UNIVERSITY PROGRAMS

INTERDISCIPLINARY GENERAL EDUCATION (IGE)
Nancy Ware, Co-director

The Interdisciplinary General Education (IGE) Program is a team-taught, thematically integrated sequence of courses that meets many general education requirements in a stimulating intellectual environment. These requirements, which apply to all California State University campuses, help to broaden skills and understanding in areas beyond the major (such as social science, literature, composition). Usually these requirements are fulfilled by taking separate courses.

IGE addresses the need for an integrated approach to curriculum, teaching, and scholarship and the creation of an extended learning community.

FIRST YEAR (F.W.Sp)

IGE 120 Consciousness and Community (4)
First knowings, origin of consciousness, myth, symbol, performance, and ceremony; prehistory and patterns of living, making of meaning; university experience. 4 lecture discussions. Prerequisite: EPT score of 151 or better. Activity fee may be required.

IGE 121 Rationalism and Revelation: The Ancient World (4)
The nature of tragedy; the ways of warriors, prophets, tyrants, philosophers, and citizens; ethics, convictions, and the sacred. 4 lecture discussions. Prerequisite: IGE 120. Activity fee may be required.

IGE 122 Authority and Faith: The Medieval and Renaissance Worlds (4)
Visions of hell, politics, social order, and redemption; constructions of the sacred and secular selves; journey of the soul; private lives and public spaces. 4 lecture discussions. Prerequisite: IGE 121. Activity fee may be required.

SECOND YEAR (F.W.Sp)

IGE 220 Ways of Knowing: Culture and Contact (4)
Explorations of the multiple ways of constructing knowledge (science, art, the sacred as ways of knowing); knowledge as historically grounded in the era of the New World colonial conquest (national artistic cultures, scientific revolution, indigenous sacred articulations of space and time, perceptions of Self and Other). 4 lecture discussions. Prerequisite: IGE 122. Activity fee may be required.

IGE 221 Ways of Coexisting: Reform and Revolution (4)
Explorations of urban and global issues (social space; domination, resistance, and revolution; traditional/transitional cultures). Inquiries are historically grounded in the Enlightenment era (rise of individual rights, spirit of revolution, restructuring social, conceptual, and scientific structures). 4 lecture discussions. Prerequisite: IGE 220. Activity fee may be required.

IGE 222 Ways of Doing: The Industrial Age (4)
Explorations of technology and human purpose; science and scientists; divergent thinking, gender, genius, and anomalies; emergent ethical frameworks; inquiries are historically grounded in the Industrial Age; individual and collective ideologies; romanticism and realism. 4 lecture discussions. Prerequisite: IGE 221. Activity fee may be required.

THIRD YEAR (F.W)

IGE 223 Ways of Living: The Contemporary World (4)
Explorations of environmental epistemology, ethics, aesthetics, and biographies; communities and cultures which offer life-enhancing practices; environmental education and responsibility; inquiries are historically grounded in the modern and postmodern worlds; global thinking and doing. 4 lecture discussions. Prerequisite: IGE 222. Activity fee may be required.

IGE 224 Connections Seminar: Exploration and Personal Expression (4)
Research and presentation of an interdisciplinary project which extends and synthesizes themes from the IGE experience. 4 lecture discussions. Prerequisite: IGE 223

INTERNATIONAL PROGRAMS

Dr. Jean Aigner, Director, International Programs

These course designations serve Cal Poly Pomona students participating in Cal Poly Pomona Exchange Programs or in CSU International Programs (IP) overseas as vehicles for residence credit and are administered by the International Center.

IP 198 Foreign Study Topics (1-6)
Study undertaken in a foreign university under the auspices of The California State University International Programs or Cal Poly Pomona Exchange Programs.

IP 398 Foreign Study Topics (1-6)
Study undertaken in a foreign university under the auspices of The California State University International Programs or Cal Poly Pomona Exchange Programs.

IP 598 Foreign Study Topics (1-6)
Graduate study undertaken in a foreign university under auspices of The California State University International Programs or Cal Poly Pomona Exchange Programs. Maximum credit 9 units.

GENERAL EDUCATION

The following 10 courses constituted Track A in previous catalogs. Track A has been discontinued as of Fall 1999.

GEN 101 Communication and Critical Thinking I (4)
Study and practice of methods of inquiry and forms of written and oral communication in the disciplines and fields of modern knowledge. Selected examples from the humanities, arts, natural sciences, social sciences, and professions. Introduction to the university as a place of cultural actions and knowledge. Frequent papers and oral presentations. Emphasis on self-reflection and exposition. 4 discussions/problem-solving.

GEN 102 Communication and Critical Thinking II (4)
This course should build on what students have explored in GEN 101 and continue the study and practice of forms of written and oral communication in the various disciplines. Students will explore the different methods of research, critical thinking, analysis and persuasion as they extend beyond the university and apply to issues of public importance and current events. 4 discussions/problem-solving. Prerequisite: GEN 101.

A has been discontinued as of Fall 1999.

The following 10 courses constituted Track A in previous catalogs. Track A has been discontinued as of Fall 1999.

GEN 101 Communication and Critical Thinking I (4)
Study and practice of methods of inquiry and forms of written and oral communication in the disciplines and fields of modern knowledge. Selected examples from the humanities, arts, natural sciences, social sciences, and professions. Introduction to the university as a place of cultural actions and knowledge. Frequent papers and oral presentations. Emphasis on self-reflection and exposition. 4 discussions/problem-solving.

GEN 102 Communication and Critical Thinking II (4)
This course should build on what students have explored in GEN 101 and continue the study and practice of forms of written and oral communication in the various disciplines. Students will explore the different methods of research, critical thinking, analysis and persuasion as they extend beyond the university and apply to issues of public importance and current events. 4 discussions/problem-solving. Prerequisite: GEN 101.

A has been discontinued as of Fall 1999.
GEN 103 Communication and Critical Thinking (4)
Capstone for GEN 101 and 102, Communication and Critical Thinking. Frequent papers and oral presentations. Integrates content knowledge and process knowledge. 4 discussions/problem-solving. Prerequisites: GEN 101 and 102.

GEN 104 The Human Conscience and Spirit (4)
A cross-cultural, multidisciplinary examination of significant recurrent themes from a variety of historical, literary, philosophical, and religious sources that exemplify alternative human responses to common life experiences and ways of resolving fundamental spiritual and moral issues. 4 lectures/problem-solving.

GEN 105 Political Authority and Change (4)
The study of political authority and change in the context of world cultures. Emphasis is given to institutions, cultural perspectives, the individual in relation to authority, social movements, and political authority at the global level. 4 lectures/problem-solving. Prerequisites: GEN 101, 102, 103.

GEN 106 Creativity, Technology, and Society (4)
An examination of the moral, aesthetic, and social dimensions of human invention. Selected cultural and historical examples. Emphasis on historical, philosophical, and literary methods of inquiry and analysis. 4 lectures/problem-solving. Prerequisites: GEN 101, 102, and 103.

GEN 107/107A World Cultures IV: Fine and Performing Arts - Intention, Process and Product (4)
Multidisciplinary exploration, on a global scale, of the fine and performing arts drawn from the disciplines of architecture, art, dance, landscape architecture, music and theatre. Emphasis on interdisciplinary dialogue on artistic intention, process and product. Instruction is by lecture, activity, or a combination of both.

GEN 108 Consumers, Producers, and Economic Institutions (4)
An interdisciplinary introduction to the concepts and the empirical and normative theories of economic practices, institutions, and outcomes. An analysis of economic and social problems from economic, historical, and philosophical points of view. 4 lectures/problem-solving. Prerequisites: GEN 101, 102, 103.

GEN 109 Readings in Human Behavior and Nature (4)
A multidisciplinary examination of the complex "nature" of the human animal. Guided exploration of the literature pertaining to the biological, social, and environmental factors underlying human behavior. An evolutionary, cross-cultural, and cross-species investigation into the uniqueness of humankind. 4 lectures/problem-solving. Prerequisites: GEN 101, 102, 103.

GEN 110 The Individual in a Diverse Society (4)
Introduces social theory relevant to the challenge and promise of diverse societies, identifies one disciplinary approach (varies from section to section) to contemporary issues of diversity, and engages students in experiential group activities designed to heighten awareness of individual diversity in society. 4 lectures/problem-solving.

NATIONAL STUDENT EXCHANGE
Peggy Madigan, Coordinator
These course designations serve Cal Poly Pomona students participating in the National Student Exchange Consortium at various universities and colleges in the United States as vehicles for Cal Poly Pomona residence maintenance.

NSE 198 National Student Exchange Study Topics: (1-15)
Study undertaken at a member campus of the National Student Exchange Consortium.

NSE 398 National Student Exchange Study Topics: (1-15)
Study undertaken at a member campus of the National Student Exchange Consortium.

LIBRARY
Harold B. Schleifer, Dean

Library Instruction/Information Competence
The Library’s program for Information Competence is designed to introduce students to the basic sources and library research strategies needed for a specific course or assignment. The presentations are designed for the particular course assignment, while also emphasizing general principles applicable to future information gathering needs in support of lifelong learning. During the presentation, the librarian will illustrate to the students how to think critically about their information needs, as well as how to evaluate sources of information for relevance, reliability and objectivity. We offer instructional sessions in a computerized classroom that allows for the demonstration and hands on learning of library resources. The class period may include the following: introduction to library services and collections; the Library Catalog; periodical indexes and databases in various formats – print, online, CD-ROM; internet resources; use of reference books and other library materials. Students receive printed bibliographies listing important sources or procedures. We also offer individual instruction, web based tutorials, and printed guides. Instructors may schedule classes by calling the Reference/Instruction/Collections office at (909) 869-3076, or via the web at <http://www.csupomona.edu/~library/html/teachingservices.html>.

MILITARY SCIENCE
Major Ruben Toys, Office in Charge

MS 101/101L Introduction to ROTC and the University (2/0)
Make your first year peer group at college one that is committed to perform well and enjoy the experience. Increase self-confidence through team study and activities in basic drill, physical fitness, rappelling, leadership reaction course, first aid, making presentations and basic marksmanship. Learn fundamental concepts of leadership in a profession in both classroom and outdoor laboratory environments. One hour and a required leadership lab, MS101L, plus optional participation in a one hour session for physical fitness. Participation in a weekend exercise is optional, but highly encouraged (and fun!).

MS 102/102L Introduction to Leadership (2/0)
Learn/apply principles of effective leading. Reinforce self-confidence through participation in physically and mentally challenging exercises with upper division ROTC students. Develop communication skills to improve individual performance and group interaction. Relate organizational ethical values to the effectiveness of a leader. One hour and a required leadership lab, MS102L, plus optional participation in a one hour session for physical fitness. Participation in a weekend exercise is optional, but highly encouraged.
MS 101/101L Continuation of MS 102 (2)

Learn/apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, writing concisely, planning of events, coordination of group efforts, advanced first aid, land navigation and basic military tactics. Learn fundamentals of ROTC is Leadership Development Program. Two hours and a required leadership lab, MS 201L, plus required participation in a two one-hour sessions for physical fitness. Participation in a weekend exercise is optional, but highly encouraged.

MS 202/202L Individual/Team Military Tactics (2)

Introduction to individual and team aspects of military tactics in small unit operations. Includes use of radio communications, making safety assessments, movement techniques, planning for team safety/security and methods of pre-execution checks. Practical exercises with upper division ROTC students. Learn techniques for training others as an aspect of continued leadership development. Two hours and a required leadership lab, MS 202L, plus required participation in two one hour sessions for physical fitness. Participation in a weekend exercise is optional, but highly encouraged.

MS 203/203L Continuation of MS 202 (2)

Open only to (and required of) students in the associated Military Science course. Series, with different roles for students at different levels in the program. Learn and practice basic skills. Gain insight into Advanced Course in order to make an informed decision whether to apply for it. Build self-confidence and team-building leadership skills that can be applied throughout life.

MS 179L Basic Course Physical Fitness (1)

Only open to students in MS 101, 102, 201 and 202. Optional in MS 101, 102 and MS 103; required in MS 201, MS 202 and 203. Series, with different roles for students at different levels in the program. Participate in and learn to lead a physical fitness program. Emphasis on the development of an individual fitness program and the role of exercise and fitness in one is life.

MS 210 Camp Challenge (0)

A six-week summer camp conducted at an Army post. The student receives pay. Travel, lodging and most meal costs are defrayed by the Army. The environment is rigorous, and is similar to Army Basic Training. No military obligation incurred. Open only to students who have not taken all six of MS 101, 102, 103, 201, 202 and 203, and who pass a physical examination (paid for by ROTC). Completion of MS 210 qualifies a student for entry into the Advanced Course. Three different cycles offered during the summer, but spaces are limited by the Army. Candidates can apply for a space any time during the school year prior to the summer. Pass/Fail grade only.

The Advanced Course consists of the courses MS 301, 302, 303, 310, 401, 402 and 403

It is open only to students who have completed the Basic Course or earned placement credit for it (various methods). The Advanced Course is designed to qualify a student for a commission as an officer in the United States Army. Students must complete all courses numbered greater than 300, to include MS 310, a five-week Advanced Camp in the summer, usually between the junior and senior years. The courses must be taken in sequence unless otherwise approved by the Professor of Military Science. Students receive $150 per month during the school year.

MS 301/301L Leading Small Organizations I (2)

Series of practical opportunities to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Uses small unit defensive tactics and opportunities to plan and conduct training for lower division students both to develop such skills and as vehicles for practicing leading. Three hours and a required leadership lab, MS 301L, plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation.

MS 302/302L Leading Small Organizations II (2)

Continues methodology of MS 301. Analyze tasks; prepare written or oral guidance for team members to accomplish tasks. Delegate tasks and supervise. Plan for and adapt to the unexpected in organizations under stress. Evaluate and apply lessons from leadership case studies. Examine importance of ethical decision making in setting a positive climate that enhances team performance. Three hours and a required leadership lab, MS 302L, plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is required; two other weekend exercises optional.

MS 303/303L Continuation of MS 302 (2)

MS 310 ROTC Advanced Camp (0)

A five-week camp conducted at an Army post. Only open to (and required of) students who have completed MS 301 and 302. The student receives pay. Travel, lodging and most meal costs are defrayed by the U.S. Army. The Advanced Camp environment is highly structured and demanding, stressing leadership at small unit levels under varying, challenging conditions. Individual leadership and basic skills performance are evaluated throughout the camp. Although this course is graded on a Pass/Fail basis only, the leadership and skills evaluations at the camp weigh heavily in the subsequent selection process that determines the type commission and job opportunities given to the student upon graduation from ROTC and the university.

MS 401/401L Leadership Challenges and Goal-Setting (2)

Plan, conduct and evaluate activities of the ROTC cadet organization. Articulate goals, put plans into action to attain them. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn/apply various Army policies and programs in this effort. Three hours and a required leadership lab, MS 401L, plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation.

MS 402/402L Transition to Lieutenant (2)

Continues the methodology from MS 401. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as relate to leading as an officer in the Army. Prepare for a future as a successful Army lieutenant. Three hours and a required leadership lab, MS 402L, plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation.
MS 403/403L Continuation of MS 402 (2)

MS 301L, 302L, 303L, 401L, 402L and 403L Advanced Course Leadership Laboratories (0)
Open only to students in the associated Military Science course. Series, with different roles for students at different levels in the program. Involves leadership responsibilities for the planning, coordination, execution and evaluation of various training and activities with Basic Course students and for the ROTC program as a whole. Students develop, practice and refine leadership skills by serving and being evaluated in a variety of responsible positions.

MS 179L Advanced Course Physical Fitness (1)
Only offered to (and required of) students in MS 301, 302, 303, 401 402 and 403, of which this program is an integral part. Series, with different roles for students at different levels in the program. Participate in and learn to plan and lead physical fitness programs. Develops the physical fitness required of an officer in the Army. Emphasis on the development of an individual fitness program and the role of exercise and fitness in one is life.

CAL POLY POMONA UNIVERSITY
The CPU designation means that such courses are offered for the entire university community regardless of major or school. Many CPU courses have been specifically designed to meet the requirements of general education or to assist students in career/academic choices. For further information in CPU coursework please contact the Office of Academic Programs, Building 98.

GENERAL EDUCATION COURSES

CPU 201/201A Exercise, Nutrition and Fitness for Modern Society (3/1)
Importance of good nutrition, circulorespiratory and muscular endurance, strength and flexibility for adult health. Role of exercise and nutrition in control/prevention of cardiovascular disease, obesity and stress-related illness. Rationale for and participation in various adult fitness activities. Team-taught. 3 lectures, 2 one-hour activities. Corequisites: CPU 201/201A.

CPU 210/210A Actualized Living (3/1)
Lifelong physiological and socio-psychological aspects of the leisure phenomenon. Experience in assessing student's leisure knowledge and habits coupled with a comprehensive leisure counseling follow-through. Includes a one unit component in death and dying. Meets GE Area 3G. Team taught. 2 lectures, 1 lecture/discussion, 1 two-hour activity. Corequisites: CPU 210/210A.

EGR 402 Ethics and Engineering Decision-Making (4)
Explores the ethics of engineers: values; ethical theory and practice; moral reasoning; morality in law and codes; professional standards and societies. Case studies. Open to engineering majors, others as space permits. Team-taught. 4 lecture discussions. Prerequisites: senior standing, IE 401, and passing score on the GWT.

ACADEMIC/CAREER GUIDANCE COURSES

CPU 100 Career and Personal Exploration (4)
Systematic development of information about (1) self—including values, interests, and skills, (2) environment—including career clusters, fields and occupational information, (3) decision-making, and (4) career search techniques. Includes vocational testing and use of the computer-based System of Interactive Guidance and Information (SIGI PLUS). Materials fee required.

CPU 101 Introduction to the University (1-3)
This course offers first-time freshmen students an orientation to the university. The class concerns instruction in the structure of the university, scheduling classes, career planning and choice of major, use of the library, co-curricular programs, use of the advisory process, study skills, etc.

CPU 102 Fundamental Principles of Learning Skills (3)
Introduction to and practice in college study techniques and learning skills including: listening, notetaking, memory improvement, and time management. Topics discussed among others: class scheduling, career planning, use of the library and advisory centers, and co-curricular programs. 3 lecture discussions.

CPU 109 Fundamental Principles of Residential Leadership (2)
This course offers students an on-going orientation to effective residential leadership. The course covers the foundation of residential leadership, and current issues as they relate to community development. A special focus is placed on the individual student’s growth as a leader by applying principles and concepts through experiential situations. The course concerns such topics as multicultural leadership, service learning, group leadership, transferable leadership skills, and logistical leadership. Prerequisite: permission of instructor. Instruction is by lecture, laboratory, or a combination.

CPU 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 eight units, with a maximum of four units per quarter. Prerequisite: permission of instructor. Instruction is by lecture, laboratory, or a combination. Corequisites may be required.

CPU 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 eight units, with a maximum of four units per quarter. Prerequisite: permission of instructor. Instruction is by lecture, laboratory, or a combination. Corequisites may be required.

ENVIRONMENTAL HEALTH SPECIALIST MINOR
The minor provides Biological Sciences majors, Agricultural Biology majors, and other majors with courses which prepare students for careers in the California Department of Health Services as Environmental Health Specialists. Increasing awareness of pollution and other health-related environmental problems has led to a demand for specialists to enforce and administer laws governing water, food, and air contamination, noise, land use planning, occupational health hazards, and animal vectors of disease. Many job opportunities exist in California for individuals trained as Environmental Health Specialists according to the California Department of Health Services.

The California Health and Safety Code outlines the standards for admission to the state internship program to become a registered specialist. The minimum educational qualifications are possession of a bachelor's degree from an approved institution with a minimum of 45 quarter units of basic science. The basic science requirement would be met by most students in Biological Sciences and in Agriculture. Students interested in more information may contact Dr. Richard Kaae or Dr. Lester Young (Horticulture/Plant and Soil Sciences Department), or Dr. John Chan (Biological Sciences Department).

Core Courses

Basic Biology ..................................................BIO 115/115L (5)
General Chemistry ...........................................CHM 121/121L (4)
General Chemistry ................. .CHM 122/122L (4)
Elements of Organic Chemistry .......... .CHM 201 (3)
Fundamentals of Physics ................. .PHY 102 (4)
College Algebra ....................... .MAT 105 (4)
Elementary Statistics with Applications .STA 120 (4)
Units .................................. (28)

Support Courses
Required of all students:
Public Administration .................. .PLS 314 (4)
Introduction to Arthropods ............. .AGB 165 (4)
or
Introduction to Entomology .......... .ZOO 426/426L (4)
Basic Microbiology .................... .MIC 201/201 (5)
General Epidemiology .................. .MIC 330 (4)
Units .................................. (17)
Select 3 courses from the following:
Applied Microbiology .................. .MIC 310/310L (5)
Water Pollution Biology .............. .BIO 420 (3)
Radiation Biology ..................... .BIO 431/431 (5)
Air Pollution Problems ................. .CHM 460 (3)
Public Health Entomology ............. .ZOO 435/435 (4)
Units ................................ (10-14)
Select 3 courses from the following:
Pesticide and Hazardous Material Laws .AGB 301 (3)
Vertebrate Pest Management ........... .AGB 323/323L (4)
Produce Market Quality ............... .AGB 325/325L (4)
Urban Pest Management ............... .AGB 342/342L (4)
Units ................................ (11-12)
Total units for the minor ................ (68-72)

PHYSIOLOGY MINOR

The Physiology Minor can be taken by students from any department in the University but it is particularly appropriate for students with the following majors: Animal Science (AS), Behavioral Science (BHS), Biology (BIO), Biotechnology (BTC), Chemistry (CHM), Electrical and Computer Engineering (ECE Biomedical Engineering), Foods and Nutrition (FN), Kinesiology and Health Promotion (KHP), Microbiology (MIC), and Zoology (ZOO). It is intended to assist students interested in physiology to discover and prepare for careers in: medicine; dentistry; veterinary science; high school teaching; graduate study in general or comparative physiology, kinesiology, exercise physiology or physiological psychology, and; allied health professions such as human and animal nutrition, exercise and health counseling, biomedical engineering, and domestic animal reproduction. It will do this by exposing students to the diversity of disciplines and careers available to people with an understanding of physiology. It will also provide them with a broad basic background and then permit them to tailor a program of advanced courses to suit their general interests and career goals. The program is administered by a steering committee composed of the following individuals: S. Bassin (KHP), D. Clark (ECE), E. Cogger (AVS), D. Lewis (HNFS), N. Harkey (BHS), D. Hoyt (ZOO), P. Mobley (CHM), and D. Stiffler (ZOO). Students interested in more information should contact Dr. Sepehr Eskandari.

Requirements
(Prerequisites listed in parentheses)
Assumed entry level skills: high school chemistry and algebra.

Core (required of all students)
Basic Biology (none) .................... .BIO 115/115L (5)
General Chemistry (none) ............. .CHM 121/121L (4)
General Chemistry (CHM 121/121L) ... .CHM 122/122L (4)
Elementary Statistics with Applications .STA 120 (4)
Units ................................ (17)

Restricted Electives
Anatomy (select one course)
Human Anatomy (BIO 115/115L) ....... .ZOO 234/234L (4)
Comparative Vertebrate Anatomy (ZOO 138/138L) .ZOO 451/451L (5)
Anatomy & Physiology of Domestic Animals (BIO 115/115L) .AVS 350 (5)
Units ................................ (4-5)

Physiology (select one course)
Human Physiology (BIO 115/115L) ....... .ZOO 235/235L (4)
Comparative Animal Physiology (ZOO 137/138L) .ZOO 442/442L (5)
Units ................................ (4-5)

Chemistry
Elements of Organic Chemistry or equivalent (CHM 122) ......... .CHM 201 (3)
Elements of Organic Chemistry Lab (CHM 122) .......... .CHM 250L (1)
Units ................................ (4)
Total Units, Restricted Electives ............... (12-14)

Advanced Physiology Courses
One or more courses from each of the following four clusters totalling at least 20 units. Two courses must be from outside the major school.

Physicochemical Principles
Elements of Biochemistry (CHM 201, CHM 250L) .CHM 321 (4)
Biochemistry (CHM 315, CHM 317) ................ .CHM 327 (4)
Biochemistry (CHM 327) ..................... .CHM 328 (4)
Biochemistry (CHM 328) ..................... .CHM 329 (4)
Elements of Physical Chemistry (MAT 118, CHM 123, PHY 133) ..CHM 304 (4)
Elements of Physical Chemistry (CHM 304) ........ ..CHM 305 (3)
Thermodynamics (PHY 132) .......... .......... .ME 301 (4)
Thermodynamics (ME 301, MAT 215) ....... .ME 302 (4)
Fluid Mechanics (ME 215, PHY 132) ........ .ME 311 (3)
Fluid Mechanics (ME 301, ME 311) ........ .ME 312 (4)
Cellular Physiology (CHM 201) .......... .BIO 435/435L (4)
Advanced Cell Biology (BIO 435, CHM 327 or consent) .......... .BIO 535 (4)
Biophysics (PHY 123 or consent) .......... .PHY 410 (4)

Physiology
Physiological Ecology (ZOO 424/424L or consent of instructor) ........ .ZOO 440/440L (4)
Endocrinology (CHM 327, ZOO 424/424L and/or consent) ........ .BIO 520/520L (4)
Renal Physiology (ZOO 424/424L) .............. .BIO 521 (3)
Physiological Psychology (BHS 204, 205, PHY 202, 203) .......... .PSY 303 (5)
Mammalian Endocrinology (AVS 350) .......... .AVS 412 (4)
Components of the program include: data acquisition and manipulation; development of spatial thinking and visualization skills; creation of models and use of analytic methods; programming; problem solving using applied GIS technology; learning to create effective output; process management; GIS theory and ethics; and an interdisciplinary focus.

For more information students may contact Dr. Francelina Neto (Department of Civil Engineering), Dr. Lin Wu (Department of Geography and Anthropology) Dr. Jeff Marshall (Department of Geology), Dr. Hollie Lund (Department of Urban and Regional Planning) or look on the web at <http://www.csupomona.edu/~gis_info>

**Core Courses**

- [Introduction to Interdisciplinary GIS Studies](#) (2)
- [Visual Basic for Geographic Information Systems](#) (4)
- [Advanced Geographic Information Systems I](#) (4)
- [Advanced Geographic Information Systems II](#) (4)
- [Visual Basic for Geographic Information Systems](#) (4)
- [Interdisciplinary Project in Geographic Information Systems I](#) (4)
- [Interdisciplinary Project in Geographic Information Systems II](#) (2)
- [Interdisciplinary Project in Geographic Information Systems III](#) (2)
- [Total Core Units](#) (20)

**Electives**

A 4-unit elective can be chosen from several departments, with the approval of the GIS Minor coordinator and the GIS advisor for the student’s department.

**Course Descriptions**

- **EGR/ENV/CLS 215 Introduction to Interdisciplinary GIS Studies (2)**
  Interdisciplinary overview of applications in geographic information system (GIS) applications. Diagnostic assessment of student skills and development of study plans. Linkage of GIS to various disciplines. 2 hours lecture/discussion.

- **GEO 240/240A Introduction to Geographic Information Systems (3/1)**
  Concepts in the framework of geographic information systems. Basic techniques for the computer processing of geographical systems analysis and modeling. 3 hours lecture/problem-solving, 2 hours activity. Prerequisites: GEO 105/105A or permission of instructor.

- **EGR 302/302A Visual Basic for Geographic Information Systems (3/1)**
  Logical methods and techniques in algorithm development. The Visual Basic environment and Visual Basic programming. Structure of object oriented programs. Concept of class organization and manipulation. Programming Geographical Information Systems (GIS) related algorithms using Visual Basic and their integration in the GIS environment. 3 hours lecture/2 hour activities. Prerequisite: MAT106 or STA120A.

- **GEO 442/442A Advanced Geographic Information Systems I (3/1)**
  Technical issues of geographic information, including data structure, database models, error estimation and product generation. 3 hours lecture/problem-solving, 2 hours activity. Prerequisite: GEO 240/240A or consent of instructor.

- **GEO 443/443A Advanced Geographic Information Systems II (3/1)**
  Applications in geographic information systems. Topics include resource...
management, urban planning, demographic and network applications and systems design and implementation. 3 hours lecture/problem-solving, 2 hours activity. Prerequisite: GEO 240/240A or consent of instructor.

EGR/ENV/CLS 494/494A Interdisciplinary Project in Geographic Information Systems I (1/1)
Problem-solving skills using GIS technology in a Fall/Winter/Spring sequence. Students design, manage and develop GIS projects in an interdisciplinary setting. Issue related to ethics, decision making, interdisciplinary applications and the visual display of information are addressed. 1 lecture discussion, 2 hours activity. Prerequisite: EGR/ENV/CLS 494/A.

EGR/ENV/CLS 495/495A (1/1) – Interdisciplinary Project in Geographic Information Systems II
Problem-solving skills using GIS technology in a Fall/Winter/Spring sequence. Students design, manage and develop GIS projects in an interdisciplinary setting. Issue related to ethics, decision making, interdisciplinary applications and the visual display of information are addressed. 1 lecture discussion, 2 hours activity. Prerequisite: EGR/ENV/CLS 494/A.

EGR/ENV/CLS 496/496A (1/1) – Interdisciplinary Project in Geographic Information Systems III
Problem-solving skills using GIS technology in a Fall/Winter/Spring sequence. Students design, manage and develop GIS projects in an interdisciplinary setting. Issue related to ethics, decision making, interdisciplinary applications and the visual display of information are addressed. 1 lecture discussion, 2 hours activity. Prerequisite: EGR/ENV/CLS 495/A.

QUANTITATIVE RESEARCH MINOR
The Quantitative Research Minor may be taken by students having any major in the University other than Mathematics. This is particularly appropriate for students having majors in the following areas: Operations Management, Marketing Management, Agricultural Business Management, Animal Science, Behavioral Science, Economics, Political Science, Kinesiology, Biological Sciences, Urban and Regional Planning. The minor is intended to prepare students to perform quantitative analyses within their area of interest by providing the working knowledge required in statistics, principles of experimental design, survey and data analysis techniques. This includes learning to understand and use some of the statistical software packages available on computers. Students are expected to complete a project in their major having a significant quantitative component. The project is jointly directed by the Statistics Coordinator and a faculty advisor selected from the student's own department. Through such experience our graduates become more able and prepared to perform quantitative studies in their chosen field of employment. For more information students may contact any of the following reference sources: Dr. D. S. Gill (Statistics Coordinator), Dr. Melinda Burrill (Animal Science), Dr. John Korey (Political Science), Dr. Nancy Harkey (Behavioral Science), Dr. Ralph Miller (Technology and Operations Management), Dr. Vernon Stauble (Marketing Management), Mr. Charles Loggins (Urban and Regional Planning), Dr. David Moriarty (Biological Sciences), Dr. Stephen Bryant (Biological Sciences), Dr. Anne E. Bresnock (Economics), Dr. Wanda Rainbolt (Kinesiology and Health Promotion) or Dr. Arthur Parker (Agricultural Business Management).

Requirements
Core
- Elementary Statistics with Applications STA 120 (4)
- Sampling Survey Methods STA 310 (4)
- Units (8)

Intermediate (Choose one sequence)
- Managerial Statistics TOM 302 (4)
- Advanced Managerial Statistics TOM 380 (4)
- Data Management for Agribusiness FMA 375 (4)
- Advanced Managerial Statistics TOM 380 (4)
- Statistics for Behavioral Sciences BHS 307/307A (3/1)
- Computer Methods in Behavior Science BHS 340/340A (3/1)
- Statistics in the Behavioral Sciences BHS 307/307A (3/1)
- Policy Analysis and Program Evaluation PLS 417/417A (3/1)
- Statistical Computing STA 210 (4)
- Nonparametric Statistics STA 320 (4)
- Statistical Computing STA 210 (4)
- Biometrics BIO 411 (3)

- Planning Research Methods I URN 331/331L (4/2)
- Planning Research Methods II URN 332/332L (4/2)
- Economic Statistics EC 321 (4)
- Economic Statistics EC 322 (4)
- Econometrics EC 421 (4)

- Units (7-12)

Applied Methods (Choose one course from each group)
GROUP I
- Marketing Research I IBM 408 (4)
- Real Estate Market Analysis FRL 483 (4)
- Survey Research SOC 433/433A (3/1)

GROUP II
- Project Design and Development TOM 460 (4)
- Experimental Psychology: Research, Design and Methodology PSY 433/433L (4/1)
- Design of Experiments STA 435 (4)

- Units (8-9)

Project
- Students will do a quantitative research project in their major field of study. (4)

Total units for the minor (27-32)

TOTAL QUALITY MANAGEMENT MINOR
The Total Quality Management (TQM) Minor may be taken by students having any major in the University. It is particularly appropriate for students having majors in the following areas: Technology and Operations Management, Industrial and Manufacturing Engineering, Management and Human Resources, International Business and Marketing. The Minor is intended to allow students to gain the
knowledge and skills necessary for effective application of quality management techniques in manufacturing, service, and not-for-profit organizations. The Total Quality Management Minor will help fill the need for graduates, especially from business and engineering, who are trained in the concepts, techniques, tools and methods of analysis used for the continuous improvement of product, service, and process quality. Computer-based approaches are used wherever they are available and appropriate. For more information, students may contact any of the following faculty members: Dr. John Knox (Operations Management), Dr. Peggy Snyder (Management and Human Resources), and Professor Phil Rosenkrantz (Industrial and Manufacturing Engineering).

Core Requirements

Prerequisites (12–26 units)

Completion of one of the following prerequisite options is required. In most instances, the prerequisites listed in an option package are part of the existing curriculum for the student in the indicated academic program area.

OPTION 1: (Business, Engineering Technology, and some Science majors. Also, all majors not included in Options 2 and 3 below)

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary Statistics with Applications</td>
<td>STA 120 (4)</td>
</tr>
<tr>
<td>Operations Management</td>
<td>TOM 301 (4)</td>
</tr>
<tr>
<td>Managerial Statistics</td>
<td>TOM 302 (4)</td>
</tr>
</tbody>
</table>

OPTION 2: (Engineering, and some Science majors)

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytic Geometry and Calculus I</td>
<td>MAT 114 (4)</td>
</tr>
<tr>
<td>Analytic Geometry and Calculus II</td>
<td>MAT 115 (4)</td>
</tr>
<tr>
<td>Analytic Geometry and Calculus III</td>
<td>MAT 116 (4)</td>
</tr>
<tr>
<td>Calculus of Several Variables I</td>
<td>MAT 214 (3)</td>
</tr>
<tr>
<td>Statistical Methods in Engineering and the Physical Sciences</td>
<td>STA 309 (4)</td>
</tr>
<tr>
<td>Engineering Probability and Statistics</td>
<td>IME 312 (4)</td>
</tr>
</tbody>
</table>

OPTION 3: (Mathematics majors)

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytic Geometry and Calculus I</td>
<td>MAT 114 (4)</td>
</tr>
<tr>
<td>Analytic Geometry and Calculus II</td>
<td>MAT 115 (4)</td>
</tr>
<tr>
<td>Analytic Geometry and Calculus III</td>
<td>MAT 116 (4)</td>
</tr>
<tr>
<td>Calculus of Several Variables I</td>
<td>MAT 214 (3)</td>
</tr>
<tr>
<td>Calculus of Several Variables II</td>
<td>MAT 215 (3)</td>
</tr>
<tr>
<td>Applied Probability Theory</td>
<td>STA 330 (4)</td>
</tr>
<tr>
<td>Applied Statistics</td>
<td>STA 331 (4)</td>
</tr>
</tbody>
</table>

Core Requirements (16 units)

(Note: OM majors are required to substitute a course outside their major, with minor advisor approval, for TOM 401.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processes and Measurement</td>
<td>IME 280 (4)</td>
</tr>
<tr>
<td>Total Quality Management</td>
<td>TOM 401 (4)</td>
</tr>
<tr>
<td>Quality Management</td>
<td>TOM 435 (4)</td>
</tr>
<tr>
<td>or Quality Control by Statistical Methods</td>
<td>IME 415 (4)</td>
</tr>
<tr>
<td>Total Quality Management Implementation</td>
<td>MHR 417 (4)</td>
</tr>
</tbody>
</table>

Directed Elective Courses (8 units)

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Managerial Statistics</td>
<td>TOM 380 (4)</td>
</tr>
<tr>
<td>Material Requirements Planning</td>
<td>TOM 432 (4)</td>
</tr>
<tr>
<td>Production and Inventory Management</td>
<td>TOM 433 (4)</td>
</tr>
<tr>
<td>Materials and Inventory Management</td>
<td>TOM 434 (4)</td>
</tr>
<tr>
<td>Purchasing Management</td>
<td>TOM 453 (4)</td>
</tr>
<tr>
<td>Operations Management in Services</td>
<td>TOM 454 (4)</td>
</tr>
<tr>
<td>Just-In-Time Production</td>
<td>TOM 455 (4)</td>
</tr>
<tr>
<td>Project Design and Development</td>
<td>TOM 460 (4)</td>
</tr>
<tr>
<td>First Line Management</td>
<td>MHR 313 (4)</td>
</tr>
<tr>
<td>Training and Development</td>
<td>MHR 405 (4)</td>
</tr>
<tr>
<td>Advanced Organizational Behavior</td>
<td>MHR 438 (4)</td>
</tr>
<tr>
<td>Design of Experiments</td>
<td>IME 435/435L (3/1)</td>
</tr>
<tr>
<td>Fundamentals of Human Factors</td>
<td>JE 225/225L (3/1)</td>
</tr>
<tr>
<td>Engineering/Laboratory</td>
<td>ME 438/448L (2/1)</td>
</tr>
<tr>
<td>Principles of Productivity Engineering</td>
<td>ME 392 (3)</td>
</tr>
<tr>
<td>Reliability Concepts and Techniques</td>
<td>JE 419 (3)</td>
</tr>
<tr>
<td>Human Engineering in Design/Laboratory</td>
<td>MFE 323/323L (2/1)</td>
</tr>
<tr>
<td>Geometric Dimensioning and Tolerancing/Laboratory</td>
<td>MFE 323/323L (2/1)</td>
</tr>
<tr>
<td>Intro to Computer Integrated</td>
<td>MFE 450/450L (3/1)</td>
</tr>
<tr>
<td>Manufacturing/Laboratory</td>
<td>MFE 484 (3)</td>
</tr>
<tr>
<td>Productivity Engineering</td>
<td>MFE 484 (3)</td>
</tr>
<tr>
<td>Advanced Human Factors in Engineering Design</td>
<td>EGR 539 (4)</td>
</tr>
<tr>
<td>Quality Assurance</td>
<td>ETP 375 (3)</td>
</tr>
<tr>
<td>Nondestructive Evaluation I</td>
<td>ETP 437/437L (1/1)</td>
</tr>
<tr>
<td>Nondestructive Evaluation II</td>
<td>ETP 438/438L (1/1)</td>
</tr>
<tr>
<td>Analysis of Variance and Design of Experiments</td>
<td>STA 435 (4)</td>
</tr>
</tbody>
</table>

TOTAL CORE & ELECTIVE UNITS REQUIRED (24 units)
ATHLETIC DEPARTMENT
Karen L. Miller, Director of Athletics

Mike Ashman
Kimberly Connors
Dee DeRaleigh
Ron Fremont
Carlos Juarez
Sandy Kriezel
Ky Kugler

Wendy Nasmyth
David Ramirez
Tim Rapp
Jim Sackett
Paul Thomas
Chris Ward
Rosie Wegrich

The Department of Intercollegiate Athletics offers opportunities for men and women in a wide variety of sports, which include (m) baseball, basketball, cross country, soccer, tennis, track and field and (w) volleyball. The University is a member of the National Collegiate Athletic Association (NCAA), Division II and competes in the California Collegiate Athletic Association (CCAA) conference. These opportunities are open to all qualified students. The University has gained National and International recognition from the performances of its many outstanding athletic teams.

Mission Statement
The mission statement for the Department of Intercollegiate Athletics is an integral part of the educational environment of the total university which allows the student to develop mental, physical, social, and emotional discipline, to develop the ability to work with others, and to enhance decision-making and leadership skills. Intercollegiate Athletics can also serve as a university focal point for public relations and social interaction.

Course Descriptions
KIN 181–195 Competitive Athletics (2)
May be taken by those students who compete on an intercollegiate athletic team and may be repeated for additional credit as long as normal academic progress is maintained.

181 Intercollegiate Basketball (Women)
182 Intercollegiate Baseball
183 Intercollegiate Basketball (Men)
184 Intercollegiate Soccer (Women)
185 Intercollegiate Cross Country (Men)
186 Intercollegiate Soccer (Men)
190 Intercollegiate Tennis (Men)
191 Intercollegiate Track and Field (Men)
192 Intercollegiate Volleyball (Women)
193 Intercollegiate Cross Country (Women)
194 Intercollegiate Tennis (Women)
195 Intercollegiate Track and Field (Women)