	ENG	105	(4)
College Chemistry (B1, B3)	CHM	121/121L	(3/1)
Basic Biology (B2, B3)	BIO	121/121L	(3/2)
Statistics with Applications (B4)	STA	120	(4)
Genetics and Human Issues (B5)	BIO	300	(4)
Introduction to American Government (D1a)	PLS	201	(4)
United States History (D1b)	HST	202	(4)
Agriculture and the Modern World (D2)	AG	101	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)
General Psychology (E)	PSY	201	(4)
Directed Electives for Dietetics (See advisor)			(19)

Note for Dietetics Students:

Select a sufficient number of courses so that the total from Unrestricted Electives and GE is at least 83 units.

Nutrition Science Subplan

Foundations of Biology	BIO	122/122L	(3/2)
General Chemistry	CHM	122/122L	(3/1)
General Chemistry	CHM	123/123L	(3/1)
Organic Chemistry	CHM	314	(3)
Organic Chemistry	CHM	315	(3)
Organic Chemistry	CHM	316	(3)
Organic Chemistry Laboratory	CHM	317L	(1)
Organic Chemistry Laboratory	CHM	318L	(1)
Organic Chemistry Laboratory	CHM	319L	(1)
Elements of Biochemistry	CHM	321/321L	(3/1)
or Biochemistry	CHM	327/327/L	(3/1)
College Physics	PHY	121	(3)
College Physics	PHY	122	(3)
College Physics	PHY	123	(3)
College Physics Laboratory	PHY	121L	(1)
College Physics Laboratory	PHY	122L	(1)
College Physics Laboratory	PHY	123L	(1)
Microbiology	MIC	201/201L	(3/2)
Calculus for Life Sciences	MAT	120	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Human Physiology	ZOO	235/235L	(3/1)
Freshman English I (A2)	ENG	104	(4)
Freshman English II (A3)	ENG	105	(4)
Statistics with Applications (B4)	STA	120	(4)
College Chemistry (B1, B3)	CHM	121/121L	(3/1)
Foundations of Biology (B2, B3)	BIO	121/121L	(3/2)
Project Design Principles and Applications (B5)	AG	481/482	(2)(2)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)
Introduction to American Government (D1a)	PLS	201	(4)
United States History (D1b)	HST	202	(4)
Agriculture and the Modern World (D2)	AG	101	(4)
General Psychology (E)	PSY	201	(4)

Note for Nutrition Science Students:
Select a sufficient number of courses so that the total from Elective Subplan/Option and GE is at least 84 units.

GENERAL EDUCATION REQUIREMENTS

Students should consult the catalog website www.csupomona.edu/~academic/catalog/ for current information regarding this requirement. Unless specific courses are stated under Support Courses, see the list of approved courses under General Education Requirements, Areas A through E.

Area A, Communication and Critical Thinking (12 units)
1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Mathematics and Natural Sciences (16 units)
1. Physical Science
2. Biological Science
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Humanities (16 units)
1. Fine and Performing Arts
2. Philosophy and Civilization
3. Literature and Foreign Languages
4. Humanities Synthesis

Area D. Social Sciences (20 units)
1. U.S. History, Constitution, and American Ideals
2. History, Economics, and Political Science
3. Sociology, Anthropology, Ethnic and Gender Studies
4. Social Science Synthesis

Area E. Lifelong Understanding and Self-development (4 units)

FOODS AND NUTRITION MINOR

The purpose of the minor in Foods and Nutrition is to help students understand the role that nutrients play in maintaining good health.

Introduction to Foods	FN	121/121L	(4)
or Introduction to Food Science and Technology	FST	125	(4)
or Food Safety and Current Issues	FST	325	(4)
Nutrition Science and Health	FN	305	(4)
or Introduction to Nutrition	FN	235	(4)
Nutrition of the Life Cycle	FN	335	(4)
College Chemistry	CHM	121/121L	(4)
College Chemistry	CHM	122/122L	(4)
Elements of Organic Chemistry	CHM	201/250L	(4)
Three upper division FN courses			(9-12)
Total units required			(33-36)

COURSE DESCRIPTIONS

All courses offered by the department may be taken on a CR/NC basis only by non-majors.

FN 100 Introduction to the Profession (1) F

Orientation to careers in dietetics, nutrition, and food science. Introduction to professional associations, publications and legislation pertinent to the professions discussed. Required of all HNFS students. 1 lecture discussion.

FN 121/121L Introduction to Foods (2/2) F, S

Application of food science concepts such as food composition, functional properties, and structure of foods. Study of food categories and basic culinary techniques. 2 lectures, 2 three-hour laboratories. Concurrent enrollment required.

FN 200 Special Study for Lower Division Students (1–2) F, W, S

Individual or group investigation, research studies or surveys of selected problems for lower division students. Total credit limited to 4 units, with a maximum of 2 units per quarter.

FN 203 Health, Nutrition and the Integrated Being (4) F, W, S

Investigation of specific areas of the integrated being dealing with nutrition, stress, drugs, sexuality, major health problems and death and dying. Understanding their effect on the integrated being and the development of behaviors and actions that will promote optimum physical and mental health. Meets General Education Area E requirement. 4 lecture discussions.

FN 228 Food and Culture (4) F, W, S

Interrelationship of food availability, historical developments, socio-economic institutions, political, religious, and other influences on food patterns. In-depth study of a selected culture group. 4 lectures. Meets General Education Area D3 requirement.

FN 235 Nutrition (4) F, W

Study of individual nutrient requirements. Utilization of dietary guidelines. Diet self-evaluation. Digestion, absorption, metabolism and excretion of carbohydrates, lipids, proteins, vitamins and minerals. Role of Nutrition in health promotion, disease prevention and treatment of disease. 4 lecture/discussions. Prerequisite: a college chemistry or biology course or equivalent.

FN 263 Introduction of Research Methods (4) S

Introduction to research in nutrition as the foundation for evidence-based practice. The scientific method, hypothesis testing, clinical trials, epidemiological research, nutrition surveys, and sensory analysis. Reading research papers. 4 lecture/discussions. Library work. Prerequisite: FN 235 or FST 125, STA 120.

FN 299/299A/299L Special Topics (1–4) F, W, S

Group study of a selected topic, the title to be specified in advance for lower division students. Total credit limited to 4 units. Instruction is by lecture, laboratory, activity, or a combination.

FN 305 Nutrition, Science and Health (4) F, W, S, Su

Integrative approach to nutrition, health and fitness based on physiological and biochemical principles. Role of diet and other influences in promoting wellness and preventing degenerative diseases. Nutritional self-assessment. Written critiques of current controversies and other assigned topics. 4 one-hour lecture/discussions. Prerequisites: One course from each of the following Sub-areas: A1, A2, A3 and B1, B2, B4. GE Synthesis course for Sub-area B5.

FN 328/328L Culture and Meal Patterns (2/2) F

Relation of environment, technology, religion, social institutions and other factors influencing culture and patterns. Selected cultures, countries and regions. Management of meals. Individual oral reports and group projects. 2 lectures/problem-solving, 2 three-hour laboratories. Concurrent enrollment required. Prerequisite: FN 121/121L or equivalent; junior standing.

FN 335 Nutrition of the Life Cycle (4) W

Nutritional needs of pregnancy, lactation, childhood, adolescence, adulthood and the aged. Planning and computation of normal diets for all phases of the life cycle. Reading and reporting of current developments in nutrition. 4 lectures/problem-solving. Prerequisite: Minimum grade of C in FN 305 or FN 235; ZOO 235/235L.

FN 343 Nutrient-Drug Interactions (2) S

Basic principles of absorption, distribution, biotransformation and excretion of drugs. Introduction to the biochemical and physiological effects of drugs and their mechanisms of action. Effect of drugs on nutritional status. Nutritional effects on drug absorption, metabolism, action and potency. 2 lecture discussions. Prerequisite: Minimum grade of C in FN 235 or FN 305.

FN 345/345L Nutrition Education (3/1) W

Principles of learning and evaluation applied to nutrition. Development of instructional systems, including objectives, learning activities and strategies in various settings. Identifications and analysis of current problems inherent in such applications. Discussion and critique of student reports. 3 lectures/problem-solving, 1 three-hour lab. Concurrent enrollment required. Prerequisites: FN 305 or FN 235, FN 328/328L.

FN 346/346L Community Nutrition (3/1) S

Goals and trends in community nutrition. Dietary methodology. National nutrition status surveys. Role of public and private agencies in community nutrition programs. Analytical tools. Grantsmanship, public policy and legislation, 3 lectures, 1 three-hour laboratory. Concurrent enrollment required. Prerequisites: FN 121/121L, FN 235 or FN 305, FN 328/328L, FN 335, FN 345/345L.

FN 357/357L Foodservice Systems Management I (2/2) F

Introduction to foodservice management through a systems approach perspective. Production planning, quantity food production. Principles and practices in planning, preparing and serving food. Beginning of facility planning project, including marketing, business plans, goals and objectives. 2 lectures, 2 three-hour laboratories. Concurrent enrollment required. Prerequisite: FN 121/121L.

FN 358/358L Foodservice Systems Management II (2/2) W

Management of foodservice facilities using menu as a basis for determining recipes, specifications, receiving and storage standards. Purchasing for the foodservice industry. Continuation of facility planning project. 2 lectures, 2 three-hour laboratories. Concurrent enrollment required. Prerequisite: FN 357/357L.

FN 359/359L Foodservice Systems Management III (2/2) S

Management principles in foodservice systems, including human resource, financial, and facility management. Distribution and service. Equipment and layout in foodservice facilities. Completion of facility planning project. 2 lectures, 2 three-hour laboratories. Concurrent enrollment required. Prerequisites: FN 358/358L.

FN 400 Special Study for Upper Division Students (1–2) F, W, S

Individual or group investigation, research studies, or surveys of selected problems for upper division students. Total credits limited to 4 units, with a maximum of 2 units per quarter.

FN 433 Advanced Nutrient Metabolism I (4) W

Macronutrients and their metabolism with an emphasis on regulation, structure, digestion, absorption, transport, distribution, and disease states. Written analysis of current research. 4 lectures/ problem-solving. Prerequisites: Minimum grade of C in FN 235 or 305 and FN 335; ZOO 235/235L; BIO 300 or 303.

FN 434 Advanced Nutrient Metabolism II (4) S

Integration and regulation of metabolism. Hormonal effects. Water soluble vitamins as regulatory nutrients. Dietary reference intakes and recommended dietary allowances. Written analysis and critique of current research. 4 lectures/ problem solving. Prerequisite: FN 433.

FN 435 Advanced Nutrient Metabolism III (4) F

Fat soluble vitamins and minerals as regulatory nutrients. Sources, absorption, transport and storage. Functions and mechanisms of action. Interactions with other nutrients. Metabolism and excretion. Dietary reference intakes and recommended dietary allowances. Written analysis and critique of current research. 4 lectures/problem solving. Prerequisite: FN 434.

FN 441, 442 Internship in Foods and Nutrition (1–4) (1–4) F, W, S

On-the-job training in foods and nutrition, providing professional level experiences in food service, community nutrition, research, and quality control. Experiences may be useful for preparation of senior projects. Total credit for each course is limited to four units. Prerequisite: permission of coordinator required in advance.

FN 443/443L Medical Nutrition Therapy I (3/1) W

Pathophysiology of selected medical problems with specific attention to nutritional needs and treatment as part of evidenced based medical care. Clinical nutrition applications in acute and chronic disease. Nutritional care process, nutritional support, gastrointestinal tract disease, liver disease and metabolic stress. Nutrition assessment, medical terminolgy, charting and documentation, standard hospital diets, exchange system for meal planning, calculations for parenteral nutrition and, case-study discussions. 3 lectures, I three-hour laboratory. Prerequisites: Minimum grade of C in FN 433, 434, and 435. Concurrent enrollment required.

FN 444/444L Medical Nutrition Therapy II (3/1) S

Continuation of Medical Nutrition Therapy I. Cardiovascular disease, diabetes, renal disease, cancer, metabolic disorders, obesity, anemias, food allergy and intolerance, and alternative medicine. Development of critical problem-solving skills, calculations, case study discussion and presentations. 3 lectures, I three-hour laboratory. Prerequisite: Minimum grade of C in FN 443.

FN/IA 445 Agriculture, Nutrition, and International Development (4) F

Issues in technology, food policy, nutrition, political economy, and social welfare in developing societies. Integrates concerns about food and nutrient distribution and availability, malnutrition, scientific principles of nutrient utilization and metabolism, and human productivity and reproduction. Implications for a just and sustainable economic development. 4 lectures.

FN 463 Undergraduate Investigations and Seminar (4) F, W, S

Individual investigations of foods and nutrition issues. Oral presentations and written reports. 4 seminar-discussions. Prerequisites: COM 204, ENG 105, FN 263 and senior standing.

FN 499/499A/499L Special Topics (1–4) F, W, S

Group study of a selected topic, the title to be specified in advance for upper division students. Total credit limited to 8 units, with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination of both.

FOOD SCIENCE AND TECHNOLOGY

www.csupomona.edu/~hnfs

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The Food Science and Technology (FST) Bachelor of Science curriculum at Cal Poly Pomona is an interdisciplinary program that draws faculty and courses from Human Nutrition and Food Science, Animal Science, Horticulture, Food Marketing and Agribusiness, Biology, Chemistry, and Industrial and Manufacturing Engineering. Students have the option of choosing science and technology, business, culinology®, or pre-professional (for students interested in pre-vet, pre-med or pre-dental academics) tracks while moving through a curriculum designed to meet the Institute of Food Technologists (IFT) undergraduate standards and guidelines. Students will be able to tailor the program to their general interests and career goals by choosing one of the following career tracks.

Science and Technology

This track emphasizes learning scientific concepts with the application of technology. It provides the opportunity to expand beyond the background provided by the core courses of the major. This track is for students interested in pursuing a master's and/or a doctoral program in a science or technology field in the future. In addition, this track provides additional background for research and development jobs in industry and the public sector and it will prepare one to become a food chemist, food microbiologist, or a food processing technologist. By carefully selecting electives, students may also earn a minor in chemistry, microbiology, or foods and nutrition.

Business

This track applies food science and technology knowledge to marketing and entrepreneurship. With a science and technology foundation and an emphasis in business, students can successfully compete for food industry jobs in project management, technical sales, marketing and advertising. This track is designed for students interested in pursuing a Master of Business administration (MBA) program later on.

Culinology®

Culinology is a trademark of the Research Chefs Association (RCA). This track is one of few programs approved by RCA in the U.S. The curriculum blends food science and culinary arts and will provide tools to successfully develop foods for retail and food service consumption. This track is particularly attractive to those interested in product development. Students will receive a bachelor's degree in Food Science and Technology under the Institute of Food Technologists' guidelines while taking a number of courses in Culinary Arts.

Pre-professional

The Pre-professional track prepares students for a degree in Food Science and Technology that meets the Institute of Food Technologists' guidelines for an undergraduate program in Food Science while preparing to enter veterinary, medical, and other professional graduate programs. This track includes 24 units in biological science and chemistry courses. With a professional degree in veterinary sciences, an undergraduate degree in FST will prepare students to be successful in jobs related to inspection, safety, and processing of animal foods.

The major was established in fall 1999 in response to increasing demands from the fast-growing Southern California food industry for food scientists and technologists. It allows students to apply knowledge from basic disciplines such as chemistry, microbiology, physics and engineering to different areas of Food Science and Technology such as food chemistry, food processing, sensory evaluation, food analysis, product development, and packaging and food safety among others. Competencies in these areas enable graduates to succeed in the food industry as well as in local and federal governmental agencies as they face challenges in food manufacturing, research and development, qulaity control, food regulations, and marketing.

The type of work performed by food scientists includes research, interpretation, and application of information regarding the basic composition, structure and properties of foods. They study the chemistry of changes occurring during processing and utilization of food products by consumers. Process design for commercial food processing, selection and application of unit operations for the production of processed foods, optimization of processing parameters. Selection and application of microbiological and chemical analyses for food products. Establishment and implementation of Standard Sanitation Operating Procedures (SSOPs), Good Manufacturing Practices (GMPs) and Hazard Analysis Critical Control Point (HACCP) systems in food processing facilities. Monitoring for compliance with government, company and industry standards for quality or safety of food products. Product development and improvement, product formulation, selection and application of ingredients. Food packaging selection and testing. Establishment of quality assurance systems in food processing facilities. Training of plant employees in technical, quality and safety aspects.

Cal Poly Pomona is uniquely positioned for this program because of its 1) accessibility to a vast labor market for graduates, 2) diversified faculty, and 3) excellent agricultural and technological facilities and laboratories.

High school students planning to major in Food Science and Technology are advised to build a background in foods, chemistry, mathematics, physics and biology. Community college students should concentrate on chemistry (including organic), biology (including microbiology), math, statistics, communication skills and general education.

Because the food industry serves a basic human need, a career in food science is a wise choice, as it does not generally experience the economic fluctuations of other industries. The growing needs to improve the quality, quantity, variety, and safety of foods, coupled with the growing public demand for healthier, more convenient foods, virtually ensures the stability of employment for food scientists.

Students completing the Food Science and Technology program will be prepared for careers in a variety of areas:

Food industry: quality control, product development, food marketing, food processing, food microbiology, food engineering and food analysis.

University and private laboratories: research, extension, consulting.

Government agencies: Food and Drug Administration (FDA), U.S. Department of Agriculture (USDA), State and local health departments and other agencies.

International agencies: World Health Organization (WHO), Food and Agriculture Organization (FAO), World Bank and nonprofit organizations, international research centers.

Graduate school: food science and technology with specialization in food engineering, food chemistry or food microbiology; dairy science, meat science, post-harvest physiology and technology, cereal science, meat

science, enology, agricultural and biological engineering, biotechnology, public health, packaging, and toxicology.

The Institute of Food Technologists (IFT) is the main professional group for food scientists with more than 28,000 members. The Institute also has an active Student Association (IFTSA). The Southern California Section of IFT (SCIFTS) provides many opportunities for scholarships and professional networking at the local level through regular activities.

CORE COURSES FOR MAJOR

Core courses include food chemistry, food analysis, food microbiology, unit operations in food processing, food engineering, and food laws and regulations.

Orientation to the College of Agriculture	AG	100	(1)
Introduction to the Profession	FN	100	(1)
Introduction to Food Science and Technology	FST	125	(4)
Food Process Engineering I	FST	232/232L	(3)
Food Laws and Regulations	FST	322	(4)
Food Safety and Current Issues	FST	325	(4)
Food Process Engineering II	FST	332/332L	(3)
Unit Operations in Food Processing	FST	417/417L	(4)
Food Chemistry I	FST	420/420L	(4)
Food Analysis	FST	422/422L	(4)
Principles of HACCP	FST	423/423A	(4)
Food Chemistry II	FST	426/426L	(4)
Internship in Food Science and Technology	FST	441	(2)
Food Science Colloquium	FST	464	(2)

SUPPORT COURSES

General Chemistry	CHM	122/122L	(4)
General Chemistry	CHM	123/123L	(4)
Organic Chemistry	CHM	201/250L	(4)
# or Organic Chemistry	CHM	314/317L	(4)
# and Organic Chemistry	CHM	315/318L	(4)
# and Organic Chemistry	CHM	316/319L	(4)
Biochemistry	CHM	321/321L	(4)
Microbiology	MIC	201/201L	(4)
College Physics	PHY	121/121L	(4)
Food Microbiology	MIC	320/320L	(4)
Calculus for the Life Sciences	MAT	120	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

Freshman English I (A2)	ENG	104	(4)
Freshman English II (A3)	ENG	105	(4)
College Chemistry (B1, B3)	CHM	121/121L	(4)
Basic Biology (B2, B3)	BIO	115/115L	(5)
Statistics with Applications (B4)	STA	120	(4)
Nutrition, Science, and Health (B5)	FN	305	(4)
Ethical Issues in Food, Agricultural, and Apparel Industries (C4 or D4)	AG	401	(4)
Introduction to American Government (D1a)	PLS	201	(4)
United States History (D1b)	HST	202	(4)
Agriculture and the Modern World (D2)	AG	101	(4)
General Psychology (E)	PSY	201	(4)

For Pre-professional and Science and Technology Tracks only

DIRECTED ELECTIVES

Business Track Core and Elective Courses

Required Courses:

Food Packaging	FST	319/319A	(4)
Sensory Evaluation	FST	318/318L	(2/2)
Food Product Development	FST	421/421L	(2/2)

Plus 21 units from the following courses:

Sales and Advertising Management	FMA	225	(4)
Food and Agribusiness Marketing	FMA	304	(4)
Wholesaling and Retailing of Food Products	FMA	306	(4)
Financial Analysis Agribusiness I	FMA	326	(4)
Financial Analysis Agribusiness II	FMA	327	(3)
Int'l Food and Agribusiness Mktg.	FMA	330	(4)
Operations Mgmt. for Agribusiness	FMA	376	(4)
Food and Ag Mktg Appl	FMA	405	(4)
Food Systems in Developing Nations I	FST	424	(4)
Food Systems in Developing Nations II	FST	425	(4)
Global Business Perspectives	IBM	210	(4)
Principles of Mktg Mgmt	IBM	301	(4)
Promotional Strategies	IBM	307	(4)
Business Logistics	IBM	309	(4)
Int'l Mktg Mgmt	IBM	414	(4)
Intro to Electronic Business	EBZ	301	(4)
Trigonometry	MAT	106	(4)
Principles of Management	MHR	301	(4)
Operations Management	TOM	301	(4)
Production Management	TOM	332	(4)
Total Quality Management	TOM	401	(4)
Project Management	TOM	436	(4)
Principles of Economics	EC	201	(4)
Seminar in Waste Mgmt Econ	EC	438	(4)
Industrial Organization	EC	440	(4)
Internship in FST	FST	441	(2)
Internship in FST	FST	442	(2-4)

Note for FST Business Track Students:

Select a sufficient number of courses so that the total from Elective Track and GE is at least 89 units.

Culinology® Track Core and Elective Courses

Required Courses:

Sensory Evaluation	FST	318/318L	(2/2)
Food Product Development	FST	421/421L	(2/2)
Sanitation Practices in the Hospitality Industry	HRT	225	(1)
Professional Cooking I	HRT	281/281L	(2/2)
World Cuisine	HRT	324/324L	(2/2)
Professional Healthy Cooking	HRT	325/325L	(2/2)
Professional Cooking II	HRT	381/381L	(2/2)

Select 8 units from the following courses:

Introduction to Foods	FN	121/121L	(2/2)
Culture and Meal Patterns	FN	328/328L	(2/2)
Healthy American Cuisine	HRT	255	(4)
Beer and Culture	HRT	312	(4)
Wines, Beers, and Spirits	HRT	315	(4)
Wines of the World	HRT	316	(4)
Culinary Product Development and Evaluation	HRT	485	(4)
Internship*	FST	442	(2-4)
Culinary Produce Technology	PLT	222	(4)

*Denotes Capstone Experience

Note for FST Culinology® Track Students:

Select a sufficient number of courses so that the total from Elective Track and GE is at least 76 units.

Pre-Professional Track Core and Elective Courses

Required Courses:

Organic Chemistry	CHM	315/318L	(3/1)
Organic Chemistry	CHM	316/319L	(3/1)
College Physics/Lab	PHY	123/123L	(3/1)
Genetics	BIO	303	(4)
Cell, Molecular and Dev Bio	BIO	310	(4)
Foundations of Biology	BIO	123/123L	(3/2)

Select 7 units from the following courses:

Human Anatomy	ZOO	234/234L	(2/2)
Human Physiology	ZOO	235/235L	(3/1)
Introduction to Invertebrate Zoology	ZOO	237/237L	(3/2)
Introduction to Vertebrate Zoology	ZOO	238/238L	(3/2)
Human Embryology	ZOO	415/415L	(3/1)
Histology	ZOO	422/422L	(3/2)
Mammalogy	ZOO	430/430L	(2/2)
Comparative Anatomy of Vertebrates	ZOO	451/451L	(3/2)
Trigonometry	MAT	106	(4)
Science Communication	BIO	190	(1)
Genetics	BIO	103	(4)
Developmental Biology	BIO	320/320L	(3/2)
Cell and Molecular Biology	BIO	330	(4)
Neuroscience (required for Pre-med students)	BIO	424	(4)
Cellular Physiology	BIO	428/428L	(3/2)
Concepts of Molecular Biology	BIO	450	(4)
Molecular Biology Techniques	BIO	451/451L	(2/2)
College Physics/Laboratory (required for Pre-med students)	PHY	123/123L	(3/1)
Anatomy and Physiology of Domestic Animals	AVS	350/350L	(5)

Note for FST Pre-professional Track Students:

Select a sufficient number of courses so that the total from Elective Track and GE is at least 75 units.

Science and Technology Track Core and Elective Courses

Required Courses:

Food Packaging	FST	319/319A	(4)
Sensory Evaluation	FST	318/318L	(2/2)
Food Product Development	FST	421/421L	(2/2)

Plus 21 units from the following courses:

Post Harvest Physiology	AGR	351/351L	(3/1)
Meat Science and Industry	AVS	327/327L	(3/1)
Meat Processing and Technology	AVS	427/427L	(3/1)
Horizons in Biotechnology	BIO	230	(1)
Genetics	BIO	303	(4)
Cell, Molecular and Developmental Biology	BIO	310	(4)
Plant Products in Food Science	BOT	310	(4)
Quantitative Analysis	CHM	221/221L	(2/2)
Fundamentals of Physical Chemistry	CHM	301/301L	(3/1)
Organic Chemistry and Laboratory	CHM	315/318L	(3/1)
Organic Chemistry and Laboratory	CHM	316/319L	(3/1)
Spectroscopic Methods	CHM	342/342L	(2/2)
Separation Methods	CHM	343/343L	(2/2)
Nutrition	FN	235	(4)
Intro to Research Methods	FN	263	(4)
Nutrition of the Life Cycle	FN	335	(4)
Nutrient Drug Interactions	FN	343	(2)
Community Nutrition	FN	346/346L	(2/1
Advanced Nutrient Metabolism I	FN	433	(4)
Introduction to Foods	FN	121/121L	(2/2)
Food Systems in Developing Nations I	FST	424	(4)
Food Systems in Developing Nations II	FST	425	(4)
Internship	FST	442	(2-4)
Trigonometry	MAT	106	(4)
Microbial Structures and Functions	MIC	300/300L	(3/2)
General Epidemiology	MIC	330	(4)
Medical Bacteriology	MIC	410/410L	(3/2)
Immunology/Serology	MIC	415/415L	(3/2)
Medical Mycology	MIC	425/425L	(3/2)
General Virology	MIC	430/430L	(3/2)
Energy and Society	PHY	301	(4)
Post Harvest Physiology	PLT	351/351L	(3/1)
Human Physiology	ZOO	235/236L	(3/1)
Internship	FST	442	(2-4)

Note for FST Science and Technology Track Students:

Select a sufficient number of courses so that the total from Elective Track and GE is at least 89 units.

GENERAL EDUCATION REQUIREMENTS

Students should consult the catalog website www.csupomona.edu/~academic/catalog/ for current information regarding this requirement. Unless specific courses are stated under Support Courses, see the list of approved courses under General Education Requirements, Areas A through E.

Area A, Communication and Critical Thinking (12 units)

1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Mathematics and Natural Sciences (16 units)

1. Physical Science
2. Biological Science
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Humanities (16 units)

1. Fine and Performing Arts
2. Philosophy and Civilization
3. Literature and Foreign Languages
4. Humanities Synthesis

Area D. Social Sciences (20 units)

1. U.S. History, Constitution, and American Ideals
2. History, Economics, and Political Science
3. Sociology, Anthropology, Ethnic and Gender Studies
4. Social Science Synthesis

Area E. Lifelong Understanding and Self-development (4 units)

MINOR IN CULINOLOGY®

Culinology® is the blending of culinary arts and food science and technology. This is an interdisciplinary minor offered jointly by the Human Nutrition and Food Science Department of the College of Agriculture and the Collins School of Hospitality Management. This minor is particularly suited for students majoring in Food Science and Technology, Foods and Nutrition, Chemistry and related sciences, as well as students in Hospitality Management with an interest in culinary arts and food science.

Courses required for the Culinology® minor:

Prerequisite Courses:

General Chemistry (GE Area B2)	CHM	121/121L	3/1
General Chemistry	CHM	122/122L	3/1
Elements of Organic Chemistry	CHM	201	3
Elements of Organic Chemistry Laboratory	CHM	250	1

Minor-specific courses:

Sanitation Practices in the Hospitality Industry	HRT	225	1
Professional Cooking I	HRT	281/281L	2/2
Professional Cooking I I	HRT	381/381 L	2/2
World Cuisine	HRT	324/324L	2/2
Introduction to Food Science and Technology	FST	125	4
Food Chemistry I	FST	420/420L	3/1
Food Chemistry II	FST	426/426L	3/1
Food Product Development	FST	421/421L	3/1
or Culinary Product Development & Evaluation	HRT	485	4

Total units including prerequisite courses. 41

MINOR IN FOOD SCIENCE & TECHNOLOGY

The Food Science and Technology minor was designed to provide students basic principles and concepts that will improve their knowledge and understanding of food from a scientific perspective and of the use of technology to transform raw food materials. The minor provides students an overview of the field of food science and technology, basic aspects of food safety, and current issues about commercially processed foods. In addition, the students will have the opportunity to further explore specific areas in food science and technology through elective course work. The minor will broaden career opportunities for students following closely related majors such as nutrition science, dietetics, animal science, chemistry, biology, and chemical engineering. Science students take most of the pre-requisite courses as part of the curriculum for their major.

FST Minor Curriculum

Pre-requisite courses:

General Chemistry I (GE B-2)	CHM	121/121L	3/1
General Chemistry II	CHM	122/122L	3/1
Elements of Organic Chemistry	CHM	201	3
Elements of Organic Chemistry –Laboratory	CHM	250L	1
Basic Biology (GE B-3)	BIO	115/115L	3/2
Microbiology	MIC	201/201L	3/2
Statistics with Applications (GE B-1)	STA	120	4

Minor-specific required courses

Introduction to Food Science and Technology	FST	125	4
Food Safety and Current Issues	FST	325	4

Electives

Complete 12-13 units from the courses listed below:

Food Process Engineering I (*)	FST	232/232L	2/1
Food Process Engineering II	FST	332/332L	2/1
Sensory Evaluation of Food	FST	318/318L	2/2
Food Packaging	FST	319/319A	3/1
Unit Operations in Food Processing I	FST	417/417L	2/1
Unit Operations in Food Processing II	FST	427/427L	2/1
Food Chemistry I	FST	420/420L	3/1
Food Chemistry II	FST	426/426L	3/1
Food Product Development	FST	421/421L	2/2
Food Analysis	FST	422/422L	3/1
Food Microbiology	FST	320/320L	2/2

Total Units including prerequisite courses. 46-47

(*)Pre-requisite courses for FST232/232L are: MAT114 or MAT120 Analytic Geometry and Calculus or Calculus for the Life Sciences (GE B-1) and PHY121/121L College Physics (GE B-2).

COURSE DESCRIPTIONS

All courses offered by the department may be taken on a CR/NC basis by non-majors only.

FST 125 Introduction to Food Science and Technology (4)

An introduction to the scope, principles and practices of food science and technology. Basic aspects of chemistry and microbiology of food products. Introduction to food safety and sanitation and basics of food laws and regulations. Principles of the most common methods of food preservation. Overview on the commercial processing of specific food commodities. 4 lecture discussions.

FST 200 Special Study Lower Division Students (1–2)

Individual or group investigation, research studies or surveys of selected problems for lower division students. Total credit limited to 4 units, with a maximum of 2 units per quarter.

FST 232/232L Food Process Engineering I (2/1)

Process engineering principles including math concepts for food engineering calculations, units and dimension, thermodynamics, material and energy balance, and fluid flow. 2 lectures/problem solving, and 1 three-hour laboratory. Prerequisites: MAT 120, PHY 121/121L and FST 125. Concurrent enrollment required.

FST 299/299A/299L Special Topics in Food Science and Technology for Lower Division Students (1–4)

Group study of a selected topic in food science and technology, which is specified in advance for lower division students. Total credit limited to 4 units. Instruction is by lecture, laboratory, activity, or a combination. Prerequisite: permission of instructor.

FST 318/318L Sensory Evaluation of Foods (2/2)

Principles, theory and methodology of sensory evaluation of foods and applications in food research and development and consumer testing. Group projects and field trips. 2 lectures, 2 three-hour labs. Prerequisites: FST125 or FN 121/121L, STA 120.

FST 319/319A Food Packaging (3/1)

Exploration of the role of food packaging in food preservation. Discussion of food packaging materials and their impact on food products. Overview of product stability and shelf life extension. Demonstrations and field trips. 3 lecture discussions and 1 two-hour activity. Concurrent enrollment required. Prerequisite: FST 125.

FST 321/321L Experimental Food Science (3/1)

Experimental study of ingredient functions and factors affecting food product quality as measured by sensory and objective methods. Guided group projects involving problem identification, literature search, project

design, data collection, critical analysis of data, oral and written presentations of findings. 3 lecture/problem-solving, 1 three-hour laboratory. Concurrent enrollment required. Prerequisites: FN 121/121L, CHM 201/250L or CHM 316 and CHM 317.

FST 322 Food Laws and Regulations (4)

An examination of the rules and regulations of various governmental agencies with regard to the processing, packaging, labeling and marketing of food products. Sources of information necessary for communication with government on public food policy information. 4 lectures. Prerequisite FST 125.

FST 325 Food Safety and Current Issues (4)

Overview of physical, chemical and microbiological hazards and their role in foodborne illness and the safety of the food supply. Introduction to the Hazard Analysis Critical Control Point System. The role of government and basic aspects of food safety laws and regulations. Review of current issues in food safety and security, food protection, food production, and food processing as they relate to public health. 4 lecture discussions.

FST 332/332L Food Process Engineering II (2/1)

Process engineering principles including steady-state and unsteady-state heat transfer, mass transfer mechanisms, psychrometry, and refrigeration. 2 lectures/problem solving, and 1 three-hour laboratory. Prerequisite: FST 232/232L. Concurrent enrollment required.

FST 400 Special Study for Upper Division Students (1–2)

Individual or group investigation, research studies, or surveys of selected problems for upper division students. Total credits limited to 4 units, with a maximum of 2 units per quarter.

FST 417/417L Unit Operations in Food Processing I (2/1)

Study of raw materials preparation, size reduction, homogenization, pasteurization, canning, aseptic processing, freezing, and other unit operations in food processing technology that involve physical changes of raw materials and/or heat transfer. 2 lectures/problem solving, and 1 three-hour laboratory. Field trips and term group projects. Prerequisites: CHM 201/250L or 315 and 317L, MIC 201/201L, and FST 332/332L.

FST 420/420L Food Chemistry I (3/1)

Chemical characteristics of food and its main components. Chemical changes during food processing and storage. Functions of food additives and other ingredients. 3 lectures, 1 three-hour laboratory. Prerequisite: FN 121/121L or FST 125, CHM 201/250L or CHM 316 and CHM 317. Concurrent enrollment required.

FST 421/421L Food Product Development (2/2)

Application of food science and technology principles to research and development industrial practices. A course designed to implement critical thinking, decision-making, teamwork, and communication skills towards the design and development of new and improved food products. 2 lecture discussions, 2 three-hour laboratories. Prerequisites: FST 318 for food science and technology majors or FST 321 for non-majors. Concurrent enrollment required.

FST 422/422L Food Analysis (3/1)

Principles and application of physical and chemical methods to the separation, characterization and quantitative analysis of food constituents. 3 lectures, 1 three-hour laboratory. Prerequisites: FST 125 or FN 121/121L, CHM 201/250L, and STA 120.

FST 423/423A Principles of HACCP (3/1)

Basic principles of the Hazard Analysis Critical Control Point system and their application. Prerequisite programs for implementing HACCP plans. Preliminary steps to HACCP implementation. Regulations that require HACCP systems. 3 hours lecture discussion and 1 two-hour activity. Concurrent enrollment required. Prerequisite: FST 325.

FST 424 Food Systems in Developing Nations I (4)

Study of food systems in developing nations with an emphasis in food processing, food technology, food safety issues, and food laws and regulations. Discussion of background information on a specific country selected for study. This course is also the preparatory course for participation in FST 425 Food Systems in Developing Nations II (4), which includes a trip to a developing country during one of the university recesses.

FST 425 Food Systems in Developing Nations II (4)

Direct field observation and academic study of food systems in a developing nation. Site visits may include government, academia, production, processing and packaging facilities. Includes a field trip to a developing country during one of the university recesses. The field trip will be 8-10 days including transportation to the chosen country. Students must cover field trip cost. Prerequisites: FST 424 or concurrent enrollment in FST 424.

FST 426/426L Food Chemistry II (3/1)

Chemical characteristics of major food commodities. Chemical changes during processing and storage of specific food groups. Chemical changes associated to specific food processing methods. Chemistry of food spoilage. 3 lectures, 1 three-hour laboratory. Prerequisite: FST 420/420L.

FST 427/427L Unit Operations in Food Processing II (2/1)

Study of mechanical separations, separation and concentration using membranes, dehydration, evaporation, distillation, and other unit operations in food processing that involve mass transfer with or without heat transfer. 2 lectures/problem solving, and 1 three-hour laboratory. Field trips and term group projects. Prerequisites: FST417/417L. Concurrent enrollment required.

FST 441, 442 Internship in Food Science and Technology (1–4) (1–4)

On-the-job training in the professional field of food science and technology. Potential experiences include: quality control and assurance, food safety assurance, industrial production, research and development, product development, inspection and regulatory activities and sensory testing. Prerequisite: senior standing and consent of instructor.

FST 464 Food Science Colloquium (2)

Classroom interaction of students with selected food industry leaders focusing on technical, economic, regulatory and new product trends as they impact occupational opportunities in the food and beverage industries. Written reports. 2 lectures. Prerequisite: senior standing.

FST 499/499A/499L Special Topics for Upper Division Students (1–4)

Group study of a selected topic in food science and technology, the title to be specified in advance for upper division students. Total credit limited to 4 units. Instruction is by lecture, laboratory, activity, or a combination of both. Prerequisite: consent of instructor.

INTERNATIONAL AGRICULTURE

www.csupomona.edu/~fmamaged

The Animal and Veterinary Sciences Department offers a program of courses in International Agriculture.

Edward S. Fonda, Interim Chair
Nancy Merlino, Program Director

William C. Hughes
Marvin L. Klein
Rick Mathias
Jon C. Phillips

COURSE DESCRIPTIONS

All courses offered by the department may be taken on a CR/NC basis except by majors.

IA 101 Global Resources for Food (4)

Resource base for agricultural production on various continents. Potential for increasing food supplies. Role of agriculture in economic development. 4 lectures.

IA 330 International Food and Agribusiness Marketing (4)

Marketing of food, fiber, and horticultural products in foreign markets. Special emphasis on selecting export markets, procedures for establishing contacts, promotion, financing, insuring, shopping tariffs, customs, regulations and other matters related to food and fiber products. Management practices and problems of firms involved in exporting and importing textiles and garments, livestock, fruits, vegetables, grains and other food and fiber products. 4 lectures.

IA 362 Agricultural Policy in Developing Nations (4)

Review, analysis and discussion of relevant international government agricultural policy affecting development, trade, and food production. History, current status and projections of policy trends. 4 lectures.

IA 400 Special Study for Upper Division Students (1–2)

Individual or group investigation, research, studies or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter.

IA/FN 445 Agriculture, Nutrition and International Development (4)

Issues in technology, food policy, nutrition, political economy, and social welfare in developing societies. Integrates concerns about food and nutrient distribution and availability, malnutrition, scientific principles of nutrient utilization and metabolism, and human productivity and reproduction. Implications for a just and sustainable economic development. 4 lectures.

IA/FMA 450 Agricultural Water Resource Management (4)

Water resource management applied to current issues. Water delivery systems in the United States and California, survey of water rights, water pollution, water conservation, food and agricultural system water use, and efficient water management. Includes water problems in developing nations. 4 lecture discussions.

IA 461, 462 Senior Project (2) (2)

Students select and complete a research project under faculty supervision typical of those they will be required to handle in their field of employment. Research findings and conclusions are presented in a formal report. Prerequisite: senior standing. May not be taken concurrently.

PLANT SCIENCE

www.csupomona.edu/~plantsci

Daniel Hostetler, Chairman
Sowmya Mitra, Graduate Coordinator

Terrance Fujimoto
Richard S. Kaae
Ramesh Kumar
Gregory J. Partida
Peggy S. Perry
Frederick Roth
David W. Still
Victor Wegrzyn

Graduates from the Plant Science major can look forward to an extremely wide array of career opportunities in California's growing horticultural, agronomic, and fruit industries. These careers also include many areas that provide support to these industries such as landscape irrigation, water management, soil science and conservation, agricultural biology, entomology, plant biotechnology, postharvest physiology, and environmental protection of water, farmlands, open space, and landscaped areas.

Increasing urbanization in many parts of California has created the need for professionals educated in the urban landscape and urban/rural interface issues. Students in landscape development focus on production and management of landscapes that are attractive yet functional, conserve water, have lower maintenance requirements, and serve the needs of society. Students also concentrate in areas of nursery management, turfgrass, sports and golf course management, arboriculture, propagation and pathology. Many large and small landscape design, development and maintenance companies in the local area and across the nation provide internships and job opportunities for students pursuing careers in the green industry.

California still leads the nation in the production of over 350 crops. Over the past two decades production has shifted significantly from field and cereal crops to specialty fruits and vegetables with our curricula following that trend. Employment opportunities in this field are numerous. In addition to commercial tree and crop production management, students are prepared for careers in pest control advising, the seed and nursery industry, produce marketing, postharvest physiology and agricultural chemicals. Students interested in organic production of food have the opportunity to pursue coursework in sustainable agriculture.

Many important career opportunities support commercial food, nursery and landscape areas. Graduates enter careers that protect our natural resources, the urban landscape and food production systems. Students pursuing studies in Landscape Irrigation Science design modern irrigation systems, provide irrigation water management and develop and implement best management practices that improve efficiency and protect our valuable water resources in California. Soils are the basis for all of our food, fiber and landscape developments. Students pursuing careers in this area study conservation, environmentally sound fertility practices, and modern analysis methods to assist growers and landscape designers. Agricultural biologists are experts in pest detection and prevention managing populations of insects, vertebrate pests, weeds, and plant diseases. Many graduates enter into careers in environmental health, crop management advising and regulatory enforcement work, via agricultural commissioners, public health specialists, and homeland security.

Biotechnology has had a profound impact on the plant science industry over the past few decades. Many students study crop and plant improvement via plant breeding and genetic engineering. Annually several of our graduates pursue graduate education in this area along with studies in plant pathology, seed physiology, entomology, soils and water management, and environmental conservation. Students pursuing graduate studies have an excellent combination of advanced science combined with a sound background in plant science.

The Department is home to two major centers, AGRIscapes, and CTILT, the Center for Turf, Irrigation and Landscape Technology. AGRIscapes is an educational center devoted to food, agriculture, and urban environment education. The centerpiece of this complex is the Farm Store at Kellogg Ranch, which markets all of Cal Poly's fruit, vegetable and nursery production along with California agricultural products. Set on 40 acres, AGRIscapes contains experimental gardens, u-pick fruit and vegetables, and a visitors' center which highlights the Kellogg history and exhibits that demonstrate the importance of agriculture and the green industry to our daily lives. CTILT has numerous turfgrass, landscape and irrigation demonstrations and serves as the primary research center for these areas.

The Plant Science Department has excellent support facilities and staff to enhance "hands on" education. The Department maintains over 1400 acres of diversified farmland producing deciduous and sub-tropical fruit, vegetable, and agronomic crops. Over 40,000 square feet of greenhouses support research and student activities in nursery production, hydroponics, and specialty crop culture. This is also the home to the Raymond Burr collection of cattleya and cymbidium orchids. Laboratories supporting education and research include a seed physiology lab, irrigation science lab, CIMIS weather station, soil science lab and turfgrass physiology lab. Other support facilities include the fruit and vegetable packinghouse, tractor shop, and ornamental horticulture unit.

Students of the Department are involved in a wide variety of activities. Professional organizations sponsor 4 active clubs within the Department. Competitive judging teams travel and compete in inter-collegiate competitions in horticulture, turfgrass, irrigation, crops, and soils. The Department employs over 40 students who assist with nursery and farm operations, retail farm store operations, and as research assistants with faculty. Opportunities are available for enterprising students to manage their own crops and projects.

CORE COURSES FOR MAJOR

Required of all students. A 2.0 cumulative GPA is required in core courses in order to receive a degree in the major.

Orientation to the College of Agriculture	AG	100	(1)
Landscape Horticulture	PLT	131/131L	(3/1)
Plant Propagation	PLT	132/132L	(3/1)
Agricultural Cropping Systems	PLT	133/133L	(3/1)
Basic Soil Science	PLT	231/231L	(3/1)
Irrigation and Water Management	PLT	232	(4)
Introduction to Arthropods	PLT	233/233L	(3/1)
Investigative Techniques in Plant Science	PLT	301	(4)
Technology Innovations in Plant Science	PLT	302	(4)
Weeds and Weed Control	PLT	331/331L	(3/1)
Soil Fertility and Fertilizers	PLT	332/332L	(3/1)
Integrated Pest Management	PLT	333	(4)
Crop Ecology	PLT	401	(4)
Environmental Toxicology	PLT	411	(4)
Internship	PLT	441	(2)
or Senior Project	PLT	461	2
Senior Seminar	PLT	463	(2)

SUPPORT AND ELECTIVE COURSES

Plant Structures and Functions	BOT	124/124L	(3/2)
General Plant Pathology	BOT	323/323L	(2/2)
Plant Physiology	BOT	428/428L	(3/2)
General Chemistry	CHM	122/122L	(3/1)
Accounting for Agribusiness	FMA	324	(4)

The following major support courses should be used to satisfy the indicated GE requirements. If these courses are not used to satisfy GE, the total units to degree may be more than 180 units.

General Chemistry (B1, B3)	CHM	121/121L	(3/1)
Basic Biology (B2, B3)	BIO	115/115L	(3/2)
Statistics with Applications (B4)	STA	120	(4)
Introduction to American Government (D1a)	PLS	201	(4)
United States History (D1b)	HST	202	(4)
Agriculture and the Modern World (2)	AG	101	(4)
Ethical Issues in Food, Agricultural and Apparel Industries (D4)	AG	401	(4)
Business Coursework (See Advisor)			(8)
Directed Electives (See Advisor)			(25)

Note for Plant Science Students:

Select a sufficient number of courses so that the total from Directed Support and GE is at least 93 units.

GENERAL EDUCATION REQUIREMENTS

Students should consult the catalog website www.csupomona.edu/~academic/catalog/ for current information regarding this requirement. Unless specific courses are stated under Support Courses, see the list of approved courses under General Education Requirements, Areas A through E. If completing a certified General Education Program, please refer to counselor or chairman, especially in regard to science and math requirements.

Area A, Communication and Critical Thinking (12 units)

1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Mathematics and Natural Sciences (16 units)

1. Physical Science
2. Biological Science
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Humanities (16 units)

1. Fine and Performing Arts
2. Philosophy and Civilization
3. Literature and Foreign Languages
4. Humanities Synthesis

Area D. Social Sciences (20 units)

1. U.S. History, Constitution, and American Ideals
2. History, Economics, and Political Science
3. Sociology, Anthropology, Ethnic and Gender Studies
4. Social Science Synthesis

Area E. Lifelong Understanding and Self-development (4 units)

MINORS

May be taken by students majoring in Plant Science.

ORNAMENTAL HORTICULTURE MINOR

(28 Units required, minimum 12 units upper division)

Required:

Landscape Horticulture	PLT	131/131L	(3/1)
Plant Propagation	PLT	132/132L	(3/1)
Plant Materials I	PLT	241/241L	(3/1)
Plant Materials II	PLT	242/242L	(3/1)
Greenhouse Management	PLT	323/323L	(3/1)

Select 8 Units:

Arboriculture	PLT	328/328L	(2/1)
Native Plant Materials	PLT	337/337L	(2/1)
Landscape Contracting and Estimating	PLT	416/416L	(3/1)
Urban Forestry	PLT	420/420L	(3/1)
Advanced Plant Propagation	PLT	422/422L	(3/1)
Landscape Management	PLT	443/443L	(3/1)
Special Topics in Plant Science*	PLT	499	(3)

AGRONOMY MINOR

(28 Units required, minimum 12 units upper division)

Required:

Agricultural Cropping Systems	PLT	133/133L	(3/1)
Agronomic Principles and Practice	PLT	220/220L	(3/1)

Select 12 Units:

Subtropical Fruits	PLT	202/202L	(3/1)
Pomology	PLT	203/203L	(3/1)
Culinary Produce Technology	PLT	222	(4)
Pasture and Forage Systems	PLT	223/223	(3/1)
Vegetable Crop Systems	PLT	226/226L	(3/1)
Crop Quality and Utilization	PLT	321/321L	(3/1)
Weeds and Weed Control	PLT	330/330L	(3/1)
Postharvest Physiology	PLT	351/351L	(3/1)

Select 8 Units:

Plant Breeding	PLT	404/404L	(3/1)
Crop Diseases	PLT	421/421L	(3/1)
Diseases of Ornamentals	PLT	427/427L	(3/1)
Environmentally Sustainable Agriculture	PLT	437/437L	(3/1)
Special Topics in Plant Science*	PLT	499	(3)

PEST MANAGEMENT MINOR

(28 units required, 12 must be upper division)

Required:

Introduction to Arthropods	PLT	233/233L	(3/1)
Pesticide and Haz Mat Laws	PLT	303	(3)
Integrated Pest Management	PLT	333	(4)

Select 17 Units from:

Agricultural Insect Pests	PLT	320/320L	(3/1)
Weeds and Weed Control	PLT	331/331L	(3/1)

Urban Pest Management	PLT	324/324L	(3/1)
Bee Science	PLT	336/336L	(2/1)
Invertebrate Vector Control	PLT	342/342L	(3/1)
Insect Taxonomy	PLT	402/402L	(2/2)
Biological Control	PLT	403/403L	(3/1)
Crop Diseases	PLT	421/421L	(3/1)
Pest Control Methodology	PLT	424/424L	(2/1)
Ornamental Diseases	PLT	427/427L	(3/1)
Special topics in Plant Science*	PLT	499	(3)

SOIL SCIENCE MINOR

(28 Units required, minimum 12 units upper division)

Required:

Basic Soil Science	PLT	231/231L	(3/1)
Soil Fertility and Fertilizers	PLT	332/332L	(3/1)

Select 20 Units:

Landscape Sprinkler Irrigation	PLT	251	(4)
or Drip Irrigation	PLT	340/340L	(3/1)
Landscape Drainage	PLT	341	(4)
Soil Conservation	PLT	334/334L	(3/1)
Soil Management	PLT	352/352L	(3/1)
Soil Chemistry	PLT	431/431L	(3/1)
Soil Physics	PLT	432/432L	(3/1)
Soil Genesis and Morphology	PLT	433/433L	(3/1)
Special topics in Plant Science*	PLT	499	(3)

LANDSCAPE IRRIGATION DESIGN MINOR

(28 Units required, minimum 12 units upper division)

Required:

Irrigation and Water Management	PLT	232	(4)
Computer-Aided Design	PLT	252/252L	(3/1)
Sprinkler Irrigation	PLT	251	(4)
Drip Irrigation	PLT	340/340L	(2/1)

Select a minimum of 13 units (9 upper division) from the following:

Landscape Drafting and Design	PLT	211/211L	(3/1)
General Surveying	PLT	245/245L	(2/1)
Golf Course Irrigation	PLT	322/322L	(3/1)
Landscape Drainage	PLT	341	(4)
Advanced Irrigation Water Management	PLT	440/440L	(3/1)
Special topics in Plant Science*	PLT	499	(3)

*Consult with minor coordinator for approval

Course Descriptions

PLT 131/131L Landscape Horticulture (3/1)

An introduction to the fundamental skills and principles of horticulture in the landscape. Includes an overview of basic classification, anatomy, physiology. Also discussed are the practical applications of planting techniques, pruning, propagation, soils, irrigation, turfgrass and nursery/greenhouse techniques. 3 lectures, 1 three-hour laboratory.

PLT 132/132L Plant Propagation (3/1)

Methods and principles of plant production including propagation by seed, spore, cuttings grafting and layering for ornamental and vegetable and fruit plants. Basic concepts and scientific methods used in selection, production and maintenance of propagation material. Horticultural equipment and structures related to plant production. 3 lectures, 1 three-hour laboratory.

PLT 133/133L Agricultural Cropping Systems (3/1)

An examination of the applicable cultural practices of world, national and California cropping systems in relation to fruit, nut, vegetable, field and forage crops. Areas of discussion will include the climatic and cultural requirements, growth and fruiting habits, and varietal characteristics of plants. The production and maintenance of major crops including variety selection, culture, harvesting and processing. 3 lectures, 1 three-hour laboratory.

PLT 200 Special Study for Lower Division Students (1–2)

Individual or group investigation, research, studies or surveys of selected problems. Total credit limited to 8 units, with a maximum of 4 units per quarter.

PLT 202/202L Subtropical Fruits (3/1)

Analytical investigation of citrus, avocado and other subtropical fruit tree orchards. Critical evaluation of environmental requirements, site selection, varietal adaptations, cultural requirements, fruiting and growth habits and economics of producing subtropical fruits. Assessing the harvesting and marketing of fruit crops. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 132, PLT 133.

PLT 203/203L Pomology (3/1)

Critical evaluation of the environmental and cultural requirements of California deciduous fruit tree orchards. Emphasis on the basic concepts and scientific methodologies used in the production of stone and pome fruits, grapes, kiwis, strawberry and major nut crops. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 132, PLT 133.

PLT 211/211L Landscape Drafting and Design (3/1)

The fundamentals of drafting and graphic presentation. Methods and procedures for preparation of landscape structure components. 3 lectures, 1 three-hour laboratory.

PLT 214 History of Garden Art (4)

The relationship of ornamental flora to the human living experience to show the continuity with contemporary gardens, homes, parks, and other art. An introduction to the various styles in landscape art as they developed in different cultures and in preceding ages. 4 lectures.

PLT 220/220L Agronomic Principles and Practices (3/1)

Analysis of the production, harvesting, marketing, grading and processing of major agronomic crops of California. Practical application of farm cultural practices in relation to field conditions and environmental factors. Analysis of costs, calendars of operations, and management strategies. 3 lectures, 1 three-hour laboratory.

PLT 222 Culinary Produce Technology (4)

Procurement, identification and quality standards of vegetables, fruits, and herbs utilized in a restaurant or culinary setting. Integration of seasonality, grading, post-harvest handling and environmental impacts. Discussion of major issues facing the grower and end user, organic vs. conventional produce. 4 lectures/problem solving.

PLT 223/223L Pastures and Forage Systems (3/1)

Establishment, management and composition of irrigated and rangeland pastures and major forage crops adapted to southwestern conditions. Identification, botanical characteristics, culture, and livestock utilization of forage species. 3 lectures, 1 three-hour laboratory.

PLT 226/226L Vegetable Crop Systems (3/1)

Environmental and cultural principles involved in the production of major warm and cool season vegetable crops in the southwest. Economics of production, climatic adaptation, harvesting principles, post-harvest handling. Current topics involving technologies in vegetable production. 3 lectures, 1 three-hour laboratory.

PLT 231/231L Basic Soil Science (3/1)

Basic concepts of living and non-living systems of soils; integrated relationships between soils and climate, plants, and animals. Physical, chemical, and biological properties of soils. Practical approach to current problems through basic soil principles 3 lectures, I three-hour laboratory. Prerequisite: CHM 121/121L.

PLT 232 Irrigation and Water Management (4)

An introduction to irrigation methods like drip, micro, surface and sprinklers for nursery, landscapes, turfgrass, field crops and tree crop applications. Basic soil-plant-water relationships. Information needed for planning, design and scheduling of an irrigation system, irrigation hydraulics, irrigation efficiencies and modern controllers. 4 lecture-problem solving.

PLT 233/233L Introduction to Arthropods (3/1)

Insects and related arthropods affecting food, plants, animals, people and their structures. Emphasis will be on economic insects, miscellaneous related arthropods; their morphological and phylogenetic relationships; habits and habitats; and their important biological characteristics. 3 lectures and 1 three-hour laboratory.

PLT 240/240L Turfgrass Management (3/1)

Considerations in the management of turf, including such specialized areas as golf courses, bowling greens, athletic fields and park lawns. Introduction to major cool and warm season turfgrasses and their identification. 3 lectures, 1 three-hour laboratory.

PLT 241/241L Plant Materials I (3/1)

A study of approximately 200 commonly used landscape plants. Trees and shrubs will be emphasized. Growth habit, cultural requirements and landscape use is described. 3 hours lecture, 1 three-hour field laboratory.

PLT 242/242L Plant Materials II (3/1)

A study of approximately 200 commonly used landscape plants. Herbaceous plants and groundcovers will be emphasized. Growth habit, cultural requirements and landscape use is described. 3 hours lecture, 1 three-hour field laboratory.

PLT 245/245L General Surveying (2/1)

Measurement of distances, elevations, angles, and directions. Prepare Contour maps. Calculations of earth yardage for land forming, cuts and fills and road curves. and aerial photogrammetry. Care of surveying equipment and note taking. 2 lectures/problem-solving, and 1 three-hour laboratory.

PLT 251 Sprinkler Irrigation (4)

Design of sprinkler systems for small landscapes. Selection of sprinkler irrigation equipment such as sprinklers, pipes, pipe fittings, valves, controllers, and specialty devices for efficient water application and to meet codes. Application of soil-water plant relations for scheduling irrigation. 4 lecture/ problem-solving.

PLT 252/252L Computer Aided Design (3/1)

Application of the computer software (AUTOCAD) to landscape irrigation design and graphics. 3 lectures/problem-solving, 1 three-hour laboratory.

PLT 299/299L/299A Special Topics for Lower Division Students (1–4)/(1–4)/(1–4)

Group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units, with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination.

PLT 300 Insects and Civilization (4)

Analysis of insects and related arthropods and their influence on life, ranging from everyday events to how they have changed the history of the world. Selected topics on the importance of arthropods in modern and ancient cultures. Open to all majors. Prerequisites: one GE course from each of the following sub-areas: A1, A2, A3 and B1, B2 and B4. Fulfills GE Synthesis sub-area B5.

PLT 301 Investigative Techniques in Plant Science (4)

Advanced instruction in developing written and oral reports, data analysis, and scientific/technical communication related to Plant Science disciplines. Emphasis on data analysis and interpretation, report writing and presentations in preparation for upper division coursework. 4 lectures/problem solving. Prerequisites: Stat 120.

PLT 302 Technology Innovations in Plant Science (4)

Current technological innovations that have an impact on the Plant Science field. The topics may change over time as new technology is developed. Theory and practical uses of this technology and exposure to different technological careers. As much of the new innovation combines computers and data analysis with biological systems, the regulations and ethical issues arising from these new technologies will be discussed. 4 lectures/problem solving.

PLT 303 Pesticide and Hazardous Material Laws (3)

Federal, State and County pest control laws and regulations affecting individuals, corporations, and agencies; providing for the public welfare and protecting the environment. Emphasis on hazardous materials, pesticide safety, and ground water protection. Function and enforcement practices of regulatory agencies. 3 lectures.

PLT 311 Plants and Civilization (4)

A critical review of science, technology and environment as related to plant domestication and current world food and fiber production. Societal implications associated with the biological and technical innovations in world cropping systems will be discussed. Open to all majors. Four 1-hour lecture/discussions. Prerequisites: completion of Area A and Area B, sub areas 1 and 2 and BIO 110 or BIO 115/L or equivalent. Fulfills GE Synthesis sub-area B4.

PLT 320/320L Agricultural Insect Pests (3/1)

Recognition of important insects and mites attacking major field, grain, and vegetable crops and subtropical and deciduous fruit plants. Host preference and identification of damage to plant parts. Pest biologies and problems relating to arthropod pest management programs. 3 Lectures and 1 three-hour laboratory. Prerequisite: PLT 233/233L or equivalent.

PLT 321/321L Crop Quality and Utilitzation (3/1)

Grades, quality factors and processing of major cereal, forage, and fiber crops. Analysis of nutritional values and market factors. Identification of optimal harvesting, storage, and quality issues to facilitate utilization and marketing. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 220/220L or PLT 223/223L.

PLT 322/322L Golf Course Irrigation (3/1)

Design and management of sprinkler systems for athletic fields, parks, and golf courses. Emphasis is on the application of irrigation principles to a complex irrigation system. 3 lectures/problem-solving, 1 three-hour laboratory. Prerequisite: PLT 251.

PLT 323/323L Greenhouse Management (3/1)

Design and management of different types of greenhouses and plant shelters. Maintenance, heating, cooling, humidification systems and their controls. Mechanization, automatic and semi-automatic fertilization, cropping systems, and irrigation systems. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 131, 132.

PLT 324/324L Urban Pest Management (3/1)

Analysis and management of arthropods and vertebrate pests causing damage to structures and plant and animal production environments. Evaluation of damage, control measures and important laws and regulations regarding structural integrated pest management. 3 lectures and 1 three-hour laboratory. Prerequisites: PLT 233.

PLT 328/328L Arboriculture (2/1)

Selection, planting, care and management of ornamental trees. Practice in the techniques of climbing. Safety practices. 2 hours lecture, 1 three-hour field laboratory. Prerequisites: PLT 241/241L or LA 241/241L.

PLT 331/331L Weeds and Weed Control (3/1)

Identification and control of weeds in crops, range lands, ornamentals, turfgrass and non-crop areas. Weed ecology, competition, reproduction, seed dormancy. Methods of weed control, cultural, biological, chemical, and integrated pest management strategies. Classification of herbicides and their modes of action. 3 lectures, 1 three- hour lab, Prerequisite: BIO 115/115L or BOT 124/124L.

PLT 332/332L Soil Fertility and Fertilizers (3/1)

Understanding the influence of soil biological, physical, and chemical properties and their interactions on nutrient availability for plants. Identify plant nutrition problems and investigate the relationship of edaphic factors on nutrient availability. Formulate a probable corrective action by developing a fertilizer plan based on soil and tissue tests. Identify soil and nutrient management practices that maximize productivity. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 231/231L.

PLT 333 Integrated Pest Management (4)

Critical evaluation of ecosystem-based strategies used in management of pests in agricultural, industrial, urban, horticultural and structural environments. Control measures are implemented on target pests after monitoring and evaluating damaging populations and following established laws, guidelines and treatment recommendations. 4 lectures. Prerequisites: PLT 233, BIO 115/115L.

PLT 334/334L Soil Resource Management and Conservation (3/1)

An integrated study of principles and methods for managing soil and water resources for multiple uses, sustainable agriculture, environmental quality, and erosion control. Integrated effects of soil, climate, topography, and land use; social, political, and economic relationships. 3 lectures/problem-solving, 1 three-hour laboratory. Prerequisite: PLT 231/231L.

PLT 336/336L Bee Science (2/1)

Practical application of management principles for effective establishment, care and maintenance of apiaries. Pollination and value of bees to agriculture. Recognition and control of bee diseases. Laws and regulations pertaining to beekeeping. 2 lectures, 1 three-hour laboratory.

PLT 337/337L Native Plant Materials (2/1)

Native California plants suitable for landscape purposes. Their identification, habits of growth, cultural requirements, and landscape use. 2 lectures, 1 three-hour laboratory.

PLT 340/340L Drip Irrigation (2/1)

Design of drip irrigation systems, including emitter selection and uniformity of water distribution. Lateral, and mainline design, filtration, fertilization and automation are included. Application of plant water requirements for drip irrigation scheduling. 2 lectures/problem-solving, 1 three-hour laboratory. Prerequisite: PLT 251.

PLT 341 Landscape Drainage (4)

Drainage problems related to landscaping, such as sizes of storms, and surface runoff. Calculations of storm sizes with different frequencies. Minimizing and prevention of damage due to runoff or erosion. 4 lectures/problem-solving. Prerequisite: PLT 251.

PLT 342/342L Invertebrate Vector Control (3/1)

Major invertebrate pests attacking and spreading diseases to man and animals; important pests damaging stored products. Recognition of life stages and damage; life histories and control measures. Important laws and regulations pertaining to medically important pests. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 233.

PLT 351/351L Postharvest Physiology (3/1)

Critical evaluation of the effects of post harvest handling of horticultural crops from the standpoint of harvest, storage, storage pathological problems and transportation through the marketing channels to the consumer. Examine the storage, ripening and processing of fresh horticultural commodities. 3 lectures, 1 three-hour laboratory. Prerequisites: BIO 115, PLT 202 or PLT 203 or PLT 226.

PLT 352/352L Soil Materials and Management (3/1)

Comprehensive evaluation of soils, soil materials, and technical and scientific methodologies for managing soils and soil materials for the production of agronomic and horticulture crops on a sustained basis while preserving environmental quality. Presented in an interactive setting. 3 lectures/problem-solving, 1 three-hour laboratory. Prerequisite: PLT 231/231L.

PLT 400 Special Study for Upper Division Students (1–2)

Individual or group investigation, research, studies, or surveys of selected problems. Total credit limited to 8 units, with a maximum of 4 units per quarter.

PLT 401 Crop Ecology (4)

Group research and writing project integrating environmental, ecological, economic, pest and disease management, genetics, and soil and water management in a business management setting. Prerequisite PLT 231/231L, PLT 301, senior standing.

PLT 402/402L Insect Taxonomy (2/2)

The identification and classification of adult and immature arthropods through analysis and interpretation of dichotomous keys. Critical evaluation of the taxonomy characters used to separate insects to their orders and families. 2 lectures and 2 three-hour laboratories. Prerequisite: PLT 233.

PLT 403/403L Biological Control (3/1)

Natural and induced control of insects, mites and weed pests in crop ecosystem using agents other than pesticides; collection, production and liberation of control agents; habits and identification of major groups of parasites and predators; recent developments in pest inhibition. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 233.

PLT 404/404L Plant Breeding (3/1)

Principles of traditional plant breeding methods and theory including genetic principles, effects of selection, reproductive systems and mapping techniques. Lab project demonstrates the integration of molecular-aided and traditional breeding methods. 3 lectures, 1 three-hour laboratory. Prerequisite: BIO115/115L.

PLT 411 Environmental Toxicology (4)

Survey and analyses of the effects of civilization on the environment. Emphasis will be placed on the effects of agriculture and other forms of commerce on food, water, air and soil, and human health. 4 lecture discussions. Prerequisite: PLT 231/231L, senior standing.

PLT 416/416L Landscape Contracting and Estimating (3/1)

Management of landscape maintenance and construction contracting considering legal aspects, insurance requirements. estimating, and business promotion. Management of contractors by public entities. Preparation of specifications. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 131/131L.

PLT 420/420L Urban Forestry (3/1)

The study of the management of trees in communities, considering political, funding and consumer issues. 3 lectures, 1 three-hour laboratory. Prerequisites: PLT 241/241L or LA 241/241L.

PLT 421/421L Crop Diseases (3/1)

Diagnosis and control of diseases of horticultural and agronomic crops. 3 lectures, 1 three-hour laboratory.

PLT 422/422L Advanced Plant Propagation (3/1)

Current topics in plant propagation concerning juvenility, growth regulators, scion/rootstock combinations, and tissue culturing. Emphasis on commercial propagation by cuttings, grafting/budding, tissue culturing, division, layering, and seeding. 3 lectures, 1 three-hour laboratory. Prerequisite: BOT 428/428L.

PLT 424/424L Pest Control Methodology (2/1)

Summation of integrated pest management courses through field observation and analysis of pest levels leading to written recommendation for control. Field trips to agricultural areas to critically evaluate methods used to control pest populations with written reports on trips. 2 lectures and 1 three-hour laboratory. Prerequisite: PLT 233, senior standing.

PLT 427/427L Diseases of Ornamentals (3/1)

Diagnosis and control of biotic and abiotic diseases of ornamental plants in production and use. Labs include field trips to production areas. 3 hours lecture, 1 three-hour laboratory.

PLT 431/431L Soil Chemistry (3/1)

Critical evaluation of fundamental chemical processes in soils such as ion exchange, ion precipitation, redox reactions, partitioning, adsorption, desorption and nature of soil minerals and organic matter. Evaluate various chemical processes affecting fate, transport, and availability of heavy metals and organic contaminants in soils. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 231/231L, CHM 121/121L. Concurrent enrollment required.

PLT 432/432L Soil Physics (3/1)

Critical examination of the methods of characterizing the physical attributes of soil, including soil particle size distribution and structure, the nature and behavior of clay, the state and movement of water and solutes in both saturated and unsaturated soil conditions, gas and energy exchange between the soil and atmosphere, and the principles of rheology. 3 hours lecture/problem-solving, 1 three-hour laboratory. Prerequisites: PHY 122/122L; PLT 231/231L.

PLT 433/433L Soil Genesis and Morphology (3/1)

Landscape evolution and geomorphology are keys to understanding soil development. The formation and the morphology of soils increase the scientific understanding of the pedosphere: 3 lectures, 1 three-hour laboratory. Prerequisite PLT 231. Concurrent enrollment required.

PLT 434/434L Golf Course Management (3/1)

Management, supervision, maintenance, and operation of golf courses. A study of the equipment, scheduling, promotion and personnel required and related facilities of public and private courses. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 240/240L.

PLT 435/435L Advanced Turf and Sports Turf Management (3/1)

Advances in construction techniques, management philosophy, cultural practices and environmental factors affecting the growth of turfgrass on sports turf facilities and other related areas. 3 lectures, 1 three-hour laboratory. Prerequisite: PLT 240/240L.

PLT 437/437L Environmental Sustainable Agriculture (3/1)

Environmental aspects of American agricultural systems and the future of the regulatory measures to ensure long term prosperity in food and fiber production. Field activities and design of farming practices on college operated acreage. 3 Lectures, 1 three-hour laboratory. Prerequisite BIO 110 or 115.

PLT 440/440L Advanced Irrigation Water Management (3/1)

Application of soil-water-plant relations, climactic conditions and best management practices to develop effective schedules of irrigation water for residential, commercial, industrial, park and golf course systems. Evaluation of water conservation issues, water policies and codes and other related matters. 3 lectures/problem-solving, 1 three-hour laboratory. Prerequisite: PLT 251 or PLT 340.

PLT 441 Internship in Plant Science (2–4)

On the job experience with public and private agencies for advanced students. Professional-type experience new to the student so that a valuable contribution toward career development results. Written and oral reports necessary. Approval before enrolling is required. Each course can be repeated for a total of 12 units. Prerequisite: junior standing.

PLT 443/443L Landscape Management Problem–Solving (3/1)

Technical aspects of landscape management in problem-solving case studies. Aspects of turf management, plant materials, personnel issues, equipment, irrigation, and chemical use in maintaining public and private landscapes. 3 lectures, 1 three-hour laboratory. Prerequisites: PLT 131/131L.

PLT 452/452L Landscape Irrigation Troubleshooting (2/1)

Prevention and analysis or problems and failures in landscape irrigation systems, such as irrigation controllers, remote control valves, wiring failures, sprinklers and drip system failures. Other specialty items such as cross connections, pressure regulators, vacuum breakers, pipes, etc., will be included. 2 lectures/problem-solving, 1 three-hour laboratory. Prerequisite: PLT 231.

PLT 461 Senior Project (2)

Selection of a project under faculty supervision. Students have to complete a detailed literature review of previous research in similar areas of involvement. Students have to write a report similar to the introduction section of peer-reviewed journals in the area of interest.

PLT 462 Senior Project (4)

Selection and completion of a project under faculty supervision. Projects typical of problems which graduates must solve in their fields of employment. Project results are presented in a formal report. Minimum 120 hours total time. Prerequisite: PLT 461, junior standing.

PLT 463 Undergraduate Seminar (2)

Critical reviews of contemporary research in the field of Plant Science. The student will analyze, critique and advocate by inductive and deductive methods, that inferences in contemporary literature are based on fact or a logical, unambiguous extension of fact. Oral reports of literature and senior projects are required. Prerequisite: senior standing, passing score on GWT, PLT 441 or PLT 461 and 462.

PLT 499/499L/499A Special Topics for Upper Division Students (1–4)

Group study of a selected topic, the title to be specified in advance. Total credit limited to 8 units, with a maximum of 4 units per quarter. Instruction is by lecture, laboratory, activity, or a combination. Prerequisite: junior standing.