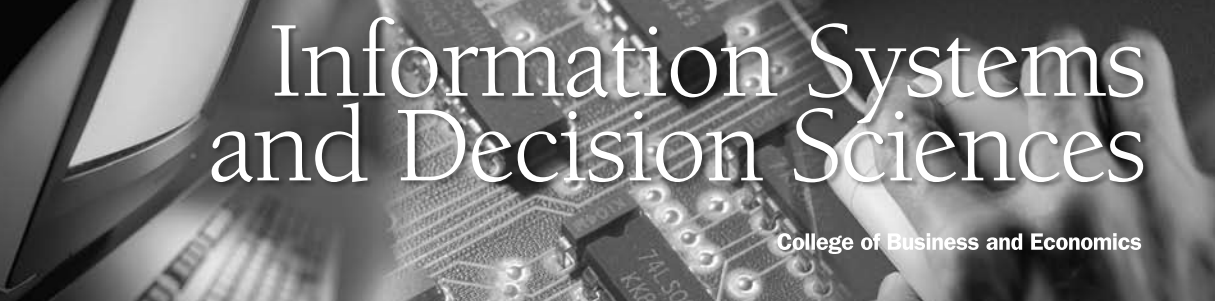

# Information Systems and Decision Sciences

College of Business and Economics

**DEPARTMENT CHAIR**

Barry A. Pasternack

**DEPARTMENT OFFICE**

Langsdorf Hall 540

**DEPARTMENT WEBSITE**

www.business.fullerton.edu/isds/

**PROGRAMS OFFERED**

Bachelor of Arts in Business Administration

- Concentration in Information Systems
- Concentration in Management Science

Minor in Information Systems

Master of Business Administration

- Concentration in Information Systems
- Concentration in Management Science

Master of Science in Information Systems

- Concentration in E-Commerce
- Concentration in Decision Sciences

Master of Science in Information Technology

## INTRODUCTION

The Information Systems and Decision Sciences Department offers courses in Information Systems, Management Science, Statistics and Logistics.

Information systems are computer based systems that aid management in making decisions and assist in implementing and controlling management policies. Information systems are used in business, industry and government operations. Applications include airline reservations, banking transactions, crime prevention networks, election returns, real estate assessment, tax records, newspaper databases, sports statistics, and computer assisted learning.

Information systems incorporate the use of data processing equipment, such as computers and their peripherals. Computer software is used to create, maintain and retrieve information. Techniques include mathematical modeling and statistics, integrated with modern computer technology. These methods are applied to systems management, programming design, analysis of information flow, decision support, database organization, small business problems, data communication networking, and distributed processing.

Management Science (also known as Operations Research) is the application of the scientific method to decision-making in business and government. In practice, nearly all management science problems involve solutions using computers. Operations research uses mathematical and simulation models to provide decision-makers with quantitative information pertaining to complex business situations. Statistics assists decision-makers by using techniques designed to draw inferences from experimental and sampling data.

Situations that require operations research techniques arise in all areas of business: accounting, finance, production, marketing, and research and development. Among the problems addressed by operations research techniques are the determination of inventory strategies, the allocation of scarce resources and the design of service systems. Others include bidding in competitive environments, selection of equipment replacement strategies and scheduling the completion of large projects.

The statistician is often involved in activities such as sales forecasting, quality control and financial analysis. Statistics is also concerned with model building and the design of experiments dealing with product testing, surveys and sampling.

Logistics is concerned with the movement of materials and finished goods. It encompasses such areas as inventory control, transportation, purchasing, warehouse management, and information support systems. Logistical control is an important component of the success of most manufacturing and service enterprises. It is also used extensively in complex organizations such as airline companies and the military.

## FACULTY

Rahul Bhaskar, Shu-Jen Chen, Tammy Drezner, Zvi Drezner, Nicholas Farnum, Zvi Goldstein, Seyed Hanizavareh, Pawel Kalczynski, Bhushan Kapoor, Malini Krishnamurthi, Mabel Kung, William Lau, John Lawrence, George Marcoulides, Laura Marcoulides, Do Le Minh, Michael Newby, Barry Pasternack, David Petrie, Sorel Reisman, Sagnika Sen, Joseph Sherif, Sohan Sihota, Ram Singhania, Ronald Suich, Ofir Tured, Samuel Yang, Yi "Jenny" Zhang

## ADVISERS

The Business Advising Center, Langsdorf Hall 731, provides information on admissions, curriculum and graduation requirements; registration and grading procedures; residence and similar academic matters.

In addition, the Information Systems and Decision Sciences Department provides advising about curriculum content and career opportunities:

*Graduate Program*: Barry Pasternack

I*nformation Systems*: Rahul Bhaskar, Pawel Kalczynski, Bhushan Kapoor, Mabel Kung, Sorel Reisman, Sagnika Sen, Joseph Sherif, Ram Singhania, Ofir Tured, Samuel Yang, Yi "Jenny" Zhang

*Management Science*: Shu-Jen Chen, Zvi Drezner, Zvi Goldstein, Seyed Hanizavareh, William Lau, John Lawrence, Do Le Minh, Barry Pasternack, Joseph Sherif

*Statistics*: Nicholas Farnum, George Marcoulides, Sohan Sihota, Ronald Suich

*Logistics Management*: Zvi Drezner, Zvi Goldstein, Barry Pasternack, Joseph Sherif

## CREDENTIAL INFORMATION

For students interested in a teaching credential, the Department of Information Systems and Decision Sciences offers courses which may be included in the Subject Matter Preparation Program for the Single Subject Teaching Credential.

Further information on the requirements for teaching credentials is found in the Teaching Credential Programs section of this catalog and is also available from the Department of Secondary Education. Students interested in exploring careers in teaching at the elementary or secondary school levels should contact the Office of Admission to Teacher Education, Education Classroom 207.

## AWARDS IN MANAGEMENT SCIENCE/INFORMATION SYSTEMS

David S. Stoller Outstanding Management Science Undergraduate Award

Dr. Wen Chow Outstanding ISDS Undergraduate Award

Klein Family Excellence Award for ISDS 361B

Outstanding Management Information Systems Undergraduate Award

Outstanding Management Science Graduate Student Award

Russell Utterberg Memorial Scholarship

## BACHELOR OF ARTS IN BUSINESS ADMINISTRATION
## MINOR IN INFORMATION SYSTEMS
## MASTER OF BUSINESS ADMINISTRATION

For information on the minor in Information Systems, as well as the Information Systems and Management Science concentrations within the B.A. and MBA, please refer to the "Business Administration" programs section of this catalog.

## MASTER OF SCIENCE IN INFORMATION SYSTEMS

The Master of Science in Information Systems program provides the conceptual understanding and technical competence for careers in information systems, E-commerce, statistics, operations research and logistics. Concentrations include E-commerce and Decision Sciences. These techniques are widely used in both private business and public enterprise. Employment opportunities include positions such as management analyst, data processing manager, statistician, forecaster, and logistical support manager.

The M.S. in Information Systems program is scheduled especially for students who are employed full time. Courses are offered during the late afternoon and evening. The curriculum should appeal to students with undergraduate degrees in business administration, computer science, mathematics, engineering or science. For students with an undergraduate degree in business administration with a concentration in information systems, the 10-course (30-unit) curriculum may be completed in 1 1/2 years (full-time) or 2 1/2 years (part time). The curriculum includes information systems applications, electives, and a capstone course, which includes a terminal project. Students with a bachelor's degree in a field other than business administration are eligible to apply, however, such students will be required to complete additional courses or demonstrate proficiency as described under the Curriculum requirements.

Cal State Fullerton is the only university in Orange County accredited by the AACSB International at both the undergraduate and graduate level for both accounting and business administration. This assures a rigorous program, a well-qualified faculty, high standards for students, and access to an extensive library system. The qualifications of the M.S. in Information Systems faculty include advanced degrees in information systems, operations research, statistics and applied mathematics; extensive computer experience; and practical experience in business, industry and government.

Most graduate courses in the College of Business Administration and Economics require "classified CBE status" and are open only to students with classified standing in the M.S. in Information Systems, M.S. in Taxation, M.A. in Economics, M.B.A. or M.S. in Accountancy programs.

**Admission Requirements**

Admission is competitive. Applicants will be evaluated based on the following:

1. Acceptable bachelor's degree from an appropriately accredited institution.
2. Minimum grade point average of at least 2.5 in the last 60 semester units attempted and in good standing at the last college attended.
3. Satisfactory score on the Graduate Management Admission Test (GMAT). Students must score in the top 50 percent on the verbal, quantitative and analytical writing areas.
4. A bachelor's degree with a major in business administration equivalent to the degree as offered at CSUF with at least an overall cumulative grade point average of 3.0 (B). The degree must include calculus and software applications equivalent to passing Mathematics 135, Business Calculus, and ISDS 265, Introduction to Information Systems and Applications, with grades of at least "C" (2.0). Courses in the major that are more than seven years old must be evaluated/validated for currency. Courses with grades lower than "C" (2.0) must be repeated.
5. For international students, a minimum TOEFL score of 570 on the paper exam, 230 on the computer-based exam, or 90 on the internet based (iBT) is required.
6. Recommendation from the ISDS Admission Committee based upon a review of the above requirements, the student's "Statement of Purpose," and prior work experience. Additional coursework may

be required of conditionally admitted students who holistically satisfy the criteria but are weak in one of the above areas.

**Application Deadlines**

The deadlines for completing online applications are March 1st for the fall semester and October 1st for the spring semester (Students may apply on-line through http://www.csumentor.edu). Mailed applications should be postmarked by the same deadlines. However, deadlines may be changed based upon enrollment projections. Check the university's website for current information.

**Curriculum**

The M.S. in Information Systems curriculum requires 30 semester units of course work beyond the baccalaureate degree. At least 21 of the 30 units required for the degree must be at the 500-level. In lieu of the Information Systems study plan, students may choose a concentration in either E-commerce or Decision Sciences.

An overall 3.0 (B) GPA is required in study plan courses and all applicable course work. Any study plan course with a grade lower than "C" (2.0) must be repeated with at least a "C" (2.0) grade.

Students admitted with a bachelor's degree in a field other than business administration will be required to complete the following additional course requirements or their equivalent (either prior to or during their residency at CSUF):

Math 135 Business Calculus (3)

ISDS 265 Introduction to Information Systems and Applications (3)

ISDS 309 Introduction to Operating Systems and Programming (3)

ISDS 361A Quantitative Business Analysis: Probability and Statistics (3)

OR ISDS 513 Statistical Analysis (3) with grades of at least "C" (2.0); and the following business foundation courses:

Accounting 510 Financial Accounting (3)

Economics 515 Microeconomic Perspective for Managers (3)

OR Management 339 Principles of Management and Operations (3)

Finance 320 Business Finance (3)

ISDS 514 Decision Models for Business and Economics (3)

Management 518 Legal and Ethical Environment of Business (3)

OR Marketing 351 Principles of Marketing (3)

These courses must be completed with at least a 3.0 (B) overall grade point average and with grades of "C" (2.0) or better in each course.

## INFORMATION SYSTEMS STUDY PLAN

ISDS 309 (or equivalent) is a prerequisite to many courses and should be taken prior to the beginning of the program.

**Required Core Courses (12 units)**

ISDS 550 Business Data Communications (3)

ISDS 551 Information Resources Management (3)

ISDS 552 Systems Analysis, Design and Development (3)

ISDS 555 Business Databases: Design and Processing (3)

**Electives (15 units)**

Five courses (15 units) to be selected in consultation with and approved by the student's adviser. Additional electives to those below may be available. Students should contact the department office for a current listing. Note that students who do not have an undergraduate degree in Information Systems must take ISDS 411 as an elective.

*No more than nine units of electives may be at the 400 level.*

ISDS 411 Microcomputer Business Application Design (3)

ISDS 415 Decision Support and Expert Systems (3)

ISDS 418 Privacy and Security (3)

ISDS 431 Enterprise Systems Implementation, Configuration and Use (3)

ISDS 433 Enterprise Systems Administration (3)

ISDS 435 Integrated Enterprise Information Systems (3)

ISDS 437 Enterprise Networks for Information Systems (3)

ISDS 442 Business Modeling Using Spreadsheets (3)

ISDS 474 Data Mining (3)

ISDS 553 Electronic Commerce: Analysis and Evaluation (3)

ISDS 554 E-Commerce: Technological Perspective (3)

ISDS 556 Data Warehousing & Data Management (3)

ISDS 557 Issues in Business Information Systems and Global Telecommunications (3)

ISDS 558 Advanced Software Development with Web Applications (3)

ISDS 563 Geographic Information Systems for Business (3)

ISDS 565 Wireless Information Systems (3)

ISDS 568 Information Systems for Knowledge Management (3)

ISDS 576 Business Modeling and Simulation (3)

Students may use one applied management science course and one applied business course as electives. The applied management science course may be selected from the following:

ISDS 526 Forecasting, Decision Analysis and Experimental Design (3)

ISDS 560 Advanced Deterministic Models (3)

ISDS 561 Advanced Probabilistic Models (3)

*The applied business course elected may be selected from the following:*

Accounting 511 Seminar in Managerial Accounting (3)

Economics 502 Advanced Microeconomic Analysis (3)

Finance 517 Managerial Finance (3)

Management 444 Project Management (3)

**Terminal Evaluation (3 units)**

ISDS 577 Seminar in Information Systems Implementation (3)

Students must complete the individual project in ISDS 577 with a grade of "B" (3.0) or better. In exceptional cases, a thesis (Business Admin 598) may serve as an option to the individual written project. See the departmental graduate adviser for details.

## E-COMMERCE CONCENTRATION

The E-Commerce concentration is designed to provide students with the technical skills in information technology as applied to the Internet and E-Commerce. Additionally, the program includes courses in small business management/entrepreneurship, marketing, and logistics, as this knowledge base is essential for an individual who would like to create an E-commerce operation. Background prerequisites for this concentration are the following courses or equivalent: ISDS 309 and 371.

**Required Core courses (12 units)**

ISDS 516 Introduction to Logistics Analysis Techniques (3)

ISDS 550 Business Data Communications (3)

ISDS 552 Systems Analysis, Design and Development (3)

ISDS 555 Business Databases: Design and Processing (3)

**Required Electives (15 units)**

ISDS 553 Electronic Commerce: Analysis and Evaluation (3)

ISDS 554 E-Commerce: Technological Perspective (3)

ISDS 558 Advanced Software Development with Web Applications (3)

Management 581 Entrepreneurship and New Ventures (3)

Marketing 455 Strategic Internet Marketing (3)

**Terminal Evaluation (3 units)**

ISDS 577 Seminar in Information Systems Implementation (3)

Students must complete the individual project in ISDS 577 with a grade of "B" (3.0) or better. In exceptional cases, a thesis (Business Admin 598) may serve as an option to the individual written project. See the departmental graduate adviser for details.

## DECISION SCIENCES CONCENTRATION

**Required Courses (9 units)**

ISDS 415 Decision Support and Expert Systems (3)

ISDS 526 Forecasting, Decision Analysis and Experimental Design (3)

ISDS 560 Advanced Deterministic Models (3)

OR ISDS 561 Advanced Probabilistic Models (3)

**Statistics Course (3 units minimum)**

*One or more of the following:*

ISDS 422 Surveys and Sampling Design and Applications (3)

ISDS 461 Statistical Theory for Management Science (3)

ISDS 467 Statistical Quality Control (3)

ISDS 472 Design of Experiments (3)

ISDS 473 Applied Business Forecasting (3)

ISDS 474 Data Mining (3)

ISDS 475 Multivariate Analysis (3)

**ISDS Electives (15 units maximum)**

*ISDS Electives*

ISDS 465 Linear Programming in Management Science (3)

ISDS 490 Queing and Stochastic Models in Management Science (3)

ISDS 516 Introduction to Logistics Analysis Techniques (3)

ISDS 551 Information Resources Management (3)

ISDS 552 Systems Analysis, Design and Development (3)

ISDS 553 Electronic Commerce: Analysis and Evaluation (3)

ISDS 555 Business Databases: Design and Processing (3)

ISDS 560 Advanced Deterministic Models (3)

OR ISDS 561 Advanced Probabilistic Models (3)

ISDS 563 Geographic Information Systems for Business (3)

**Electives Outside ISDS (6 units maximum)**

Accounting 511 Seminar in Managerial Accounting (3)

Economics 502 Advanced Microeconomic Analysis (3)

Finance 517 Managerial Finance (3)

Management 524 Seminar in Organizational Behavior and Administration (3)

Management 535 Production and Operations Management (3)

**Terminal Evaluation (3 units)**

ISDS 576 Business Modeling and Simulation (3)

Students must complete the individual project in ISDS 576 with a grade of "B" (3.0) or better. In exceptional cases, a thesis (Business Admin 598) may serve as an option to the individual written project. See department graduate adviser for details.

## MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

The Master of Science in Information Technology is designed to afford a quality graduate education in a growing technological field to individuals who may not be able to get to campus to take classes in a traditional format. The objective of the program is to serve the needs of those working in the field of information technology who wish to advance their managerial and technical skills in areas critical for success, as well as for those individuals who have suitable business experience and wish to enter the field of information technology.

Subject areas required by the program are programming, accounting, data communications, management of an IT organization, systems analysis and design, e-commerce, and database development. Students who graduate from the program will be able to understand and develop code for computer programs, prepare and analyze financial statements and management reports, have the ability to assess how data is communicated (both in local and wide area networks), implement managerial concepts associated with good leadership, implement the managerial and technical aspects of e-commerce, be able to design an information system, and be able to set up a database system.

**Admission Requirements**

Applicants will be evaluated based on the following:

1. Acceptable bachelor's degree from an appropriately accredited institution.
2. Minimum grade-point average of at least 2.5 in the last 60 semester units attempted and in good standing at the last college attended.

3. Minimum of 2 years practical experience in a functional area of business.
4. Minimum average score of 530 on the GRE or a total scaled score of 530 on the GMAT.
5. Submission of a written self-assessment explaining why they believe they would be a good candidate for the program.
6. Successful passage of a phone or face to face interview designed to assess their level of technology knowledge, skills, and abilities to be an online learner.
7. Proficiency in office productivity tools using a Personal Computer and knowledge and experience in utilizing Internet-based systems.
8. For international students, a score of 570 on the paper exam or 230 on the computer based TOEFL is required.

**Application Deadlines**

The deadline for completing an online application is March 1st for the following fall semester (see: www.csumentor.edu). Mailed applications need to be postmarked by the same deadline. However, the deadline may be changed based upon enrollment projections. Check the university graduate studies website for current information at www.fullerton.edu/graduate/.

**Curriculum**

The MS in Information Technology curriculum requires 30 semester units of course work beyond the baccalaureate degree. Each student is required to attend and successfully complete an on-campus orientation session for new students and maintain a GPA of 3.0. If circumstances force a student to fall out of the original cohort schedule, the student will be permitted to continue in the program, but will default to the next cohort cycle, provided the student remains in good academic standing.

## INFORMATION TECHNOLOGY STUDY PLAN

**Required Courses (21 units)**

Accounting 509 Financial and Managerial Accounting (3)

ISDS 405 Programming Concepts for Information Technology (3)

ISDS 550 Business Data Communications (3)

ISDS 551 Information Resource Management (3)

ISDS 552 Systems Analysis, Design and Development (3)

ISDS 553 Electronic Commerce: Analysis and Evaluation (3)

ISDS 555 Business Databases: Design and Processing (3)

**Elective Courses (6 units)**

Accounting 507 Seminar in Accounting Information Systems (3)

ISDS 435 Integrated Enterprise Information Systems (3)

ISDS 518 Quantitative Tools for Information Technology Management (3)

ISDS 554 E-Commerce: Technological Perspectives (3)

ISDS 556 Data Warehousing and Data Management (3)

ISDS 558 Advanced Software Development with Web Applications (3)

**Required Capstone Course (3 units)**

ISDS 577 Seminar in Information Systems Implementation (3)

## INFORMATION SYSTEMS AND DECISION SCIENCES COURSES

Courses are designated as ISDS in the class schedule.

**102 Introduction to Information and Multimedia Technology (2)**

This hands-on course covers information resources and multimedia tools available to students at CSUF. Topics include: e-mail, the World Wide Web, Internet search engines, computerized library resources, and developing electronic presentations using software such as Power Point. (Same as Comp Sci 102).

**161 Discovering Business through Decision Science (1)**

The students will investigate how businesses operate through tours of a number of manufacturing and service facilities. The emphasis will be on how businesses use quantitative analysis to improve operations.

**162 Introduction to Excel Spreadsheets (1)**

Introduction to the Excel spreadsheet with emphasis on business applications. Topics include how to enter data, formulas, functions, and enhancing the worksheet to create graphs and databases. Students who take ISDS 265 can not receive credit for ISDS 162.

**163 Electronic Research of Business Enterprises (1)**

Students will learn how to utilize electronic and non-electronic resources to research the history of a business. The resulting history will be published on the World Wide Web.

**165 Navigating the Information Superhighway (1)**

This hands-on course is a survey of information resources available through the Internet. Students will cover topics such as e-mail, the World Wide Web, Internet search engines, and computerized library resources.

**166 Developing Computer Based Presentations (1)**

This course introduces the concepts, principles and techniques for developing computer based presentations. Students will learn to create presentation outlines, use masters and templates, work with graphs and organization charts, and develop electronic slides and transparencies.

**167 Practical Approach to Database Systems (1)**

This course presents hands-on methods to plan, create, and maintain databases. Students also learn to create customized forms and queries, as well as to develop professional looking reports. Students who take ISDS 265 cannot receive credit for ISDS 167.

**168 Mastering the World Wide Web (1)**

This course covers how the World Wide Web works and how one can set up a website and author web pages. Topics include: web browsers, design of a website, HTML, multimedia, interactive techniques, CGI, security, and site promotion.

**262 Visual Basic for Excel (1)**

Prerequisite: ISDS 162 or equivalent. Introduction to the Visual Basic programming language that is a subset of the Excel spreadsheet. Students who take ISDS 265 cannot receive credit for ISDS 262.

**265 Introduction to Information Systems and Applications (3)**

Introduction to information systems, hardware, software, information systems concepts in business; telecommunications; e-commerce; enterprise systems; system development/acquisition; ethics, crime, and security; microcomputer applications and hands-on exercises in the business arena.

**309 Introduction to Operating Systems and Programming (3)**

Prerequisite: ISDS 265. Structured programming principles; operating systems; shell commands and scripts; preparing and maintaining disks; managing files and processes; fundamental programming constructs; conditional processing; arrays; subroutines; parameter passing; file processing.

**310 Systems Analysis and Design (3)**

Prerequisite: ISDS 309 (may be taken concurrently). Systems analysis and design for business information systems; systems development methodologies; managing changes to system parameters; systems process and data models; case tool types and their use; structured vs. object oriented analysis and design.

**352 Advanced Data and Information Analysis in Business (3)**

Prerequisites: Finance 320 and Marketing 351. Advanced spreadsheet topics for professional business, downloading of databases into spreadsheets and database packages and statistical analyses for decision support; database concepts and design; querying and report writing; applications to financial/ marketing forecasting models.

**361A Quantitative Business Analysis: Probability and Statistics (3)**

Prerequisites: Math 135 and ISDS 265 or equivalents. Corequisite: Business Admin 301. Probability concepts; expectations; descriptive statistics; discrete and continuous random variables; sampling; estimation; hypothesis testing; simple and multiple regression; nonparametric statistics.

**361B Quantitative Business Analysis: Statistics and Management Science (3)**

Prerequisite: ISDS 361A. Quantitative methods and their application to business and economic problems. Forecasting, ANOVA, quality control, decision analysis, mathematical modeling, optimization, PERT/ CPM, inventory.

**371 C++ For Business Applications (3)**

Prerequisites: ISDS 309, 310 (ISDS 310 may be taken concurrently). C++ syntax, structured programming, table handling, design standards, object oriented programming.

**372 Java Programming for Business Applications (3)**

Prerequisites: ISDS 309, 310 (ISDS 310 may be taken concurrently). Java syntax and structure. Object oriented programming: classes, objects, association, inheritance, polymorphism. Business applications of Java. Use of Java packages. Web applications: applets and threads.

**405 Programming Concepts for Information Technology (3)**

Prerequisite: admission to the Master of Science in Information Technology program. Application programming fundamentals for IT systems; structured and object-oriented programming, accessing and management of database tables and external files; layout design and data extraction for advanced output; testing, debugging and analysis tools.

**408 Database Management Systems (3)**

Prerequisites: Business Admin 301 and ISDS 309, 310 and either ISDS 371, 372, or 411 (ISDS 371, 372 or 411 may be taken concurrently). Provides essential concepts, principles and methods for analysis, design and implementation of database management systems; covers theory and practice; emphasis is on the relational model; examines issues and problems associated with developing single and multiple user applications both today and in the future; project required.

**409 Business Telecommunications for Information System Design (3)**

Prerequisites: Business Admin 301, ISDS 309 and 310 (ISDS 309 and 310 may be taken concurrently). This course examines the essential concepts for developing a data communication architecture to support Information Systems for a business enterprise. The course will require students to undertake a group project to design a LAN.

**411 Microcomputer Business Application Design (3)**

Prerequisites: Business Admin 301 and ISDS 309 and 310. This course focuses on contemporary issues in the design and development of integrated, graphical user interface-based business applications.

**414 Internet Technologies and Applications (3)**

Corequisites: ISDS 408 and one of: 371, 372, or 411. Contemporary Internet technologies and Web applications: Internet infrastructures, development of Web sites and dynamic Web pages, Web databases, business applications. Not applicable to graduate degree requirements.

**415 Decision Support and Expert Systems (3)**

Prerequisites: Business Admin 301, ISDS 309. Principles and procedures related to the design and use of expert systems and decision support systems principles in management decision making; development of expert systems using shells.

**418 Privacy and Security (3)**

Corequisites: Business Admin 301, ISDS 309. Security and privacy problems associated with the use of computer systems; ways to minimize risks and losses.

**422 Surveys and Sampling Design and Applications (3)**

Prerequisites: Business Admin 301, ISDS 361A. Principles for designing business and economic surveys. Applications in accounting, marketing research, economic statistics and the social sciences. Sampling; simple random, stratified and multistage design; construction of sampling frames; detecting and controlling non-sampling errors.

**431 Enterprise Systems Implementation, Configuration, and Use (3)**

Prerequisite: ISDS 310 or 552. Students will explore the methodology and tools for configuring an ERP system to support critical business processes. Course topics include system modules, implementation tools, and data settings. The course will focus on configuring the system to support a variety of business scenarios.

**433 Enterprise Systems Administration (3)**

Prerequisite: ISDS 310 or ISDS 552. Students will explore the technical administration practices required to manage the day-to-day operations of an Enterprise Resource Planning (ERP) system. Topics covered will include system architecture, security, system performance, and installation of upgrades.

**435 Integrated Enterprise Information Systems (3)**

Prerequisites: ISDS 309 and Management 339. Application programming fundamentals for ERP systems; accessing and management of ERP database tables and external files; layout design and data extraction for advanced output; testing, debugging and analysis tools; security issues in an ERP system.

**437 Enterprise Networks for Information Systems (3)**

Prerequisite: ISDS 409 or ISDS 550. Networks in the enterprise concentrates on placing the network in perspective within the overall enterprise that it serves. The issues involved in constructing, updating, and managing the networks, which make up the infrastructure of those information systems.

**440 Integrative Decision Tools for Business Operations (3)**

Prerequisites: Business Admin 301, ISDS 361B. Intermediate management science modeling and solution techniques, including topics in linear and non-linear programming, integer programming, dynamic programming, Markov processes, queuing theory, and inventory models.

**442 Business Modeling Using Spreadsheets (3)**

Prerequisites: ISDS 361B or equivalent. Microsoft Excel will be used to implement business models. Excel will be used to effectively organize, analyze and present information. Examples include operations, production, marketing and finance. Macros, goal seek, solver, simulation and data tables are covered.

**454 Senior Project: Information Systems Development (3)**

Prerequisites: Business Admin 301, ISDS 408, 409. Integrates information systems development concepts of analysis, design and implementation. Students will develop an information system from concept to completion. Individual and team effort.

**461 Statistical Theory for Management Science (3)**

Prerequisites: Business Admin 301, ISDS 361A. Review of mathematical topics needed for statistical theory. Distribution theory, moment generating functions, central limit theorem. Estimation theory, maximum likelihood. Hypothesis testing, Neyman-Pearson Lemma, likelihood ratio tests. Use of statistical software packages.

**465 Linear Programming in Management Science (3)**

Prerequisite: Business Admin 301, ISDS 361B or Math 250B. Mathematical and theoretical foundations for linear programming; geometric and linear algebraic approaches and proofs; simplex method, duality, sensitivity and parametric analyses, extensions to specialized algorithms, and large scale models; practical and computer based applications will be discussed.

**467 Statistical Quality Control (3)**

Prerequisites: Business Admin 301 and ISDS 361A. Control charts for variables, percent defective and defects. Tolerances, process capacity; special control charts, acceptance sampling and batch processing problems. Bayesian aspects of process control.

**472 Design of Experiments (3)**

Prerequisite: Business Admin 301 and ISDS 361A. Corequisite: ISDS 440. Fundamentals of experimental design. Analysis of variance, factorial experiments, nested designs, confounding and factorial replications.

**473 Applied Business Forecasting (3)**

Prerequisite: Business Admin 301 and ISDS 361A. Corequisite: ISDS 440. Forecasting methods applied to problems in business and industry; practical multiple regression models with computer solutions; basic techniques in time-series analysis of trend, cyclical and seasonal components; correlation of time-series and forecasting with the computer.

**474 Data Mining (3)**

Prerequisite: ISDS 361A or equivalent. Introduction to the fundamentals of data mining. Topics may include association, classification, clustering, decision trees, statistical modeling, and visualization. Motivation for the applications of data mining techniques. Use of data mining software suites on data sets.

**475 Multivariate Analysis (3)**

Prerequisites: Business Admin 301 and ISDS 361A. The least squares principle; estimation and hypothesis testing in linear regression; multiple and curvilinear regression models; discriminant analysis; principle components analysis; application of multivariate analysis in business and industry.

**490 Queuing and Stochastic Models in Management Science (3)**

Prerequisites: Business Admin 301 and ISDS 361B or Mathematics 335. Probabilistic models in management science; theoretical foundation and model development for Poisson process models, birth-death models, Markovian and general queuing situations, and Markov chains; renewal theory and/or reliability models; practical business applications.

**495 Internship (1-3)**

Prerequisites: Business Admin 301; at least junior standing, 2.5 GPA, and one semester in residency at the university; and consent of internship adviser. Students in the information systems concentration must have completed ISDS 309, students in the management science concentration must have completed ISDS 361B, students in the international business concentration must have completed ISDS 309 or ISDS 361B. Planned and supervised work experience. May be repeated for credit up to a total of six units. Credit/No credit grading only.

**499 Independent Study (1-3)**

Prerequisites: Business Admin 301, ISDS 361B, senior standing, and approval by the Department Chair. Open to qualified students desiring to pursue directed independent inquiry. May be repeated for credit. Not open to students on academic probation.

**513 Statistical Analysis (3)**

Prerequisites: Math 135, ISDS 265 (or equivalents) and classified CBE status. Basic probability and descriptive statistics; sampling techniques; estimation and hypothesis testing; simple and multiple regression, correlation analysis; computer packages and other optional topics.

**514 Decision Models for Business and Economics (3)**

Prerequisites: ISDS 513 and classified CBE status. Linear programming; inventory; PERT-CPM; queuing; computer simulation; time-series forecasting; and other optional topics.

**516 Introduction to Logistics Analysis Techniques (3)**

Prerequisites: ISDS 514 and classified CBE status. The scope of logistics; external and internal environment; analysis of demand, analysis of cost, commodity and transportation rates; structure of transport industry, inventory management, merchandise storage and warehousing; framework of regional analysis; methods of location analysis.

**518 Quantitative Tools for Information Technology Management (3)**

This course covers quantitative tools that are useful in management of an IT organization. Topics include review of probability concepts, linear programming, network modeling, project management, decision analysis, forecasting, queuing theory, and simulation. Students may not receive credit for both ISDS 514 and 518.

**526 Forecasting, Decision Analysis and Experimental Design (3)**

Prerequisites: ISDS 514 and classified CBE status. Time series analysis. Trend, cyclical and seasonal components. Statistical decision theory. Fundamental principles of experimental design; interaction. Software packages.

**550 Business Data Communications (3)**

Prerequisites: ISDS 514 and classified CBE standing. This course examines the essential concepts for developing a data communication architecture for a business enterprise. The course examines the issues of transmission media, speed, efficiency, protocols, security in a variety of network architectures such as LAN, WAN, VPN, leading to "the state of the art" wireless networks. The course concludes with a discussion on the technical implications of doing business on the Internet.

**551 Information Resources Management (3)**

Prerequisite: admission to CBE graduate program. The expanding role of information systems in the overall strategy and management of organizations is examined. Topics include strategic value of information systems, management of the information systems development and procurement process, E-commerce, and integrated enterprise systems.

**552 Systems Analysis, Design and Development (3)**

Prerequisite: admission to CBE graduate program. Systems analysis and design concepts, life cycle and prototyping; planning and managing projects; Systems evaluation and selection; System development using programming languages such as Visual Basic. Interface design with controls, object-oriented design concepts and tools, including the use of cases and UML, with applications in Visual Basic.

**553 Electronic Commerce: Analysis and Evaluation (3)**

Prerequisite: ISDS 550. This course studies electronic commerce. It focuses on understanding the technical infrastructure, which enables E-commerce. Examines organizational challenge for developing an appropriate business model for emergence of the electronic business. Explores social economical impact of electronic commerce.

**554 E-Commerce: Technological Perspective (3)**

Corequisite: ISDS 555. This course recognizes the expanding role of the Internet in the overall strategy, implementation, and management of enterprise-wide information systems. Topics include organizational utilization of electronic information resources, as well as Internet application planning, development, implementation and control.

**555 Business Databases: Design & Processing (3)**

Prerequisite: ISDS 550. Corequisite: ISDS 552. Internet and multi-user databases; accessing Web servers; data warehouse, structured query language, client-server database systems and programming; object-oriented databases.

**556 Data Warehousing and Data Management (3)**

Prerequisites: ISDS 552 and 555. This course introduces students to basic concepts, architectures, and development strategies of data warehousing, issues in managing data as organizational assets, and its potentials for competitive advantages in dynamic business environments.

**557 Issues in Business Information Systems & Global Telecommunications (3)**

Prerequisite: Management 515. Introduce advanced concepts of global networks, advanced communications design and management, global information security and privacy, global communications protocol and applications to industry, government and commercial sectors.

**558 Advanced Software Development with Web Applications (3)**

Prerequisites: ISDS 552, 555, and 411 or equivalent programming course. Advanced client/server software development techniques with specific emphasis on the Internet. Topics include file structure, managing relational databases with data control and SQL, and ActiveX components and objects.

**560 Advanced Deterministic Models (3)**

Prerequisites: Management 515, ISDS 514 and classified CBE standing. Advanced linear programming, dynamic programming, integer programming, non-linear programming, business applications. Software packages and computer-utilization.

**561 Advanced Probabilistic Models (3)**

Prerequisites: ISDS 514 and classified CBE standing. Stochastic processes, Markov processes, advanced queuing and inventory models; reliability. Software packages and computer utilization.

**563 Geographic Information Systems for Business (3)**

Prerequisite: ISDS 555. This course covers the use of Geographic Information Systems in support of business applications such as site location, scheduling, marketing, and real estate. Students will develop GIS applications for local businesses.

**565 Wireless Information Systems (3)**

Prerequisite: ISDS 550. Contemporary wireless technologies; wide-area and local-area wireless infrastructures; design, planning, and operation of wireless communication systems; 3G and next-generation wireless architectures. Wireless spectrum and regulatory issues.

**568 Information Systems for Knowledge Management (3)**

Prerequisite: ISDS 555. Knowledge management systems are useful for businesses to leverage their intellectual capital. The course covers how knowledge is created, captured, represented, stored and used to solve business problems. Software demonstrations and case studies will be used for illustrations.

**576 Business Modeling and Simulation (3)**

Prerequisite: ISDS 513 or equivalent. Theory and application of modeling and simulation methodology. Probabilistic concepts in simulation; arrival pattern and service times; simulation languages and programming techniques; analysis of output; business applications. Requires projects. The individual project will fulfill the terminal degree requirement.

**577 Seminar in Information Systems Implementation (3)**

Prerequisites: To be taken in the last semester, or with completion of at least seven ISDS courses in the program. This course integrates the information systems development concepts of information systems project management, analysis, design, and implementation with telecommunications, database design, programming, testing and system integration issues. Students will develop information systems from concept to completion through individual and team effort. Requires projects. The individual project will fulfill the terminal degree requirement.

**578 Seminar in Logistics Models (3)**

Prerequisites: ISDS 516, 526, and Marketing 519. This course integrates the concepts of logistics to systematically analyze a distribution system. Students will perform a complete analysis of an existing distribution system to investigate the value added role of logistics in distribution. Includes article analysis, case analysis, a research project, individual and group reports, and oral and written presentations. Requires projects. The individual project will fulfill the terminal degree requirement.

**597 Project (3)**

Prerequisite: classified CBE status. Directed independent inquiry. Not open to students on academic probation.

**599 Independent Graduate Research (1-3)**

Prerequisite: classified CBE status and consent of Department Chair and Associate Dean. May be repeated for credit. Not open to students on academic probation.


# Instructional Design and Technology

College of Education

## INTRODUCTION

The Master of Science in Instructional Design and Technology is an interdisciplinary program housed within the College of Education and draws upon a team of outstanding faculty with expertise, training, and experience in instructional technology and its applications for teaching, learning and curriculum development.

Benefits of the program include:

- The degree represents a comprehensive, high quality, affordable program staffed by a team of outstanding and dedicated faculty with expertise and experience in instructional technology and educational practice, backed up with strong program and administrative support.
- The program is completed in 21 months (2 courses per term segment).
- The course work in the program is 100 percent online, with 2 required on-campus meetings (two on-campus trips for a total of 2 days).
- The program promotes collaboration, professional networking, and team-building among peers, faculty, staff, and other professionals.
- Graduates of the program will gain valuable knowledge and skills in the development, design, evaluation, and implementation of a wide variety of instructional technologies applicable to a wide range of settings (K-12, postsecondary education, military, business/industry). Furthermore, graduates will obtain expertise in the enhancement of teaching and learning based on sound and current educational research, theory, and practice and will be well positioned in a competitive job market.

## ADMISSION AND PROGRAM REQUIREMENTS

New students are admitted once a year for the fall term segment that begins in August. Deadline for completing on-line applications is March 1st, as is the postmark deadline for mailed applications. However, this deadline may be changed based upon enrollment projections. Please check the program website for current information at http://msidt.fullerton.edu.

Minimum state and program requirements for admission to conditional classified standing in the program include the following:

1. Hold a baccalaureate from an accredited institution of higher education.
2. Have earned a minimum grade-point average of 3.0 in the last 60 semester units attempted as documented by two official copies of transcripts from all higher education institutions attended.
3. Good standing at the last college attended.
4. For international students from countries where English is not the official language, have a TOEFL score of 575.
5. Submission of a written self-assessment essay. Students must submit a written essay on issues such as why they would be good candidates for the program, including their experience and/or commitment to online learning environments, and curriculum development, how they will manage their time, their level and types of technology skills, their technology access, ability to work independently and professional goals.
6. Successful passage of a phone or face-to-face interview designed to assess their level of technology knowledge, skills, and abilities to be an online learner.

### DEAN

Claire C. Cavallaro

### PROGRAM COORDINATOR

JoAnn Carter-Wells

### PROGRAM OFFICE

Education Classroom Building 531

### PROGRAM WEBSITE

http://msidt.fullerton.edu

### PROGRAM OFFERED

Master of Science in Instructional Design and Technology (On-line offering only)

### PROGRAM COUNCIL

JoAnn Carter-Wells (Reading)

Karen Ivers (Elementary and Bilingual Education)

Barbara Glaeser (Special Education)

Joyce Lee (Educational Leadership)

Ula Manzo (Reading)

Chris Street (Secondary Education)

7. Technology requirements may be found on the program website, http://msidt.fullerton.edu.

8. Knowledgeable in the use of a personal computer (PC or Macintosh) including the ability to do the following. These skills and knowledge will be ascertained through either a phone or face-to-face interview:

   a. Locate, create, move, copy, delete, name, rename, and save files and folders on hard drives and on secondary storage devices such as floppy disks;

   b. Use a word-processing program that runs on a PC or Macintosh computer to create, edit, format, store, retrieve, and print documents;

   c. Use an electronic mail system to receive, create, edit, print, save, and send an e-mail message with and without an attached file;

   d. Use an Internet browser to search the World Wide Web; and

   e. Use databases, spreadsheets and multimedia applications.

Continuation and completion of the program requires:

9. Registration, attendance, and successful completion of the on-campus "Boot-Up Camp" and the Midpoint Symposium (program requisites).

If circumstances force a student to fall out of their original cohort schedule, they will be permitted to continue in the program, but will default to the next cohort cycle provided they remain in good academic standing.

Special accommodations for disabled students will be made on an individual student, as-needed basis in compliance with the CSUF Catalog (online catalog at http://www.fullerton.edu/disabledservices/handbook/SupportiveServices.htm). Please contact the instructor and Program Coordinator if this applies to you.

## STUDY PLAN REQUIREMENTS

The Master of Science in Instructional Design and Technology requires 30 units of approved graduate courses and takes 5 term segments, (21 months) total to complete. The schedule runs year-round as follows:

**August**

On-Campus Boot-Up Camp (1 day)

**Session 1:** *September through December*

IDT 505 Hardware and Authoring Environments in Instructional Contexts (3)

IDT 510 Research Practices in Instructional Design and Technology (3)

**Session 2:** *January through mid-May*

IDT 520 Instructional Design Issues for Technology-based Instruction (3)

IDT 525 Instructional Approaches in Learning and Cognition (3)

**Session 3:** *May through August*

IDT 530 Planning, Designing and Evaluating Technology-based Instruction (3)

IDT 535 Instructional Strategies for Pre-K through Adulthood (3)

**October**

On-Campus Midpoint Symposium (1 day)

**Session 4:** *September through December*

IDT 540 Web-based Teaching and Learning (3)

IDT 545 Emerging Technology and Issues in Instruction (3)

**Session 5:** *January through mid-May*

IDT 550 Practicum in Instructional Design and Technology (3)

IDT 597 Project (3)

## INSTRUCTIONAL DESIGN AND TECHNOLOGY COURSES

Courses are designated as IDT in the class schedule.

**505 Hardware and Authoring Environments in Instructional Contexts (3)**

Prerequisite: successful completion of summer on-campus orientation (Boot-Up Camp). Provide students with necessary understanding of operating systems, hardware, and networking environments to develop instructional tools and products using a multimedia authoring tool.

**510 Research Practices in Instructional Design and Technology (3)**

Prerequisites: Completion of orientation program for M.S. in Instructional Design & Technology (IDT). Survey course on terms and accepted procedures in qualitative and quantitative inquiry as they apply to instructional design and technology. Students conduct controlled portions of IDT research and prepare preliminary proposals for larger projects.

**520 Instructional Design Issues for Technology-based Instruction (3)**

Prerequisite: IDT 505. Focuses on the systematic design of instructional courseware, including analysis, media selection, design, development, and evaluation. Topics include learning principles, learner characteristics, instructional strategies, screen design, response analysis, feedback, and interactivity.

**525 Instructional Approaches in Learning and Cognition (3)**

Prerequisite: IDT 510 and concurrent enrollment in IDT 520. Focuses on behavioral, cognitive, constructivist learning theories, related concepts, and their implications for designing instruction. Develops students' critical thinking about desirable cognitive outcomes when designing educational experiences.

**530 Planning, Designing, Developing, and Evaluating Technology-based Instruction (3)**

Prerequisite: IDT 520. Focuses on application of computer-based instructional design principles to develop new methods and materials for technology-based instruction. Topics include computer-based instruction, project management, planning, assessment, design principles, and development tools. Students will design multimedia courseware.

**535 Instructional Strategies for Pre-K through Adulthood (3)**

Prerequisite: IDT 525 and concurrent enrollment in IDT 530. Provide students with training in instructional strategies for Pre-K through adulthood. Emphasis on current research on instructional strategies and assistive technologies in a variety of instructional contexts.

**540 Web-based Teaching and Learning (3)**

Prerequisites: IDT 530 and successful completion of Midpoint Symposium. Focuses on the design, development, and implementation of Web pages and sites for instructional purposes. Emphasis on issues surrounding using the World Wide Web for instruction.

**545 Emerging Technologies and Issues in Instruction (3)**

Prerequisites: IDT 530, IDT 535 and concurrent enrollment in IDT 540. Focuses on the theoretical basis, issues, and strategies for improving teaching and learning through the use of emerging technologies.

**550 Practicum in Instructional Design and Technology (3)**

Prerequisites: concurrent enrollment in IDT 597 and consent of Program Coordinator. Provides strategies for effectively implementing and evaluating instructional design and technology to improve learning; course includes significant field work assignments in work-related settings.

**597 Project (3)**

Prerequisites: concurrent enrollment in IDT 550 and consent of Program Coordinator. Individual research on an empirical project, with conferences with the instructor, culminating in a project.


## PROGRAM COORDINATOR

Dr. Irene Lange

## PROGRAM WEBSITE

http://business.fullerton.edu/Undergraduate/intlbus.htm

## PROGRAM OFFICE

College Park 900

## PROGRAM OFFERED

Bachelor of Arts in International Business

Concentrations in:

- Chinese
- French
- German
- Japanese
- Portuguese
- Spanish

## ADVISERS

The Business Advising Center, Langsdorf Hall 731, provides information on admissions, curriculum and graduation requirements, registration and grading procedures, residence and similar academic matters. Additional advising on curriculum content and career opportunities is available from the International Business Program:

| | |
|---|---|
| International Business | Irene Lange |
| Chinese | Jinghui Liu |
| French | Helene Domon |
| German | Marjorie Tussing |
| Japanese | Setsue Shibata |
| Portuguese and Spanish | Josefina Hess |

## INTRODUCTION

The international business curriculum covers the fundamentals of business administration, with an emphasis on international business. Foreign language courses are required and stress the use of the applied language. The program also includes an internship with an international business. This curriculum prepares students for entry level positions. Opportunities exist in contracts, distribution and sales and may lead to general management positions. Since Southern California is a major international business center, there are career opportunities with internationally oriented firms in this area. Other career opportunities may involve international travel or overseas assignments.

Language concentrations are offered in Chinese, French, German, Japanese, Portuguese, and Spanish. Other concentrations may be developed in the future. The program is offered jointly by the College of Business Administration and Economics and the Department of Modern Languages and Literatures.

### Scholarship In International Business

Friends of International Marketing

### Preparation For The Major

Students who expect to complete this program in the usual four-year period should realize that the total requirements, including general education courses and prerequisites, can exceed 120 semester units. Intermediate to advanced competency in a foreign language is a prerequisite to the required concentration courses. Students are strongly encouraged to complete a minimum of three years of foreign language study while in high school. Similarly, algebra and geometry are necessary for many required business courses. The equivalent of three years of high school mathematics, including a second course in algebra, is the prerequisite for the required Math 135, Business Calculus. Students without the necessary background will need to enroll in Math 115, College Algebra.

## BACHELOR OF ARTS IN INTERNATIONAL BUSINESS

Admission to the International Business major involves two steps. Students who apply to the major are initially classified as pre-international business. After completing the lower-division core requirements with grades of at least "C" (2.0), and demonstrating satisfactory progress toward intermediate competency in a foreign language, students may apply to the international business major. Pre-international business students may take lower-division business courses, but most upper-division courses are not open to pre-international business students.

All of the following requirements must be met for the degree. Students must earn a grade of at least "C" (2.0) in each course in the major. The International Business degree requires a minimum of 120 units. Students must fulfill all requirements for the major, General Education, all other University requirements, and free electives.

### Required Lower-Division Core Courses

Accounting 201A Financial Accounting (3)

Accounting 201B Managerial Accounting (3)

Business Admin 201 Business Writing (3)

Econ 201 Principles of Microeconomics (3)

Econ 202 Principles of Macroeconomics (3)

Management 246 Business and Its Legal Environment (3)

InfoSys/DecSci 265 Introduction to Information Systems and Applications (3)

Math 135 Business Calculus (3)

OR Math 130A Short Course in Calculus (4)

OR Math 150A Analytic Geometry and Calculus (4)

Intermediate foreign language competency is a prerequisite to the concentrations in Chinese, French, German, Japanese, Portuguese, and Spanish. Students in international business should consult an adviser in the Department of Modern Languages and Literatures as soon as possible in order to assess individual proficiency levels. Students may be required to take additional prerequisite courses.

**Required Upper-Division Core Courses**

Business Admin 301 Advanced Business Communication (3)

Econ 335 International Economy (3)

Finance 320 Business Finance (3)

Finance 370 International Business Finance (3)

Management 339 Principles of Management & Operations (3)

Management 340 Organizational Behavior (3)

InfoSys/DecSci 361A Quantitative Business Analysis: Probability and Statistics (3)

Marketing 351 Principles of Marketing (3)

Marketing 445 International Marketing Strategies (3)

**Required Capstone Core Course**

After completing all lower- and upper-division core courses, take Management 480 Global Strategic Management (3).

**Required Concentration**

Choose one of the following concentrations:

*Concentration in Chinese*

Chinese 310 Chinese in the Business World (3)

Chinese 311 Chinese for International Business (3)

Chinese 315 Introduction to Chinese Civilization (3)

Chinese 325 Contemporary Chinese Culture (3)

*Concentration in French*

French 310 French in the Business World (3)

French 311 French for International Business (3)

French 315 Origins of Modern France (3)

French 325 Contemporary French Civilization (3)

*Concentration in German*

German 310 German in the Business World (3)

German 311 German for International Business (3)

German 315 Introduction to German Civilization (3)

German 325 Current Trends in Culture of German-Speaking Peoples (3)

*Concentration in Japanese*

Japanese 310 Japanese for Business (3)

Japanese 311 Japanese for International Business (3)

Japanese 315 Introduction to Japanese Civilization (3)

Japanese 316 Modern Japan (3)

*Concentration in Portuguese*

Portuguese 310 Portuguese in the Business World (3)

Portuguese 317 Advanced Conversation and Composition (3)

Portuguese 320 Introduction to Luso-Brazilian Culture and Civilization (3)

Portuguese 325 Contemporary Brazilian Civilization (3)

One of the following courses may be substituted for Portuguese 320 or 325:

Spanish 310 Spanish in the Business World (3)

Spanish 311 Spanish for International Business (3)

*Concentration in Spanish*

Spanish 310 Spanish in the Business World (3)

Spanish 311 Spanish for International Business (3)

Spanish 315 Introduction to Spanish Civilization (3)

Spanish 316 Introduction to Spanish-American Civilization (3)

*Note*: Students may substitute one of the following for Spanish 315 or 316:

Spanish 415 Contemporary Spanish Culture (3)

Spanish 416 Contemporary Spanish-American Culture (3)

**Collateral Requirement (3 units)**

Complete at least one approved collateral elective. It is recommended that students take up to 12 units of electives, if possible. The list of approved courses is available in the Business Advising Center, Langsdorf Hall 731 or the International Business Program Office, College Park 900.

**Internship Requirement**

Internships outside the United States: Students who successfully arrange an internship in a country where the language of their concentration is used, will enroll for three units in a language internship and for three units in a business internship. During this experience, students are expected to spend a minimum of four months in full-time employment with a faculty-approved firm. Simultaneous enrollment in the two internships is expected and students normally will not engage in any other academic activity.

**Internships in the United States**

Students who complete internships locally must arrange a business internship that involves some aspects of international operations. In addition, these students must complete an additional pre-approved three-unit upper-division foreign language course. The course must increase students' understanding of the language and culture of their concentration. If students are expected to use their foreign language on

a daily basis as part of their business internship work activity, students may complete a foreign language internship rather than the course. Approval for this option must be obtained prior to enrollment in the business internship and written evidence of language use must be provided at the completion of the language internship.

**Internship Courses**

Accounting 495 Internship (3)

Economics 495 Internship (3)

Finance 495 Internship (3)

InfoSys/DecSci 495 Internship (3)

Management 495 Internship (3)

Marketing 495 Internship (3)

Modern Language 495 Internship (3)

**Other Requirements**

Grade Point Average (GPA): Attain at least a 2.0 GPA ("C" average) in all university courses and in the concentration courses. Earn at least a "C" (2.0) grade in each course required for the major.

Grade Options: Take all required core and concentration courses for a letter grade (A,B,C,D,F). The credit/no credit grading option may not be used for these courses, and a grade of CR (credit) will not satisfy the requirements of the degree. Exceptions: Calculus (Math 130, 135 or 150A) and Internship may be taken under the credit/no credit option, although courses taken to meet general education requirements must be taken for a letter grade.

Residence: At least 12 units of upper-division core courses, 6 units of upper-division concentration courses and 6 units of internships must be taken in residence at CSUF.

# Kinesiology

College of Health and Human Development

## DEPARTMENT CHAIR

Kathy Koser

## DEPARTMENT OFFICE

KHS 121A

## DEPARTMENT WEBSITE

http://hhd.fullerton.edu/knes

## PROGRAMS OFFERED

Bachelor of Science in Kinesiology

Minor in Kinesiology

Athletic Training Education Program

Subject Matter Preparation Program in Physical Education for the Single Subject Credential

Master of Science in Kinesiology

## FACULTY

Michele Barr, William Beam, Lee Brown, David Chen, Jared Coburn, Cheryl Cooky, Laura Dean, Barbie Gil-Alviso, Daniel Judelson, Robert Kersey, Patricia Laguna, Julie Max, Guillermo Noffal, Karen Perell, Kenneth Ravizza, Debra Rose, Daniela Rubin, Clay Sherman, Stephan Walk, Kathy Webster, Carol Weinmann, Lenny Wiersma, Ronald Witchey, Steven Zinder

## INTRODUCTION

The mission of the Department of Kinesiology is to provide a broad understanding of human motor performance through its degree programs and through the scholarship and creativity of its faculty and students. Emphasis is placed on examination of the entire lifespan from infancy to older adult years, with special attention to understanding human movement in the context of a diverse and ever-changing society. The department's degree programs include foundation courses, essential disciplinary core courses, and advising tracks related to multiple career objectives and subdisciplines within the human movement field. The cross-disciplinary focus of the department's curriculum fosters the development of a diversity of values and skills important to a liberal arts education: critical thinking, leadership, verbal and written communication, technological competency, and performance and wellness assessment.

The Bachelor of Science degree in Kinesiology offers students a variety of professional focus areas such as education, sports, therapeutic intervention, and fitness/wellness. The undergraduate minor in kinesiology, also based upon core curricula, provides opportunities for professional and/or personal enhancement.

The Master of Science degree in Kinesiology has a required core curriculum, plus individualized courses leading to professional or disciplinary specific preparation.

In addition, select courses within the curriculum service the general education program, various credential programs, and other university degree programs that require a human movement foundation. Performance courses provide university-wide opportunities for development of skills and knowledge leading to lifelong enjoyment of physical activity, health, well-being and worthy use of leisure time. Internships, practica, independent study, and scholarly outreach provide opportunities for interaction and service within the community.

### Student Awards/Scholarships

Awards and scholarships are presented each year to outstanding undergraduate and graduate students. Additional information is available in the Kinesiology Department office.

### Advisement

Entering students interested in Kinesiology should contact the Kinesiology Academic Advising Center in KHS 161A prior to their first semester at Cal State Fullerton to receive appropriate advisement materials. Students transferring course work from other colleges and universities should provide official transcripts of all prior course work to the Kinesiology Academic Advising Center.

Transfer students and students seeking advisement related to completion of General Education requirements, should visit the Academic Advisement Center located in University Hall 123.

## BACHELOR OF SCIENCE IN KINESIOLOGY

The Department of Kinesiology offers the Bachelor of Science in Kinesiology for students preparing for professional careers or for graduate work in fields related to exercise, sport, movement and wellness.

The degree consists of 120 units with 51 units required for the major. Within the major, students must complete nine units of foundation courses, an 18-unit disciplinary core, a three-unit writing course, and a 21-unit advising track in one of the following focus areas: Athletic Training, Clinical Exercise Science, Fitness and Health Promotion, Gerokinesiology, Sport Studies, or Teacher Education. With adviser approval, students also have the option of developing a "Special Studies" advising track if their interests lie outside these designated areas. The "Special Studies" plan must include a rationale statement, 21 units of upper-division course work, and must be approved by a faculty adviser and the Department Chair. Students are

required to seek advising from Department faculty in planning careers, selecting advising tracks, and choosing elective courses.

Each course counted toward the major, including prerequisites, must be completed with a grade of "C" (2.0) or higher. All courses counted toward the major must be taken on an Option 1 (letter grade) basis.

**Prerequisite Requirements**

Prerequisite requirements for the major include three units of anatomy/physiology (Biology/Kinesiology 210 or equivalent) and six units of performance classes, representing the following performance areas: Fitness, Martial Arts/Combatives, Aquatics, Individual Sports, Racquet Sports, and Team Sports. Four of the six performance courses must be completed prior to enrollment in Kinesiology 300 Principles of Movement. All performance courses must be completed prior to completion of the Disciplinary Core Courses.

**Prerequisite Performance Courses (6 units)**

*Fitness*

KNES 100 Physical Conditioning (1)

KNES 102A Beginning Jogging (1)

KNES 103 Fitness Walking (1)

KNES 144 Aerobic Exercise and Weight Control (1)

KNES 145 Cardio Kick Boxing* (1)

KNES 146 Weight Training (1)

*Aquatics*

KNES 110A Beginning Swimming (1)

KNES 110B Intermediate Swimming (1)

KNES 111 Water Polo* (1)

KNES 112A Beginning Surfing* (1)

KNES 112B Intermediate Surfing* (1)

KNES 214A Basic Scuba* (3)

KNES 214B Intermediate Scuba* (2-3)

*Martial Arts/Combatives*

KNES 145 Cardio Kick Boxing* (1)

KNEX 150 Wrestling (1)

KNES 151A Beginning Aikido (1)

KNES 151B Intermediate Aikido (1)

KNES 152A Beginning Karate (1)

KNES 153 Wushu: Chinese Martial Arts (1)

KNES 154 Self-Defense (1)

KNES 155 Fencing* (1)

KNES 156 Tai Chi* (1)

*Individual Sports*

KNES 112A Beginning Surfing* (1)

KNES 112B Intermediate Surfing* (1)

KNES 117A Beginning Bowling (1)

KNES 117B Intermediate Bowling (1)

KNES 119A Beginning Golf (1)

KNES 119B Intermediate Golf (1)

KNES 119C Advanced Golf (1)

KNES 120A Beginning Gymnastics (1)

KNES 120B Intermediate Gymnastics (1)

KNES 120C Advanced Gymnastics (1)

KNES 155 Fencing* (1)

KNES 156 Tai Chi* (1)

KNES 214a Basic Scuba* (3)

KNES 214B Intermediate Scuba* (3)

KNES 246A Basic Hatha Yoga (2)

KNES 246B Intermediate Hatha Yoga (2)

*Racquet Sports*

KNES 130A Beginning Badminton (1)

KNES 130B Intermediate Badminton (1)

KNES 131A Beginning Tennis (1)

KNES 131B Advanced-Beginning Tennis (1)

KNES 131C Intermediate Tennis (1)

KNES 131D Advanced Tennis (1)

KNES 132A Beginning Racquetball (1)

KNES 132B Intermediate Racquetball (1)

*Team Sports*

KNES 111 Water Polo* (1)

KNES 160 Ultimate Frisbee (1)

KNES 161A Beginning Slow Pitch Softball (1)

KNES 161B Intermediate Slow Pitch Softball (1)

KNES 164A Beginning Volleyball (1)

KNES 164B Intermediate Volleyball (1)

KNES 164C Advanced Volleyball (1)

KNES 165A Beginning Soccer (1)

KNES 165B Intermediate Soccer (1)

KNES 167A Beginning Basketball (1)

KNES 167B Intermediate Basketball (1)

KNES 167C Advanced Basketball (1)

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* May only be used in one performance area.

## REQUIREMENTS FOR THE MAJOR

**Foundation Courses (9 units)**

KNES 202 Introduction to Kinesiology (3)

KNES 260 Movement Anatomy (3)

KNES 349 Measurement and Statistics in Kinesiology and Health (3)

**Disciplinary Core Courses (18 units)**

KNES 300 Principles of Human Movement (3)

KNES 348 Physiology of Exercise (3)

KNES 371 Human Motor Control and Learning (3)

KNES 380 History and Philosophy of Human Movement (3)

KNES 381 Sports, Games and Culture (3)

KNES 383 Psychology of Sport and Physical Activity (3)

**Upper-Division Writing Course (3 units)**

English 301 Advanced College Writing (3)

**Advising Track Requirement (21 units)**

Courses are to be selected from one of the following advising track focus areas: Athletic Training, Clinical Exercise Science, Fitness and Health Promotion, Gerokinesiology, Sport Studies, Teacher Education, or Special Studies. See descriptions and specific course requirements below. With adviser approval, these courses can be modified to better meet student needs/interests.

## CLINICAL EXERCISE SCIENCE (CES) ADVISING TRACK (21 UNITS)

The Clinical Exercise Science advising track provides students with background knowledge and practical experience in preparation for careers in a variety of settings where exercise is used in conjunction with other therapeutic modalities, (such as clinical exercise physiology, geriatric pathokinesiology, and sports health care) and/or for further study leading to a variety of health care professions (e.g., physical/ occupational therapy, medicine, physician assistant, etc.*). This advising track also prepares students for advanced study in clinical exercise science.

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**Note*: Students taking course work in preparation for admission to a specific professional program, such as physical or occupational therapy, should check the entry requirements for the specific program at the institution to which they intend to apply. These students should also seek advising from the Health Professions Office in UH-223. Through careful planning students can maximize the number of courses that meet CSUF General Education and Kinesiology degree requirements, as well as the entry requirements for other programs of interest.

**CES Advising Track Recommendations (12 units)**

Kinesiology 377 Therapeutic Exercise (3)

Kinesiology 451 Sports Medicine (3)

Kinesiology 461 Biomechanics (3)

Kinesiology 495 Internship (3)

**CES Advising Track Electives (9 units)**

*Select 9 units from:*

Kinesiology 351, 364, 365, 373, 374, 375, 378, 432, 452, 453, 454, 455, 463, 471, Health Science 401, 405

## FITNESS AND HEALTH PROMOTION (FHP) ADVISING TRACK (21 UNITS)

The Fitness and Health Promotion advising track provides students with background knowledge and experience supporting careers in areas such as personal training, fitness instruction, corporate fitness/ worksite health promotion, and older adult fitness/wellness. This advising track also prepares students for advanced study in fitness and health promotion, as well as provides opportunities for personal enrichment and growth.

**FHP Advising Track Recommendations (12 units)**

Kinesiology 350 Nutrition (3)

Kinesiology 351 Principles of Strength and Conditioning (3)

Kinesiology 452 Graded Exercise Testing & Prescription (3)

OR Kinesiology 352 Principles of Teaching Group Fitness (3)

OR Kinesiology 495 Internship in Kinesiology (3)

**FHP Advising Track Electives (9 units)**

*Select 9 units from:*

Kinesiology 342, 348L, 352, 406, 432, 451, 452, 453, 454, 455; Health Science 405, 440, 460, 461.

## GEROKINESIOLOGY (GK) ADVISING TRACK (21 UNITS)

The Gerokinesiology advising track provides students with the background knowledge and skills necessary to develop and teach a variety of fitness and physical activity classes and/or personalized training programs for older adults. This advising track also prepares students for advanced study in geriatric pathokinesiology, and meets national recommendations for preparing senior fitness instructors.

**GK Advising Track Recommendations (12 units)**

Kinesiology 352 Principles of Teaching Group Fitness (3)

Kinesiology 454 Physical Dimensions of Aging (3)

Kinesiology 455 Functional Perform Assess Program for Older Adults (3)

Kinesiology 495 Internship in Kinesiology (3)

**GK Advising Track Electives (9 units)**

*Select 9 units from:*

Kinesiology 342, 350, 351, 352, 364, 375, 377, 378, 432, 451, 452, 463, 471; Health Sciences 440, 450; Psychology 362

## SPORT STUDIES (SS) ADVISING TRACK (21 UNITS)

The Sport Studies advising track provides course work for students interested in careers related to youth sports programs, athletic coaching, and/or sports performance enhancement. In consultation with an adviser, students choose electives that allow for further study of various aspects of sports performance, including physiological performance enhancement (biomechanics, exercise physiology, motor control and learning), psychological performance enhancement, athletic coaching, community/ youth physical activity and sports program, and the study of sport (history, philosophy and sociology). Students may also choose electives in preparation for advanced study in one or more of the sub-disciplines of kinesiology.

**SS Advising Track Recommendations (12 units)**

Kinesiology 325 Techniques of Coaching (3)

Kinesiology 351 Principles of Strength and Conditioning (3)

Kinesiology 365 Prevention/Care of Athletic Injuries (3)

Kinesiology 385 Instructional Analysis of Human Movement (3)

**SS Advising Track Electives (9 units)**

*Select 9 units from:*

Kinesiology 350, 384, 386, 387, 410, 430, 432, 461, 463, 480, 495

## ATHLETIC TRAINING (AT) ADVISING TRACK (21 UNITS)

The Athletic Training advising track is for students interested in completing a Bachelor's Degree in Kinesiology while focusing their electives in athletic training and related areas. Students selecting this track are NOT part of the Athletic Training Education Program (ATEP) and do NOT qualify to become a BOC Certified Athletic Trainer (ATC). Students do have the option of applying for admission to the ATEP (see Athletic Training Education Program description below). Thus, students completing the 21-unit Athletic Training advisement track can meet the requirements for the B.S. Degree in Kinesiology but will only partially meet the minimum ATEP and BOC requirements to become an ATC.

**AT Advising Track Requirements (21 units)**

Kinesiology 365 Prevention and Care of Athletic Injuries (3)

Kinesiology 373 Advanced Assessment of Lower Extremity (3)

Kinesiology 374 Advanced Assessment of Upper Extremity (3)

Kinesiology 375 Management of Athletic/Exercise Emergencies (3)

Kinesiology 377 Therapeutic Exercise in Rehabilitation (3)

Kinesiology 378 Therapeutic Modalities in Rehabilitation (3)

Kinesiology 465 Administration & Leadership in Athletic Training (3)

## ATHLETIC TRAINING EDUCATION PROGRAM (ATEP)

The Athletic Training Education Program (ATEP) prepares students for careers as Certified Athletic Trainers (ATCs). ATCs are allied health care professionals recognized by the American Medical Association as specialists in the prevention, recognition, management and rehabilitation of injuries and/or illnesses to athletes and physically active individuals. Students interested in the ATEP should contact the director to plan their academic program.

**Prerequisites**

Applicants must have completed 30 semester units, including the following classes with a minimum grade of "C (2.0): Kinesiology 200 and 202, Biology 101 and 361, Health Sci 101 and Psychology 101. Additionally, Kinesiology 365 and Biology 310 are highly recommended. Applicants must also complete a minimum of 100 clinical hours with an ATC and have an overall college GPA of 2.5. See the ATEP director or visit http://hdcs.fullerton.edu/at/ for complete details.

**Admission Criteria**

ATEP acceptance involves a competitive admissions process including evaluation in five areas: 1) academic qualifications, 2) athletic training experiences, 3) written communications, 4) professional recommendations, and 5) oral communication skills.

**Application Deadlines**

ATEP applications are available at http://hdcs.fullerton.edu/at/ and the deadline for filing completed applications is April 1st of each year.

**Requirements**

Upon ATEP admission, students must meet a number of accrediting agency, university and/or ATEP requirements. All ATEP students must complete and sign a CSUF Volunteer Employee contract and the following ATEP forms: Oath of confidentially, 1st Responder Contract, Clinical Practice Policy and Communicable Disease Policy. All new ATEP students must complete the ATEP Health Screening and Physical. They must also show proof of previous HBV vaccination, complete the HBV immunization or sign the HBV waiver form. Finally, new students must meet the ATEP Technical Standards. Students unable to fulfill the Technical Standards, with or without reasonable accommodation, will not be successfully advanced through the ATEP (see http://hdcs.fullerton.edu/at/).

**Completion**

For successful ATEP completion, each student commits to a minimum of 5 semesters and 1,000 hours of clinical rotations. ATEP students will be progressively rotated through a variety of on-campus and off-campus clinical settings to learn and perfect the needed knowledge and skills. All ATEP students must achieve and maintain a 2.5 overall GPA, a 3.00 ATEP Core GPA, and a 2.50 ATEP Support GPA. Professional Rescuer CPR certification must be continually maintained. Upon successful ATEP completion and completion of all requirements for the B.S. in Kinesiology, students become eligible to take the national board exams to become an ATC.

**Athletic Training Education Program Courses (58 units)**

KNES 200 Introduction to Athletic Training (3)

KNES 348L Physiology of Exercise Lab (1)

KNES 351 Principles of Conditioning (3)

KNES 365 Prevention and Care of Athletic Injuries (3)

KNES 367 Clinical Proficiencies in Athletic Training I (1)

KNES 368 Clinical Proficiencies in Athletic Training II (1)

KNES 369 Clinical Proficiencies in Athletic Training III (1)

KNES 373 Advanced Injury Assessment of Lower Extremities (3)

KNES 374 Advanced Injury Assessment of Upper Extremities (3)

KNES 375 Management of Sport/Exercise Emergencies (3)

KNES 377 Therapeutic Exercise in Rehabilitation (3)

KNES 378 Therapeutic Modalities in Rehabilitation (3)

KNES 451 Sports Medicine (3)

KNES 465 Administration & Leadership in Athletic Training (3)

KNES 468 Clinical Proficiencies in Athletic Training IV (1)

KNES 469 Clinical Proficiencies in Athletic Training V (1)

Biology 101 Elements of Biology (3)

Biology 310 Human Physiology (3)

Biology 361 Human Anatomy (4)

Chemistry or Physics Class from General Education Category III.A.2a (3)

Chemistry 111 Nutrition and Drugs (3)

Health Sci 101 Personal Health (3)

Psychology 101 Introduction to Psychology (3)

## TEACHER EDUCATION (TE) ADVISING TRACK (21 UNITS)

The Teacher Education advising track is designed for students interested in completing the Bachelor's Degree in Kinesiology while focusing their elective units on preparation for entering the teaching profession. Students completing the coursework below meet only some of the requirements for the Subject Matter Preparation Program (SMPP) which is designed to prepare students to enter a Single Subject Credential Program in Physical Education. Specifically, students completing this advisement track must complete additional units to fulfill California state-mandated subject matter competencies for pursuit of the single-subject teaching credential in kinesiology. Students interested

in the SMPP should see the program description below. Coursework in the Teacher Education advising track may help students qualify for teaching and coaching positions in the public schools, provide background knowledge and experiences for advanced study in pedagogy, and provide personal enrichment in the art and the science of human movement.

**TE Advising Track Requirements: (21 units)**

Kinesiology 325 Techniques of Coaching (3)

Kinesiology 363 Developmental Adaptations of the Atypical (3)

Kinesiology 364 Motor Development (3)

Kinesiology 385 Instructional Analysis of Human Movement (3)

Kinesiology 386 Movement and the Child (3)

Kinesiology 387 Movement and the Adolescent (3)

Kinesiology 350 Nutrition (3)

OR Kinesiology 351 Principles of Strength and Conditioning (3)

OR Kinesiology 365 Prevention and Cure of Athletic Injuries (3)

In addition to the 51-unit requirement for the Kinesiology degree and the Teacher Education advising track, students who wish to fulfill California state-mandated subject matter competencies (i.e., the Subject Matter Preparation Program) for pursuit of the single-subject teaching credential in physical education must also complete the requirements described below.

## SUBJECT MATTER PREPARATION PROGRAM (FOR OBTAINING SINGLE SUBJECT TEACHING CREDENTIAL IN PHYSICAL EDUCATION)

The Kinesiology Department offers course work as part of the Subject Matter Preparation Program (SMPP) for obtaining a Single Subject Credential (K-12) in Physical Education. In place of the six-unit performance course requirements within the major, teacher education students must take Kinesiology 240 Teaching Team Sports (3), Kinesiology 241 Teaching Nontraditional Team Sports (3) and Kinesiology 242 Teaching Lifetime Physical Activity (3). In addition to the requirements for a major in Kinesiology (which includes the Teacher Education advising track described above), all credential candidates must complete the following courses with a minimum grade of "C" (2.0). A grade point average of 3.0 in the major and 2.75 cumulative is required for admission to the fifth-year teacher education program.

**Additional Requirements**: Subject Matter Preparation Program in Physical Education (22 units)

Ed Sec 304 Personal Proficiency in Educational Technology for Secondary Teachers (3)

Ed Sec 310 The Teaching Experience: Participation (3)

Ed Sec 320 Adolescence and Education (3) (May count as a General Education Category IV)

Ed Sec 330 Developing Literacy in Secondary Schools (3)

Ed Sec 340 Diversity in Secondary Schools (3)

Health Sci 103 CPR, AED and First Aid (1) (or current CPR/First Aid Cert)

Kinesiology 120 Gymnastics (1)

Kinesiology 494 Practicum (2)

Dance 101 Introduction to Dance (3)

OR Dance 471 Creative Dance for Children (3)

**Advisement**

The department offers guidance for students considering a teaching career, available through the Kinesiology Teacher Education Coordinator. Prospective students should consult with the Teacher Education Coordinator as early as possible in order to plan and acquire needed experiences prior to entry into the Teacher Education Program. The university program for meeting basic requirements for the teaching credential with a specialization in Physical Education can be found elsewhere in this catalogue (see Teaching Credential Programs).

**Admission to Teacher Education**

In addition to the requirements set forth in the Teaching Credential Programs and in the Department of Secondary Education, the Department of Kinesiology requires candidates to complete the SMPP and to submit an application. A screening committee evaluates candidates' qualifications based on Kinesiology GPA, cumulative GPA, required SMPP course work, experiences with children and adolescents and having passed the California Basic Education Skills Test (CBEST). In addition, the candidate must be available for a personal interview by the Kinesiology Teacher Education Committee. Applications to the Teacher Education Program must be submitted by February 28th each year when all required SMPP courses are completed or will be completed by the student teaching fall semester.

Acceptance into the program allows the candidate to enroll in the following Fall-Spring semester sequence:

**Fall semester (15 units):**

Ed Sec 410, 440S, 440F; Kinesiology 442, 449E

**Spring semester (16 units):**

Ed Sec 460; Kinesiology 449I and 449S

## MINOR IN KINESIOLOGY

A kinesiology minor consists of 24 units of approved course work. All courses for the minor must be taken for a letter grade and completed with "C" (2.0) or better. Students are required to meet with the Kinesiology General Adviser for assistance in developing a cohesive set of courses that would best support their educational, career, or personal goals.

**Performance Courses (3 units)**

Three courses (1 unit each) must be taken from any three of the following areas: Fitness, Martial Arts/Combatives, Aquatics, Individual Sports, Team Sports, or Racquet Sports.

**Required Courses (9 units)**

Kinesiology 202 Introduction to Kinesiology (3)

Kinesiology 210 Human Anatomy and Physiology (3)

Kinesiology 260 Movement Anatomy (3)

**Upper-Division Electives (Select 12 units)**

Kinesiology 300 Principles of Human Movement (3)

Kinesiology 325 Theories of Coaching (3)

Kinesiology 348 Physiology of Exercise (3)

Kinesiology 351 Principles of Strength and Conditioning (3)

Kinesiology 353 Physical Activity and Lifelong Well-being (3)

Kinesiology 371 Human Motor Control and Learning (3)

Kinesiology 380 History and Philosophy of Human Movement (3)

Kinesiology 381 Sport, Games and Culture (3)

Kinesiology 383 Psychology of Sport and Physical Activity (3

Kinesiology 386 Movement and the Child (3)

Kinesiology 387 Movement and the Adolescent (3)

## MASTER OF SCIENCE IN KINESIOLOGY

The graduate program in Kinesiology provides a broad, comprehensive study of the varied aspects of human movement. Movement across the entire lifespan is observed and studied from mechanical, physiological, psychological, sociocultural, behavioral, instructional, and professional points of view.

The course work for the degree is designed to: (1) provide students with background knowledge and experience for professional careers in a variety of areas including clinical exercise science, fitness and health promotion, gerokinesiology, pedagogical studies, and sport studies, and/or (2) to prepare students for further graduate study in one or more of the sub-disciplines of kinesiology: biomechanics, exercise physiology, motor control/learning, philosophical perspectives, sport psychology, or sociocultural perspectives.

**Application Deadlines**

The deadlines for completing online applications are March 1st for the fall semester and October 1st for the spring semester (see http://www.csumentor.edu). Mailed applications need to be postmarked by the same deadlines. However, deadlines may be changed based upon enrollment projections. Check the university graduate studies website for current information at http://www.fullerton.edu/graduate.

**Admission Requirements**

All graduate degree applicants must meet the university requirements for admission, which include a baccalaureate degree from an accredited institution with a grade-point average of at least 2.5 in the last 60 semester units attempted. To be admitted into the graduate program in Kinesiology, a student must further submit to the Kinesiology graduate program: (1) transcripts showing an undergraduate degree in Kinesiology, Exercise Science, or Physical Education with a grade-point average of at least 3.0 in upper-division major coursework; (2) Graduate Record Exam scores general test; (3) a 500-word essay describing the applicant's academic preparation and goals in the area of intended study within the degree program; and (4) two letters of recommendation. Screening of fall semester applicants begins March 1; screening of spring semester applicants begins November 1.

Students who meet the general university requirements, but do not meet the Kinesiology degree requirements, may apply to the university for postbaccalaureate-unclassified standing. Any student without an undergraduate degree in Kinesiology, Exercise Science, Physical Education, or a related field must complete a prescribed set of undergraduate coursework (usually about 12 units) with a grade-point average of at least 3.0. Any student with a grade-point average deficiency must complete additional undergraduate coursework as specified by the Kinesiology graduate program adviser. Once all admission requirements are subsequently met, a change of program may be requested from postbaccalaureate-unclassified standing to conditionally classified in Kinesiology.

**Classified Standing**

Classified standing requires the development of a study plan (see below) approved by the faculty adviser, graduate studies committee, kinesiology graduate program adviser, and office of graduate studies. No more than nine units of graduate work taken before classification may be included on the study plan. Any changes to the study plan after classified standing is granted must be approved in advance, in writing, by the Kinesiology graduate program.

**Advancement to Candidacy**

Advancement to candidacy is attained by requesting a graduation check in the semester prior to graduation (see class schedule for deadlines) and receiving subsequent approval from the graduate studies adviser on the grad check completion review form, mailed by the Graduate Studies Office. Students not completing requirements by the graduation date specified on the original graduation check must contact the Graduate Studies Office.

**Graduate Advisement**

Students should consult with the Kinesiology graduate studies adviser for general information regarding the program. Upon acceptance to the program, students choose or are assigned a faculty adviser who assists in developing the study plan. Thesis/project advisers are selected in consultation with the student, faculty adviser, and potential thesis/project chair. Students may not register for thesis/project without the consent of the thesis/project chair.

## GRADUATE STUDY PLAN

The graduate degree in Kinesiology consists of a total of 30 units, at least 18 units of which must be 500 level. Once accepted into the program, each student must create an adviser-approved study plan before completing nine units of work. With adviser approval, up to nine units of 400/500-level course work may be included on the study plan that was taken at another university or in another department at Cal State Fullerton.

The study plan must include Kinesiology 508 and Kinesiology 510 (which fulfills the graduate level writing requirement), and at least two advanced study courses-one in the students major academic area of interest and one in a minor or supporting academic area. The study plan also must include 15 units of electives selected from one of six advisement tracks: clinical exercise science, fitness and health promotion, gerokinesiology, pedagogical studies, performance enhancement/sport psychology/sport studies, or special studies. Finally, the study plan must include one of three culminating experience options: a thesis, a project, or a comprehensive examination.

**Core Course Requirements (9 units)**

Kinesiology 508 Statistical Methods in Kinesiology (3)

Kinesiology 510 Research in Kinesiology (3)

Kinesiology 597/598 Project/Thesis (3) or Comprehensive Examination*

*Students who select the Comprehensive Examination shall be required to complete an additional adviser-approved 500-level course in Kinesiology (3 units).

**Advisement Track Requirements (21 units)**

The remaining 21 units of course work is to be selected from one of the following six advisement tracks: (1) Clinical Exercise Science, (2) Fitness and Health Promotion, (3) Gerokinesiology, (4) Teacher Education/Pedagogical Studies, (5) Sport Studies, or (6) Special Studies. Advanced study courses are required within each track, as well as recommended electives.

## KINESIOLOGY COURSES

Courses are designated as KNES in the class schedule.

Students may sign up for only one section of a given performance activity in any semester. This applies to Kinesiology 100 through 167, 214A, 214B, and 246A. Thus a student may take Kinesiology 102A Beginning Jogging and Kinesiology 112B Intermediate Surfing since jogging and surfing are different activities; however, signing up for multiple tennis courses, for example, is not permitted.

**100 – 167 Performance Courses (1)**

100 Physical Conditioning; 102A Beginning Jogging; 103 Fitness Walking; 110A Beginning Swimming; 110B Intermediate Swimming; 110C Advanced Swimming; 111 Water Polo; 112A Beginning Surfing; 112B Intermediate Surfing; 117A Beginning Bowling; 117B Intermediate Bowling; 119A Beginning Golf; 119B Intermediate Golf; 119C Advanced Golf; 120A Beginning Gymnastics; 120B Intermediate Gymnastics; 120C Advanced Gymnastics; 130A Beginning Badminton; 130B Intermediate Badminton; 131A Beginning Tennis; 131B Advanced-Beginning Tennis; 131C Intermediate Tennis; 131D Advanced Tennis; 132A Beginning Racquetball; 132B Intermediate Racquetball; 144 Aerobic Exercise and Weight Control; 145 Cardio Kick-Boxing; 146 Weight Training; 150 Beginning Wrestling; 151A Beginning Aikido; 152A Beginning Karate; 153 Wushu: Chinese Martial Arts; 154 Self Defense; 155A Beginning Fencing; 156 Tai Chi; 160 Ultimate Frisbee; 161 Slow Pitch Softball; 161B Intermediate Slow Pitch Softball; 164A Beginning Volleyball; 164B Intermediate Volleyball; 164C Advanced Volleyball; 165A Beginning Soccer; 165B Intermediate Soccer; 167B Intermediate Basketball; 167C Advanced Basketball.

Performance courses are instructional. Beginning, intermediate, and advanced sections are offered for most performance courses. Students who already possess proficiency in an activity should consider the course chosen from the standpoint of the level of skill development that may be encountered, standards of proficiency expected and their own ability level. Initial assessment and determination will be made by the course instructor. May be repeated for credit up to six times.

**170 – 189 Intercollegiate Sports (2)**

Prerequisite: consent of coach. An inter-collegiate activity in individual or team sports in an educational setting under the direction of a coach.

170 Gymnastics – Women Only; 172 Cross Country – Men and Women; 174 Track-Field – Men and Women; 175 Tennis – Women Only; 176 Wrestling – Men Only; 177 Fencing – Men and Women; 178 Basketball – Men and Women; 179 Baseball – Men Only; 180 Soccer – Men and Women; 185 Volleyball - Women Only; 186 Softball – Women Only. May be repeated for credit. Offered Credit/No Credit only.

**190 Team Management (2)**

Prerequisites: consent of coach and department chair. Field experience in the management of an intercollegiate sport. May be repeated for maximum of eight units of credit. (Credit/No Credit only)

**200 Introduction to Athletic Training (3)**

Practical skills acquisition for the treatment, prevention and care of sports-related injuries. Basic required course for all students admitted to the Athletic Training Education Program. (2 hours lecture, 2 hours activity)

**202 Introduction to Kinesiology (3)**

Prerequisite: declared Kinesiology major or minor. An introduction to the study of human movement, including its role in daily life, its place in higher education, and professional career opportunities in areas related to sport, movement, exercise, and fitness. Examines the multiple ways of knowing and studying human movement with a focus on the subdisciplines within kinesiology.

**210 Human Anatomy and Physiology (3)**

(Same as Biology 210)

**214A Basic Scuba (3)**

Prerequisites: ability to swim 400 yards, tread water one minute and swim 25 yards underwater. Skin and scuba diving, theory of diving, safety procedures and ocean environment. Open Water Basic Scuba Certification earned with successful completion. (1 hour lecture, 4 hours pool activity/ocean dives)

**214B Intermediate Scuba (3)**

Prerequisite: Open Water Scuba Certification. Application of scuba diving, including photography, navigation, salvage, game hunting, night diving and others. Advanced Scuba Certification for successful completion. (1 hour lecture, 4 hours pool activity/ocean dives)

**240 Teaching Team Sports (3)**

This course prepares students with knowledge of the team sports of volleyball, basketball, soccer, softball and football including histories, skills, rules, teach progressions, and sport specific teaching strategies. Appropriate teaching strategies are intended to promote active participation and experiential learning. (2 hours lecture, 2 hours activity)

**241 Teaching Nontraditional Team Sports (3)**

This course prepares pre-service teachers (e.g., future Physical Education teachers) with knowledge of nontraditional team sports including histories, fundamental skills, teaching progressions, sport-specific teaching strategies, sport rules, and officiating. (2 hours lecture, 2 hours activity)

**242 Teaching Lifetime Physical Activity (3)**

This course prepares students with the knowledge, skills, and experiences necessary to lead young people in gaining the skills, knowledge, attitudes, and behaviors required to lead physically active lifestyles. Appropriate teaching strategies are used to promote active participation and experiential learning. (2 hours lecture, 2 hours activity)

**246A Basic Hatha Yoga (2)**

Basic Yoga postures, breathing and relaxation techniques, and beginning meditation techniques from theoretical and experiential perspectives. Awareness, concentration and breathing patterns that accompany the movements of Hatha Yoga. (1 hour lecture, 2 hours activity) (Same as Comparative Religion 246A)

**246B Intermediate Hatha Yoga (2)**

Prerequisites: Kinesiology/Comparative Religion 246A. Intermediate and advanced yoga sequences including postures, breathing practices, meditation techniques and guided relaxation. Yoga philosophy and movement based on various Hatha yoga traditions. (1 hour lecture, 2 hours activity.) (Same as Comparative Religion 246B)

**247 Yoga Instructor Preparation (3)**

Prerequisites: one year of yoga experience or completion of KNES 246A. Recommended: concurrent enrollment in KNES 246B. Preparation for teaching Hatha Yoga techniques and philosophies to the general public. Instruction on yogic lifestyle and advanced yoga practices. (2 hours lecture, 2 hours activity)

**250 Mental Skills for Sport Performance (3)**

Developing an understanding of the mental aspects of sport performance and learning mental skills that can be used to enhance sport performance. (Credit/No Credit only)

**260 Movement Anatomy (3)**

Prerequisite: Kinesiology/Biology 210 or equivalent. Prerequisite or corequisite: Kinesiology 202. The muscular-skeletal system and its function in human movement. Movement in sports skills and the muscles involved.

**300 Principles of Human Movement (3)**

Prerequisites: Kinesiology 260. Prerequisite or corequisite: Kinesiology 202 and four of required six units of approved performance courses. General movement patterns as applied to sport and human movement.

**325 Techniques of Coaching (3)**

Factors related to coaching strategies and techniques: philosophy, ethics, legal issues, gender, multicultural and equity issues, leadership, motivation, team management, budget, recruiting, equipment purchase, skill acquisition, season planning, conditioning, nutrition, and drugs.

**342 Stress Management (3)**

Kinesiology majors may count this course either for the major or for General Education. (Same as Health Science 342)

**348 Physiology of Exercise (3)**

Prerequisites: Kinesiology 210 or a human physiology course or equivalent. Prerequisite or corequisite: Kinesiology 202. Physiological processes in physical activities and the effect of training upon performance.

**348L Physiology of Exercise Laboratory (1)**

Prerequisite: prior completion or concurrent enrollment in Kinesiology 348. Laboratory techniques in physiology of exercise. (3 hours laboratory)

**349 Measurement and Statistics in Kinesiology and Health Science (3)**

Prerequisite or corequisite: Kinesiology 202. A study of measurement theory and statistics used in the evaluation of health and human performance, with special focus on the analysis and interpretation of data in different environments.

**350 Nutrition (3)**

(Same as Health Science 350)

**351 Principles of Strength and Conditioning (3)**

Prerequisites: Kinesiology 260 and 348; Kinesiology 300 recommended. Conditioning for those who plan to coach or supervise fitness programs. Circuit training, nutrition, motivation, weight control and kinesiology factors.

**352 Principles of Teaching Group Fitness (3)**

Prerequisites: Kinesiology 210. Provide content knowledge and practical experience concerned with teaching group fitness. Emphasis will be placed on teaching principles, techniques and safety. A variety of exercise formats will be introduced.

**353 Physical Activity and Lifelong Well-Being (3)**

Prerequisites: one course from Category III of General Education. An integration of physiological, psychological and sociological understandings of the human being in relationship to physical activity as a lifelong pursuit. Topics include physical fitness, nutrition, stress reduction, socialization, and individual differences in human behavior. Health Science majors may count this course either for the major or for General Education. Kinesiology majors may not count this course for General Education. (Same as Health Science 353)

**363 Developmental Adaptations of the Atypical (3)**

Prerequisites: Kinesiology 300, 348 and 364. The study of the disabled whose unique needs in motor development determine their least restrictive environment in physical activity. Programs of games, sports and exercise in diversified settings; legally mandated regulations.

**364 Motor Development (3)**

Prerequisites: Kinesiology 260. Life span motor development: age, sex, ethnic, cultural and perceptual components, their implications and the main course of action needed in developmental strategies for optimal motor behavior development.

**365 Prevention and Care of Athletic Injuries (3)**

Prerequisites: Kinesiology 202. Focuses upon immediate observation and examination of injuries. Special emphasis will be placed upon the etiology, pathology, signs, symptoms and complications related to injuries sustained by athletes.

**367 Clinical Proficiencies in Athletic Training I (1)**

Prerequisites: Kinesiology 202 and admission to Athletic Training Education Program. This course is designed to develop a cognitive understanding and a practical knowledge of the various clinical skills required in a first-semester athletic training student.

**368 Clinical Proficiencies in Athletic Training II (1)**

Prerequisites: Kinesiology 367. Knowledge and develop clinical skills related to athletic training, including environmental safety, protective equipment, surface anatomy, palpation skills, special and functional tests, fitness testing techniques, etc.

**369 Clinical Proficiencies in Athletic Training III (1)**

Prerequisites: Kinesiology 368. Knowledge and develop clinical skills related to athletic training, including environmental safety, protective equipment, surface anatomy, palpation skills, special and functional tests, fitness testing techniques, etc.

**371 Human Motor Control and Learning (3)**

Prerequisite: Kinesiology 210 or a human anatomy course. Prerequisite or corequisite: Kinesiology 202. An examination of the neural, musculoskeletal, and psychological mechanisms underlying the control and learning of movement skills across the lifespan.

**373 Advanced Injury Assessment of the Lower Extremity (3)**

Prerequisites: Kinesiology 365. This advanced course is designed to develop the knowledge and clinical skills related to the recognition, evaluation, and assessment of pathologies to the lower extremity and lumbar spine.

**374 Advanced Injury Assessment for the Upper Extremity (3)**

Prerequisites: Kinesiology 365. This is an advanced course intended to develop the knowledge and clinical skills related to the recognition, evaluation, and assessment of pathologies to the upper extremity and cervical spine

**375 Management of Sport/Exercise Emergencies (3)**

Prerequisite: Kinesiology 202. This course is designed to provide the theoretical, practical, and clinical basis for the recognition, treatment, and management of medical emergencies and catastrophic situations involving the physically active individuals, including athletes.

**377 Therapeutic Exercise in Rehabilitation (3)**

Prerequisite: Kinesiology 202. This course is designed to provide the theoretical and clinical basis for therapeutic exercise in rehabilitation. Therapeutic exercises as they relate to injury rehabilitation will be developed for student syntheses and understanding.

**378 Therapeutic Modalities in Rehabilitation (3)**

Prerequisite: Kinesiology 202. This course is intended to provide theoretical, clinical, and practical basis for the use of therapeutic modalities in rehabilitation. Information concerning physical agents and biophysics, indications, contraindications, physiological effects, and applications will be developed.

**380 History and Philosophy of Human Movement (3)**

Prerequisites: completion of General Education Category II.A and III.B.2. Prerequisite or corequisite: Kinesiology 202. Historical development of thought and practice in athletics, sport, kinesiology, play, dance, and other human movement forms from ancient Greeks to the present. Philosophical theories of human movement relative to personal identity, reality, being, values, and nature of competition.

**381 Sports, Games and Culture (3)**

Prerequisites: one course from Category III of General Education. Prerequisite or corequisite: Kinesiology 202. Human movement in the cultural milieu. Historical and contemporary interpretations of the role of play, games, sports, dance and recreation in human life.

**383 Psychology of Sport and Physical Activity (3)**

Prerequisite or corequisite: Kinesiology 202. Introduction to theory and research of psychological processes that influence human performance in numerous movement settings including sport, exercise, and rehabilitation. Topics include individual difference variables (e.g., personality, arousal/anxiety, and motivation), social psychological variables (e.g., aggression, leadership, and group dynamics), and assessment and intervention (e.g., goal setting, cognitive techniques, and behavioral change strategies).

**384 Sport Sociology (3)**

Prerequisite: Kinesiology 381. Sport and social institutions and social processes. Understanding sport as a social phenomenon.

**385 Instructional Analysis of Human Movement (3)**

Prerequisites: completion of all six units of Kinesiology performance classes in specified areas (i.e., fitness, aquatics, combatives, individual sports, court/racquet sports, team sports) and Kinesiology 300. This course examines variables and principles which contribute to effective observation, analysis, and instruction of human movement skills across the life span.

**386 Movement and the Child (3)**

Prerequisite: completion of General Education Categories III.A.2 and III.C.1; co-requisite, KNES 494 for teacher education kinesiology majors only. Characteristics of the child; physical growth and development; basic mechanical principles related to human movement and motor learning; and concepts related to the design of physical activity programs that are appropriately challenging for children at various developmental levels.

**387 Movement and the Adolescent (3)**

Co-requisite: KNES 494 for teacher education kinesiology majors only. Prepares students to implement physical education programs at the secondary level. Addresses cognitive, affective and psychomotor development; structure, concepts and principles related to human movement and motor learning; concepts related to the design of secondary school movement programs.

**396 Physical Education Tutorial (1)**

Prerequisite: consent of instructor and tutorial adviser. Supervised experience in performance or laboratory situations through tutoring or assisting in instruction. May be repeated for six units of credit. A maximum of three units may be applied toward the major.

**405 Worksite Injury Prevention and Rehabilitation (3)**

(Same as Health Sci 405)

**406 Principles of Sport and Exercise Management (3)**

A broad overview of sport/ exercise management enterprise, including school, facility, professional, commercial, industrial, corporate management and specialists in marketing, print/electronic media. Job descriptions, professional preparation and placement opportunities are detailed. Portfolio development.

**410 Issues in Youth Sports (3)**

Prerequisite: Kinesiology 381. Recommended prerequisite: Child and Adolescent Studies 312. An interdisciplinary examination of trends and issues in youth sport, focusing on non-school based community programs. Emphasis is on the structural characteristics of sport and physical activity programs as they pertain to proper development of children and adolescents.

**430 Applied Sport Psychology (3)**

Prerequisites: Kinesiology 383. Application of principles from sport psychology literature to enhance athletes' and coaches' performance.

**432 Applied Exercise Psychology (3)**

Prerequisites: Kinesiology 383. Understanding and applying the principles from exercise psychology to enhance competencies and skills related to preventive and rehabilitative exercise programs.

**442 Teaching Physical Education (3)**

Prerequisite: admission to Teacher Education. Objectives, methods and materials of teaching Physical Education K to 12. Required before student teaching. Part of the 12-unit education block and may not be taken separately. (Credit/No Credit only. Requires "B" (3.0) or better for credit.)

**449E Externship in Secondary Teaching (3)**

To be taken concurrently with Kinesiology 442. See description under Secondary Education. (Credit/No Credit only. Requires "B" (3.0) or better for credit.)

**449I Internship in Secondary Teaching (10)**

See description under Secondary Education. (Credit/No Credit only. Requires "B" (3.0) or better for credit.)

**449S Seminar in Secondary Teaching (2)**

See description under Secondary Education. (Credit/No Credit only. Requires "B" (3.0) or better for credit.)

**451 Sports Medicine (3)**

Prerequisites: Kinesiology 348 and 348L. Addresses those alterations in human movement, anatomy, and physiology that are caused by such factors as injury, drugs, and environment.

**452 Graded Exercise Testing and Prescription (3)**

Prerequisites: Kinesiology 348 and 348L; Kinesiology 351 and 451 recommended. Methods of graded exercise testing in the apparently healthy adult. Guidelines for aerobic exercise prescription. Discussion of cardiovascular disease and identification of risk factors.

**453 Clinical Exercise Physiology (3)**

Prerequisites: Kinesiology 348 and 452, Kinesiology 350 recommended. Application of exercise physiology concepts to clinical/pathological situations in order to determine the therapeutic and functional benefits of physical activity.

**454 Physical Dimensions of Aging (3)**

Prerequisites: minimum of 6 units of upper-division Kinesiology courses completed or 6 units from the Gerontology minor. Examination of the scientific evidence concerning the relationship between level of physical activity and one's physical, mental and psychological well-being during aging.

**455 Functional Performance Assessment and Programming for Older Adults (3)**

Prerequisites: Kinesiology 349 and either Kinesiology 353, 371, or 454. This course emphasizes the development of technical and personal skills related to functional performance assessment and to the development and implementation of physical activity programs for healthy and frail older adults.

**456 Environment Exercise Physiology (formerly 556) (3)**

Prerequisite: Kinesiology 348. The interrelationship between the physical environment and the human while exercising under different states of fitness and acclimatization.

**460 Worksite Health Promotion (3)**

(Same as Health Science 460)

**461 Biomechanical Analysis of Human Movement (3)**

Prerequisites: Kinesiology 300, Physics 211 recommended. An analytical approach to the mechanics of human motion. Quantitative video analysis techniques are introduced and applied to select movement analysis projects.

**463 Biomechanics of Musculoskeletal Injury (3)**

Prerequisites: Kinesiology 300. Biomechanical analysis of bone, joint cartilage, and callagenous tissue, and of forces and moments acting at the major joints of the human body with specific interest on how these forces contribute to musculoskeletal injuries.

**465 Administration and Leadership in Athletic Training (3)**

Prerequisites: Kinesiology 365. This course is intended to enable students to comprehend and appraise the many theoretical, legal, moral, ethical, technical, and practical aspects of administration and leadership in sports health care programs, including those in athletic training.

**468 Clinical Proficiencies in Athletic Training IV (1)**

Prerequisites: Kinesiology 369. This course is designed to develop a cognitive understanding and a practical knowledge of the various clinical skills required of a fourth-semester athletic training student.

**469 Clinical Proficiencies in Athletic Training V (1)**

Prerequisites: Kinesiology 468. This course is designed to develop a cognitive understanding and a practical knowledge of the various clinical skills required of a fifth-semester athletic training student.

**471 Motor Control and Movement Dysfunction (3)**

Prerequisites: Kinesiology 371. This course will examine contemporary motor control theories and how they are applied to the development of therapeutic exercise programs for children and adults with balance and movement disorders caused by disease and/or trauma to the neurological system.

**480 Women and Sport (3)**

Prerequisites: minimum of 15 kinesiology upper-division units completed. A multidimensional focus of influences impacting women's competitive and non-competitive sport participation with emphasis on access, inclusion, adherence, benefits/liabilities, and lifelong well being.

**494 Practicum (1-3)**

Prerequisites: consent of faculty sponsor, field supervisor, fieldwork coordinator, and department chair. Planning, preparing, coaching, teaching in public school, college, or community physical education or recreation programs. May be repeated for a maximum of six units of credit. Credits not applicable toward major or fifth year work. (Credit/No Credit only)

**495 Internship in Kinesiology (3)**

Prerequisites: minimum of 12 units of upper-division kinesiology coursework completed, faculty sponsor, field supervisor, fieldwork coordinator and department chair consent. Includes seminar for analysis of field experiences including appropriate theory, skills and techniques in addition to supervised experience in an approved fieldwork location agency. Internship must be specific to the discipline of kinesiology. Minimum of 120 hours per semester. Application forms must be completed and approved prior to enrollment. May not be repeated for credit toward the major.

**499 Independent Study (1-3)**

Prerequisite: minimum of 15 upper-division kinesiology courses completed. Topics based on a study plan prepared in cooperation with a faculty supervisor. Culminates in a paper, project, comprehensive examination or performance. Application forms must be completed and approved prior to enrollment. Maximum of three units in any one semester; may be repeated once.

**508 Statistical Methods in Kinesiology (3)**

Prerequisites: graduate status, Kinesiology 349. Statistical theory, data collection procedures, techniques for analysis and interpretation of data.

**510 Research Methods in Kinesiology (3)**

Prerequisites: graduate status, Kinesiology 508. The fundamental tools of research. Types of research, process of scientific inquiry and critical analysis of research. Topic selection and development of a research proposal.

**516 Advanced Study of the Philosophical Perspective of Human Movement (3)**

Prerequisites: graduate status, Kinesiology 380. Methods of the philosophical process of human movement.

**550 Graduate Internship (3)**

Prerequisites: graduate status, consent of faculty sponsor, field supervisor, field coordinator and chair. On-the-job training experiences supervised by a fully trained practitioner. Minimum of 120 hours per semester plus conferences with faculty sponsor. Application forms must be completed and approved prior to enrollment. Upon completion of the internship, a written evaluation must be submitted. Not open to students on, or subject to, academic probation.

**551 Advanced Study in Physiology of Exercise (3)**

Prerequisites: graduate status, Kinesiology 348 and 348L. Current issues and research in physiology of exercise with emphasis on physiological control during acute exercise. Includes written, oral and laboratory assignments.

**555 Applied Strength and Conditioning (3)**

Prerequisites: graduate status, Kinesiology 351 and 551. The anatomical and physiological bases for programs that develop physical fitness and performance.

**557 Instructional Strategies in Physical Education and Sport (3)**

Prerequisites: graduate status, Kinesiology 371 or 383. Study of theoretical concepts, models, and research on instructional strategies for Physical Education, sport and related professional setting. Highly recommended for graduate students in all concentrations in Physical Education.

**558 Advanced Study in Teaching Human Movement (3)**

Prerequisites: graduate status, Kinesiology 300 or Kinesiology 371 or consent of the instructor. Provides a general overview of historical perspectives and current trends in pedagogical research and the resultant principles that undergird the science of teaching human movement.

**561 Advanced Study in Biomechanics (3)**

Prerequisites: graduate status, Kinesiology 461. Advanced methods and concepts associated with the quantification of human movement. Emphasis is placed upon the biomechanical analysis of force plate and three-dimensional video data.

**571 Advanced Study in Human Motor Control and Learning (3)**

Prerequisites: graduate status, Kinesiology 371. In-depth study of contemporary trends and issues in motor control/learning research. Emphasis on application of research to practice.

**580 Advanced Study in Sport and Exercise Psychology (3)**

Prerequisites: graduate status, Kinesiology 383. Current issues and research in sport and exercise psychology. Topic areas include motivation, personality, leadership and group dynamics, attention/concentration, exercise adherence/compliance, sport and exercise injury, and behavioral change strategies.

**581 Consultation in Applied Sport Psychology (3)**

Prerequisites: Kinesiology 383 and 430, and graduate standing. Explores factors related to effective consultation for enhancing athletic performance. Knowledge of consultation issues will be derived from the existing best practices and literature with the purpose of drawing practical applications for the new professional. May be repeated for a maximum of six units credit.

**582 Advanced Study in Sociocultural Perspectives of Human Movement (3)**

Prerequisites: graduate status and Kinesiology 384. An in-depth study of the theories and methods of the sociocultural perspective and their application to the study of human movement phenomena.

**597 Project (3)**

Prerequisites: graduate classified status, Kinesiology 510, successful completion of an oral presentation of the project, and signature of all committee members on or before the census date of the semester in which the student elects to enroll. Directed independent inquiry. Not open to students on, or subject to, academic probation.

**598 Thesis (3)**

Prerequisites: graduate classified status, Kinesiology 510, successful completion of an oral presentation of the thesis, and signatures of all committee members on or before the census date of the semester in which the student elects to enroll. Student will select and have approved a research proposal, conduct the research, and prepare a formal analysis and report. May be repeated. Not open to students on, or subject to, academic probation.

**599 Graduate Independent Research (1-3)**

Prerequisites: graduate status, Kinesiology 510, and consent of the faculty adviser and chair. Student research in a specific area of human movement studies. Application forms must be completed and approved prior to enrollment. Upon completion of the research, a written report must be submitted. Not open to students on, or subject to, academic probation. Maximum of three units in any one semester; may be repeated once.


**PROGRAM COORDINATOR**

Sandra M. Pérez-Linggi

**PROGRAM OFFICE**

Humanities 420A

**WEBSITE**

http://hss.fullerton.edu/latinamerican/

**PROGRAMS OFFERED**

Bachelor of Arts in Latin American Studies

Minor in Latin American Studies

**PARTICIPATING FACULTY**

Ruth Capelle (Art), Isaac Cardenas (Chicana/o Studies), James Dietz (Economics), Dagoberto Fuentes (Chicana/o Studies), Ana Garza (Education), Ron Harmon (Modern Languages), Juan Carlos Gallego (Modern Languages), Joanne Gass (English), Nancy Porras Hein (Chicana/o Studies), Irene Lange (Marketing), Heather McCrea (History), Robert Voeks (Geography), Bruce Wright (Political Science), Phillipe Zacair (History)

**ADVISER**

Sandra M. Pérez-Linggi

## INTRODUCTION

Latin America is our closest neighbor and is a developing region with vast potential. Countries range in size from the Dominican Republic to resource-rich Brazil, which is larger than the continental United States.

By pursuing a broad yet in-depth course of study, Latin American Studies students are well equipped to enter many fields and occupations as teachers in the United States or Latin America, as business people sensitive to Latin American history and culture, or as journalists, lawyers, and doctors where contact with Latin America or Latin Americans in the United States is important.

The Latin American Studies major is designed to provide an in-depth, interdisciplinary understanding of Latin America. Majors develop language proficiency in both Spanish and Portuguese and have a broad range of courses from which to choose in anthropology, art, Chicana/o studies, economics, history, geography, political science, and modern languages and literatures. The major is well-suited for: (1) students who wish to pursue careers which require residence in or knowledge of Latin America (e.g., business, journalism, government); (2) those who plan to teach Spanish and/or social sciences in the secondary schools; and (3) students who wish to pursue graduate work in Latin American studies or other disciplines where a Latin American specialization would be helpful (e.g., political science, economics, history).

## BACHELOR OF ARTS IN LATIN AMERICAN STUDIES

The Bachelor of Arts in Latin American Studies requires a minimum of 120 units, which includes courses for the major, General Education, all university requirements, and free electives.

Prior to graduation, each student must demonstrate a critical and in-depth understanding of Latin America from an interdisciplinary perspective reflected in the courses that make up the major. The student must complete either a capstone experience through one of the 400-level elective courses offered or the capstone course (once approved and offered). Students completing the capstone experience will identify and complete a project under the supervision and guidance of the instructor of the 400-level course (e.g., research paper, Power Point presentation, poster, community service project) which must have a writing component. Once the capstone project is completed, the student should submit a copy of the written portion of the project to the Program Coordinator. When offered, students may enroll in the variable topic Latin American Studies Capstone Course as an option in fulfilling the requirement.

**Foundation Courses**

All majors should develop a language proficiency level equivalent to Spanish 204 and Portuguese 102.

Students with no language background should take:

Spanish 101 Fundamental Spanish - A (5)

Spanish 102 Fundamental Spanish - B (5)

Spanish 203 Intermediate Spanish - A (3)

Spanish 204 Intermediate Spanish - B (3)

Portuguese 101 Fundamental Portuguese - A (4) (usually offered in the Fall)

Portuguese 102 Fundamental Portuguese - B (4) (usually offered in the Spring)

A student with knowledge of Spanish and/or Portuguese may be able to meet part or all of the foundation course requirements after evaluation by the Department of Modern Languages and Literatures.

**Required Fields of Study**

*Upper-Division Writing Requirement (3 units)*

English 301 Advanced Composition (3)

*Language (3 units)*

Spanish 301 Advanced Grammar and Composition (3)

OR Portuguese 317 Advanced Conversation and Composition (3)

*History and Culture (9 units)*

Spanish 316 Introduction to Spanish American Civilization (3)

OR Portuguese 325 Contemporary Brazilian Civilization (3)

Latin Amer Studies 300 Topics in Latin America (3)

Three units in upper-division Latin American History (3)

*Social Science (6 units) selected from two departments*

Anthropology 325 Peoples of South America (3)

Anthropology 423 The Ancient Maya (3)

Anthropology 424 The Aztecs and Their Predecessors (3)

Economics 333 Economic Development: Analyses and Case Studies (3)

Economics 334 Economics of Latin America and the Caribbean (3)

Geography 333 Latin America (3)

Upper-division Latin American Political Science courses when offered

**Elective Fields of Study**

Twelve units selected from three or more of the following groupings chosen in consultation with the program coordinator:

*Culture*

Anthropology 325 Peoples of South America (3)

Anthropology 423 The Ancient Maya (3)

Anthropology 424 The Aztecs and Their Predecessors (3)

Chicana/o 302 Ancient Mexican Culture (3)

Chicana/o 303 Cultural Differences in Mexico and the Southwest (3)

Chicana/o 353 Mexico Since 1906 (3)

Comparative Religion/Chicana/o 367 Latino Spirtuality and Religion (3)

Geography 452 Ecotourism (3)*

Latin Amer Studies/Chicana/o 350 Mexican Life and Culture (3) (offered only as part of CSUF La Paz program.)

Portuguese 317 Advanced Conversation and Composition (3)

OR Spanish 301 Advanced Grammar and Composition (3)

Portuguese 320 Introduction to Luso-Brazilian Culture and Civilization (3)

Portuguese 325 Contemporary Brazilian Civilization (3)

OR Spanish 316 Introduction to Spanish-American Civilization (3)

Spanish 416 Contemporary Spanish-American Culture (3)

*Fine Arts and Literature*

Art 460 Pre-Columbian Art (3)

Art 462 Latin American Art from 1800 to the 1950s (3)

Art 480T Selected Topics in Art History (3)*

Chicana/o 304 Music of Mexico (3) (Same as Music 304)

Chicana/o 330 Evolution of Mexican Literature (3)

Chicana/o 333 Mexican Literature Since 1940 (3)

Chicana/o 336 Main Trends in Spanish-American Literature (3)

Spanish 440 Spanish-American Literature to Modernismo (3)

Spanish 441 Spanish-American Literature Since Modernismo (3)

Spanish 466 Spanish Phonology and Dialectology (3)

Spanish 485T Senior Seminar: Topics in Spanish-American Literature (3)

*History and Politics*

History 350 History of Latin American Civilization (3)

History 449 Race, Ethnicity and Gender in Latin America (3)

History 451 Colonial Period of Latin America (3)

History 452 20th-Century Brazil (3)

History 453A History of Mexico Pre-Columbian (pre-1521) through 1821 (3)

History 453B History of Mexico from Independence to Modern Day (3)

History 454 19th Century Latin America: Era of Nation Building (3)

History 455 Latin America Since 1945 (3)

Upper-division Latin American Political Science courses when offered.*

*Geography and Economics*

Economics 333 Economic Development: Analyses and Case Studies (3)

Economics 334 Economics of Latin America and the Caribbean (3)

Geography 333 Latin America (3)

*Latin American Studies*

Latin American Studies 399 Directed Studies (1-3)

## MINOR IN LATIN AMERICAN STUDIES

The minor in Latin American studies is designed to complement other majors for which a focus on Latin America can be beneficial (e.g., history, international business, communications, Spanish, economics and political science). Prospective secondary teachers may find this minor particularly attractive. The minor requires proficiency in either Spanish or Portuguese, as defined above for the major; 3 units of cultural history (Latin Amer Studies 300, History 350 or Spanish 316 or Portuguese 325); and 9 units of approved electives from at least two departments listed below; or from the Latin American Studies "Elective Fields of Study" list.

Anthropology 423 The Ancient Maya (3)

Anthropology 424 The Aztecs and Their Predecessors (3)

Anthropology 325 Peoples of South America (3)

Art 460 Pre-Columbian Art (3)

Art 462 Latin American Art from 1800 to the 1950s (3)

Art 480T Selected Topics in Art History (3)*

Chicana/o 302 Ancient Mexican Culture (3)

Chicana/o 303 Cultural Differences in Mexico and the Southwest (3)

Chicana/o 304 Music of Mexico (3) (Same as Music 304)

Chicana/o 330 The Evolution of Mexican Literature (3)

Chicana/o 333 Mexican Literature Since 1940 (3)

Chicana/o 336 Main Trends in Spanish-American Literature (3)

Chicana/o 340 Mexican Intellectual Thought (3)

Chicana/o 353 Mexico Since 1906 (3)

Economics 333 Economic Development: Analysis and Case Studies (3)

Economics 334 Economics of Latin America and the Caribbean (3)

Geography 333 Latin America (3)

History 451 Colonial Period of Latin America (3)

History 452 20th-Century Brazil (3)

History 453A History of Mexico Pre-Columbian (pre-1521) through 1821 (3)

History 453B History of Mexico from Independence to Modern Day (3)

History 454 19th Century Latin America: Era of Nation Building (3)

History 455 Latin America Since 1945 (3)

Upper-division Latin American Political Science courses when offered*

Portuguese 310 Portuguese in the Business World (3)

Portuguese 317 Advanced Conversation and Composition (3)

Portuguese 320 Introduction to Luso-Brazilian Culture and Civilization (3)

Portuguese 325 Contemporary Brazilian Civilization (3)

Spanish 301 Advanced Grammar and Composition (3)

Spanish 310 Spanish in the Business World (3)

Spanish 316 Introduction to Spanish-American Civilization (3)

Spanish 416 Contemporary Spanish-American Culture (3)

Spanish 440 Spanish-American Literature to Modernismo

Spanish 441 Spanish-American Literature Since Modernismo (3)

Spanish 466 Spanish Phonology and Dialectology (3)

Spanish 485T Senior Seminar: Topics in Spanish-American Literature (3)

*Latin American focus only.

## LATIN AMERICAN STUDIES COURSES

Course are designated as LTAM in the class schedule.

**300 Topics in Latin America (3)**

Prerequisite: completion of General Education Category III.C.1. An interdisciplinary examination and discussion of the history, geography, peoples, and major issues of Latin America from pre-Colonial times to the present.

**350 Mexican Life and Culture (3)**

Prerequisite: Completion of General Education category III.C.1. Introduction to Mexican culture and civilization. Students study contemporary Mexican society by focusing on social, political, environmental, cultural and historical issues. Course requires travel to La Paz, Baja California, Mexico and will only be offered in summer or intersession. Letter grade or credit/no credit. (Same as Chicana/o 350)

**399 Directed Study (1-3)**

Prerequisite: approval of program coordinator. Supervised individual or small group study as an elective. May be repeated for credit with different content.


**DEPARTMENT CHAIR**

James R. Hofmann

**DEPARTMENT OFFICE**

Humanities 214

**DEPARTMENT WEBSITE**

http://hss.fullerton.edu/liberal/

**PROGRAMS OFFERED**

Bachelor of Arts in Liberal Studies
Minor in Liberal Studies

**FACULTY**

Emily Bonney, April Bullock, Ronald Clapper, Mark Fischer, Margaret Garber, Joseph Gonzalez, James Hofmann, Kevin Lambert, Rachel Lindheim, Edward Maine, Craig McConnell, Andrea Patterson, Angeles Sancho-Velazquez, Terri Snyder, Bradley Starr

**ADVISERS**

Emily Bonney, April Bullock, Ronald Clapper, James Hofmann, Craig McConnell, Terri Snyder, Bradley Starr

## INTRODUCTION

Liberal Studies is an interdisciplinary department that integrates concepts from the humanities and arts, the natural sciences and the social sciences. Some core courses trace the historical development of these areas of knowledge in their intellectual and cultural context. The broad framework of these courses will enable students to see the whole range of human knowledge. Other core courses compare and contrast the methods and underlying assumptions of the humanities and arts, the natural sciences and the social sciences, and explore the ways in which these disciplines communicate. The critical thinking and communication skills these courses develop provide students with the self-confidence that comes from being able to express one's ideas clearly and effectively both orally and in writing. The core courses use a combination of lecture, discussion and seminar to make the student not only a well-rounded, well-educated person, but also a more independent thinker and a more creative human being.

The major in Liberal Studies is designed for students who desire the broadest possible liberal education: (1) as preparation for teaching all subjects in the elementary school classroom; (2) as an alternative approach to careers in business; (3) as preprofessional preparation for entry into professional schools in the health sciences, law, ministry, etc.; (4) as a means of obtaining specific occupational requirements that cannot be met from course work in a single department; (5) and as a source of personal growth and development.

## AWARDS IN LIBERAL STUDIES

The Outstanding Elementary Education Plan Student Award and the Outstanding Thematic Plan Student Award go to the outstanding graduating senior in each plan.

## MULTIPLE SUBJECT CREDENTIAL PROGRAM

In addition to completing their B.A. in Liberal Studies, students seeking a Multiple Subject (Elementary) Credential need to enter a state-approved Multiple Subject Credential Program.

The Bachelor's Degree in Liberal Studies may be effectively combined with subject matter studies necessary for the multiple subject teaching credential (K-8). Undergraduates are encouraged to work with the Center for Careers in Teaching (714-278-7130) as early as possible in their academic careers to plan efficient course selections for general education, the major and electives. With careful planning, it may be possible to enter the credential program in the senior year of the bachelor's degree. Postgraduate students should contact the Admission to Teacher Education office in the College of Education (714-278-3352) to obtain information on attending an overview presentation.

## STREAMLINED TEACHER EDUCATION PROGRAM

Designed for freshmen planning to be teachers, students in the Streamlined Teacher Education Program (STEP) combine their bachelor's degree requirements with credential program courses to earn both the degree and the preliminary credential in an efficient, well-planned program. For a special education credential, one additional semester is required. Students in STEP complete the requirements for the bachelor's degree in Child and Adolescent Development, Liberal Studies or Comparative Religion and the requirements for a Professional (preliminary) Multiple Subject Credential (for teaching elementary school) and/or an Education Specialist Credential (for teaching special education).

Students in STEP benefit from early field experience in K-12 classrooms, regular contact with faculty members from their major departments and from the education departments, and regular

advisement and support throughout the program. Students in STEP also have multiple opportunities to meet and work with other students in the program, facilitating their social connections with other students with similar career aspirations.

Transfer students may also participate in STEP. To be well-positioned to participate in the program, they must seek advisement from their community college counselors as early in their academic careers as possible. Students in this program must take a particular pattern of courses to satisfy General Education Program requirements. Transfer students should check the Center for Careers in Teaching website for more information.

For further information about STEP, please visit the Center for Careers in Teaching (CCT) website at www.fullerton.edu/cct or visit the CCT directly in H 113.

## BACHELOR OF ARTS IN LIBERAL STUDIES

The Bachelor of Arts in Liberal Studies requires a minimum of 120 units which includes courses for the major, General Education, all University requirements, and free electives. The 27 units of core courses are required of all majors. In addition, students must take the 24-unit option under either the Elementary Education Plan or the Interdisciplinary Thematic Plan. Each course counted for the major must be completed with a grade of "C" (2.0) or higher.

**Core Courses (27 units)**

Liberal Studies 300 Introduction to Liberal Studies (3)
Liberal Studies 301 Inquiry and Composition in Liberal Studies (3)*
History/Liberal Studies 302A Historical Dimension of Liberal Studies (3)

History/Liberal Studies 302B Historical Dimension of Liberal Studies (3)
Liberal Studies 303 Liberal Studies in the Humanities and Arts (3)
Liberal Studies 304 Liberal Studies in the Sciences (3)
Liberal Studies 305 Liberal Studies in the Social Sciences (3)
Liberal Studies/Philosophy 401 Knowledge in the Arts and Sciences (3)

*Fulfills the course requirement of the university upper-division baccalaureate writing requirement for Liberal Studies majors.

One of the following Senior Seminars:

Liberal Studies 485 Senior Seminar in Cultural Diversity (3)
Liberal Studies 486 Senior Seminar in Humanities and Arts (3)
Liberal Studies 487 Senior Seminar in Evolution and Creation (3)
Liberal Studies 488 Senior Seminar in Environmental Studies (3)
Liberal Studies 489 Senior Seminar in Gender Issues (3)
Liberal Studies 490 Senior Seminar in Great Books (3)
Liberal Studies 491 Senior Seminar in Literature and Science (3)

**Sequence of Core Courses**

Because the core curriculum is designed as an integrated whole and builds upon the student's general education, there is an order in which these courses need to be taken and there are certain prerequisites for them. Introduction to Liberal Studies (Liberal Studies 300) and the Historical Dimension of Liberal Studies come first. The only prerequisite for Introduction to Liberal Studies is the completion of General Education Category I. The Historical Dimension of Liberal Studies 302A requires completion of General Education Category II.A, but transfer students who have not had a course in western civilization or world history will be able to take History 110A (110B) and 302A (302B) concurrently. The Historical Dimension of Liberal Studies 302A, with a grade of at least "C" (2.0), is a prerequisite for The Historical Dimension of Liberal Studies 302B.

The Historical Dimension of Liberal Studies 302B and Liberal Studies 301 Inquiry and Composition in Liberal Studies, are prerequisites for Liberal Studies 303, 304, and 305 because Liberal Studies in the Humanities and Arts, Liberal Studies in Science, and Liberal Studies in the Social Sciences pick up the historical developments where History of Liberal Studies 302B leaves off. Since the courses in these three areas also integrate what the student has learned from general education, completion of General Education Category III. B.1&2 (including Music 101 or an equivalent course or background in basic music theory) is required for Liberal Studies 303; completion of General Education Category III.A.1&2 is required for Liberal Studies 304; and completion of III.C.1 is required for Liberal Studies 305.

Knowledge in the Arts and Sciences and the Senior Seminar come last. Liberal Studies 401 or Philosophy 401 require the completion of Liberal Studies 304 and either Liberal Studies 303 or Liberal Studies 305. The Senior Seminar requires senior standing, the completion of 90 units of college work. Some of the senior seminars have additional prerequisites. Students may take whichever senior seminar they prefer.

**The Elementary Education Plan (24 units)**

The Elementary Education Plan, which is designed for students seeking an elementary or multiple subject teaching credential, provides academic preparation in many of the subject areas taught in the elementary school.

English 303 The Structure of Modern English (3)**
OR English/Linguistics 206 Language Structure and Language Use (3)
One of the following**
English 110 Literature of the Western World from Ancient through Medieval Times (3)
English 111 Literature of the Western World from the Renaissance through the 19th Century (3)

English 211 British Literature to 1760 (3)

English 212 British Literature from 1760 (3)

English 221 American Literature to Whitman (3)

English 222 American Literature from Twain to the Moderns (3)

Comparative Literature 324 World Literature to 1650 (3)*

Comparative Literature 325 World Literature from 1650 (3)*

English 341 Children's Literature (3)*

OR Theatre 311 Oral Interpretation of Children's Literature (3)*

Mathematics 303A,B Fundamental Concepts of Elementary Mathematics (3,3)**

Geology 410 Physical Science Concepts (3)

OR Biology 453 Life Science Concepts (3)

One of the following courses in Cultural Diversity in the Social Sciences*: Afro-Ethnic 304, 310, 311; American Studies 301, 395, 450; Anthropology 350, Asian American Studies 300, 340, 342; Chicano 305, 331; Geography 332; Human Comm 320; Sociology 357; Women's Studies 302.

One of the following courses in Visual and Performing Arts: Art 380, Dance 471, Music 433, Theatre 402A.

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*These courses will also count toward meeting the upper-division requirement for general education.

**In exceptional cases substitutes may be made with the approval of the department chair.

**The Interdisciplinary Thematic Plan (24 units)**

The Interdisciplinary Thematic Plan (ITP) is designed for students who have broad interests that expand beyond the confines of a single department. For these students, the ability to construct their own area of interdisciplinary study by taking advanced course work in several disciplines may be more beneficial than restricting their study to one of the various majors offered by the university. The Interdisciplinary Thematic Plan does not duplicate any existing major, and does not consist of a random collection of courses. It is a well-thought-out, highly individualized group of courses that, even though they come from various departments, have a common subject, focus, or interest.

ITP students may center their course work on an academic interest or may select courses that prepare them for later professional training or for specific careers.

**The Personalized Coordinated Program (21 units)**

ITP students are allowed to select, in consultation with a liberal studies adviser, 21 units of upper-division course work from various departments for the purpose of pursuing an interdisciplinary problem, theme, or issue.

To ensure breadth of knowledge, ITP students are allowed to take (a) no more than 9 units from a single department and (b) no more than 15 units from a single area of knowledge (humanities and arts, science, social sciences). ITP students should have their study plan approved by a liberal studies adviser prior to taking course work.

**The Senior Project (3 units)**

To integrate and synthesize knowledge acquired through their Personalized Coordinated Program, ITP students must complete a senior project (such as a thesis or a creative work relevant to the theme of their Personalized Coordinated Program) by enrolling in three units of Independent Study (499) with a professor of their choice. During the semester prior to their enrollment in Independent Study (499), ITP students must attain the consent of a CSUF faculty member to supervise their Senior Project and must also get written approval of their Senior Project Proposal from a Liberal Studies adviser. Developed in close collaboration with the project supervisor, the proposal shall include a clear statement of the topic, a well-defined approach to the project, a preliminary list of sources, and a specific schedule for the completion of the project, including realistic due dates for drafts or other indications of progress. Written approval of the proposal by both the project supervisor and a Liberal Studies adviser must be achieved before the student will be permitted to enroll in Independent Study (499).

As part of the project approval process, all ITP students are required to attend at least one short Senior Project Workshop during the semester prior to their enrollment in Independent Study (499). Senior Project Workshop will feature presentations by ITP students currently completing their projects as well as a faculty-taught module on techniques and procedures for the successful completion of a research paper or similar project. The workshop provide opportunities for ITP students to learn and gain support from their peers and faculty. No Senior Project Proposal will be approved without proof of the student's attendance at a Senior Project Workshop. In order to graduate, all ITP students are required to present a brief summary of their Senior Project at one of the Senior Project Workshops scheduled during their final semester.

## MINOR IN LIBERAL STUDIES

Students who wish to minor in Liberal Studies complete the following courses:

History/Liberal Studies 302A* The Historical Dimension of Liberal Studies (3)

History/Liberal Studies 302B The Historical Dimension of Liberal Studies (3)

Liberal Studies 303 Liberal Studies in the Humanities and Arts (3)

Liberal Studies 304 Liberal Studies in the Sciences (3)

Liberal Studies 305 Liberal Studies in the Social Sciences (3)

Total units required: 15 units. A grade of "C" (2.0) or better is required in each course.

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*Prior completion or concurrent registration in Liberal Studies 300, although a requirement for Liberal Studies majors, is not a requirement for Liberal Studies minors.

Students who minor in Liberal Studies are expected to attain a general understanding of significant concepts, themes and figures in the three general subject areas covered by the major: the arts and humanities, the social sciences and the natural sciences. Students learn to analyze, evaluate, and apply significant concepts, themes and arguments from the three general subject areas of Liberal Studies. Students should be able to recognize interdisciplinary connections among the three subject areas and synthesize parallel interdisciplinary connections among the three subject areas and synthesize parallel developments within them. They also learn to communicate effectively, in particular by being able to: (1) write clearly and correctly, and (2) analyze and present ideas and subject material coherently.

## LIBERAL STUDIES COURSES

Courses are designated as LBST in the class schedule.

**100 Introduction to the Humanities (3)**

This course is an interdisciplinary introduction to the humanities as a set of related disciplines that apply conceptual, critical, historical, and linguistic analyses to advance our understanding of what it means to be human.

**101 Introduction to the Social Sciences (3)**

This course surveys major topics in the social sciences in order to understand their systematic study of human behavior, to realize the connections among particular issues and approaches, and to reflect critically on modern life.

**300 Introduction to Liberal Studies (3)**

Prerequisite: completion of General Education Category I. Focusing on the natural world as theme, introductory exploration of values and modes of inquiry and expression in the arts and humanities, natural and social sciences.

**301 Inquiry and Composition in Liberal Studies (3)**

Prerequisite: completion of General Education Category I. Exploration of selected thematic interconnections between the arts and humanities, sciences and social sciences through reading, discussion and composition. Satisfies the upper-division writing course requirement for majors in Liberal Studies.

**302A Historical Dimension of Liberal Studies (3)**

(Same as History 302A)

**302B Historical Dimension of Liberal Studies (3)**

(Same as History 302B)

**303 Liberal Studies in the Humanities and Arts (3)**

Prerequisites: Music 101 or equivalent, History 302B, Liberal Studies 301, and completion of General Education Category III.B.2. An interdisciplinary approach to the humanities and arts which examines their purposes, structures and major developments in this century.

**304 Liberal Studies in the Sciences (3)**

Prerequisites: History 302B, Liberal Studies 301, and completion of General Education Categories III.A.1. and III.A.2. An interdisciplinary introduction to the character and aims of 20th-century science, current theories and knowledge, and the role of science and technology in contemporary society.

**305 Liberal Studies in the Social Sciences (3)**

Prerequisites: History 302B, Liberal Studies 301, and completion of General Education Categories III.C.1. An interdisciplinary introduction to modern social science in which major thinkers, ideas, movements and problems will be approached historically, comparatively and analytically.

**310 The California Experience (3)**

Prerequisite: Completion of General Education Category III.C.1. This course examines seven themes in California studies. Students will explore the California experience through readings, films and music and three writing assignments that ask them to research one topic each in the arts/humanities, social sciences and natural sciences in California. (Same as History 310)

**333 Evolution and Creation (3)**

(Same as Philosophy 333)

**401 Knowledge in the Arts and Sciences (3)**

(Same as Philosophy 401)

**485 Senior Seminar in Cultural Diversity (3)**

Prerequisites: senior standing, Liberal Studies 301 and 305, and completion of General Education cultural diversity category. An intensive interdisciplinary study of the historical and cultural experiences of racial and ethnic groups in America. Emphasizes student-led discussions.

**486 Senior Seminar in Humanities and Arts (3)**

Prerequisites: senior standing and Liberal Studies 301 and 303. Intensive interdisciplinary study of selected topics in the humanities and arts. Integrates and builds upon previous classes in Liberal Studies and emphasizes student-led discussions.

**487 Senior Seminar in Evolution and Creation (3)**

Prerequisites: senior standing, Liberal Studies 301 and History 302B. An interdisciplinary examination of the relationship between evolutionary biology and the theology of divine creation. Traces the development of both perspectives from the pre-Darwinian period to the modern era. Emphasizes critical reading of texts and student-led discussions.

**488 Senior Seminar in Environmental Studies (3)**

Prerequisites: senior standing, Liberal Studies 301 and Liberal Studies 304 or 305. An interdisciplinary seminar involving the examination and analysis of environmental problems from the perspectives of the natural sciences and the social sciences. Students participate in class discussions and write papers on environmental topics.

**489 Senior Seminar in Gender Issues (3)**

Prerequisites: senior standing and Liberal Studies 301 and 305. Intensive interdisciplinary study of gender issues in the modern period. Emphasizes student-led discussions.

**490 Senior Seminar in Great Books (3)**

Prerequisites: senior standing, Liberal Studies 301, and History 302B. Intensive study of important books from early civilization to the present. Develops critical reading of texts, clear expression of ideas and integration of knowledge. Emphasizes student-led discussions.

**491 Senior Seminar in Literature and Sciences (3)**

Prerequisites: senior standing, Liberal Studies 301, and History 302B. An interdisciplinary examination of the relationships between literary and scientific communities, and of literature as a forum for the critique, appraisal, and assessment of science in culture.

**499 Independent Study (1-3)**

Prerequisites: consent of instructor and approval by Liberal Studies department chair. Individually supervised studies and/or projects. May be repeated once for credit.


## INTRODUCTION

Linguistics is the study of language. Like other rapidly developing fields, linguistics resists simple classification into one of the traditional categories of academic disciplines. As one of the humanities, linguistics is concerned with the historical development of a particular language or language family. As a social science, linguistics may be related to anthropology in describing language as part of culture; or it may be related to physics in describing phonetics; it may even be considered a natural science, related to the physical science of acoustics and the biological sciences of anatomy and physiology. As an applied science, linguistics has found many applications in fields as far apart as language pedagogy, speech therapy, and computer programming. Finally, linguistics may be considered a formal science in its own right, related to mathematics and logic.

The interdisciplinary aspects of linguistic study are reflected in the organization of the program which offers a core of general linguistics courses and draws upon linguistically related courses in other departments.

Graduates use the major in linguistics for a liberal arts base in language-related fields. With advanced work, they enter teaching, language research, translation, and linguistic field work, as well as such professional fields as law or teaching English as a second language.

The Bachelor of Arts is for students with an exceptional interest in and aptitude for the study of language. The essential relationships between language and thought and language and culture, the structure of modern languages as well as English, the historical study of language, and formal techniques and methodologies are the theoretical foundations of linguistic analysis.

The M.A. in Linguistics builds upon a foundation of undergraduate study in linguistics and allied areas, such as foreign languages, English language, anthropology, human communication and related areas in psychology and philosophy. The program emphasizes strong preparation in general linguistics and offers the opportunity to specialize in one of several areas.

The relationship between linguistics and other disciplines and the application of its techniques, findings and insights to such activities as language teaching are treated in interdisciplinary courses and seminars.

### Student Awards

Each year the program honors an outstanding undergraduate student with the Award for Excellence in Undergraduate Linguistics. The Patricia Bruner Memorial Award is awarded annually to a student in the M.A. program in recognition of a distinguished graduate project or academic record.

## BACHELOR OF ARTS IN LINGUISTICS

The B.A. in Linguistics requires a minimum of 120 units which includes courses for the major, General Education, all university requirements, and free electives. A grade of "C" (2.0) or better is required in all courses applied to the major.

### Language Requirement

Linguistics majors are required to take two progressive semesters of any two languages or four progressive semesters of any one language.

### Core Requirements (15 units)

Linguistics 351 Introduction to Linguistic Phonetics and Phonology (3)
Linguistics 406 Descriptive Linguistics (3)
Linguistics 408 Syntax (3)
Linguistics 412 Sociolinguistics (3)
Linguistics 430 Historical Linguistics (3)

## PROGRAM COORDINATOR

Joseph Sawicki

## PROGRAM OFFICE

University Hall 323

## DEPARTMENT WEBSITE

http://hss.fullerton.edu/linguistics

## PROGRAMS OFFERED

Bachelor of Arts in Linguistics
Minor in Linguistics
Master of Arts in Linguistics

## FACULTY

Juan Carlos Gallego (Modern Languages), Angela Della Volpe (English), Janet Eyring (Modern Languages), Ronald Harmon (Modern Languages), Alan Kaye (English), Kurt P. Kitselman (Human Communication), Thomas P. Klammer (English), Edith C. Li (Human Communication), Franz Müller (English), James Santucci (Comparative Religion), Setsue Shibata (Modern Languages),

## ADVISERS

Undergraduate: Franz Müller
Graduate: Franz Müller

**Electives (18 units)**

Two must be from linguistics upper-division courses other than those listed as required above; and four may be selected from linguistics upper-division courses or from the courses listed below:

Child Development 312 Human Growth and Development (3)
English 303 The Structure of Modern English (3)
Modern Languages, any upper-division course (3)
Philosophy 368 First Course in Symbolic Logic (3)
Psychology 415 Cognitive Processes (3)

Students must consult with an adviser in linguistics before establishing their individual programs of study. Other courses in the university may be taken as electives with the permission of the adviser.

## MINOR IN LINGUISTICS

The minor in linguistics provides a solid introduction to the scientific study of language for students in a related major field. Students are required to take: Linguistics 106, Linguistics 351 and Linguistics 406. In addition, 12 units in elective courses selected with the approval of the undergraduate adviser are required. It is thus possible to tailor the minor to individual needs in rounding out a course of study in the student's major area of specialization. A grade of "C" or better is required in all courses applied to the minor.

## MASTER OF ARTS IN LINGUISTICS

**Application Deadlines**

The deadlines for completing online applications are March 1st for the fall semester and October 1st for the spring semester (see www.csumentor.edu). Mailed applications need to be postmarked by the same deadlines. However, deadlines may be changed based upon enrollment projections. Check the university graduate studies website for current information www.fullerton.edu/graduate/.

**Admission to Graduate Standing: Conditionally Classified**

Requirements include a bachelor's degree from an accredited institution and a minimum GPA of 2.50 in the last 60 semester units attempted.

**Graduate Standing: Classified**

Classified graduate standing requires a bachelor's degree in Linguistics or a related field from an accredited institution with at least 3.0 grade-point average in the major courses provided that a minimum of 24 units of upper-division course work is included.

If the student holds a bachelor's degree in a major other than Linguistics, 24 units of upper-division course work in Linguistics with a minimum of 3.0 grade-point average must have been completed. Included among the 24 units of course work must be the following courses or their equivalents:

Linguistics 351 Introduction to Linguistic Phonetics and Phonology (3)
Linguistics 406 Descriptive Linguistics (3)
Linguistics 408 Syntax (3)
Linguistics 412 Sociolinguistics (3)
Linguistics 430 Historical Linguistics (3)

A student who has not completed one or more of the preceding four courses may enroll in the required course(s) concurrently with graduate course work in the program.

If the student lacks the prerequisite number of linguistics courses, they must be made up before commencing the master's degree program, with at least a 3.0 GPA in such makeup course work. In the event that the student's GPA in prerequisite Linguistics courses is less than 3.0, six to nine units of probationary, adviser-approved course work may be assigned. If the GPA in these probationary courses is 3.0 or better, the student may be classified. Some courses taken to make up qualitative deficiencies may be credited toward the M.A., if completed with a grade of "B" (3.0) or better, and if applicable to the student's particular study plan. Courses taken to remove quantitative deficiencies may not be applied to the M.A. program.

Knowledge of one foreign language is required (equivalent of Modern Languages 317 course). Students without course work in a foreign language may demonstrate proficiency by a score of average or better on the MLA-ETS Proficiency Examination for Advanced Students. Work toward fulfillment of this requirement may be taken concurrently with graduate work in linguistics.

Modifications of certain prerequisite requirements may be permitted in exceptional circumstances.

A study plan must be developed and approved for admission to classified graduate standing.

## M.A. STUDY PLAN REQUIREMENTS

**Descriptive and Historical Linguistics (15 units)**

Linguistics 501 Research Methods and Bibliography (3)
Linguistics 505 Phonological Analysis (3)
Linguistics 507 Grammatical Analysis (3)
Linguistics 508 Theories of Syntax (3)
Linguistics 530 Graduate Seminar: Historical Linguistics (3)

**Specialized Electives (9 units)**

Course work selected from any one of the following five areas of specialization, including other courses in the university with the approval of the adviser:

*Applied Linguistics*

English 303 Structure of Modern English (3)
FLED 532 Technology and Second Language Learning (3)
French 466 Introduction to French Linguistics (3)
French 599 Independent Graduate Research (1-3)
German 466 Introduction to German Linguistics (3)
German 599 Independent Graduate Research (1-3)
Linguistics 305 The English Language in America (3)
Linguistics 307 Speech/Language Development (3)
Linguistics 416 Anthropological Linguistics (3)

Linguistics 599 Independent Graduate Research (1-3)
Spanish 466 Spanish Phonology and Dialectology (3)
Spanish 467 Spanish Morphology and Syntax (3)
Spanish 468 Spanish/English Bilingualism and Language Contact (3)
Spanish 599 Independent Graduate Research (1-3)
TESOL 468 Language Transfer and TESOL (3)
TESOL 509 Advanced Principles of TESOL: Listening/Speaking (3)
TESOL 510 Advanced Principles of TESOL: Reading and Writing (3)
TESOL 515 Pedagogical Grammar in TESOL (3)
TESOL 527 Second Language Acquisition (3)
TESOL 560 Second Language Assessment (3)

*Anthropological Linguistics*
Anthro 599 Independent Graduate Research (1-3)
Linguistics 416 Anthropological Linguistics (3)
Linguistics 599 Independent Graduate Research (1-3)
TESOL 400 Fundamentals in TESOL (3)
TESOL 468 Language Transfer and TESOL (3)

*Analysis of Specific Language Structures*
English 599 Independent Graduate Research (1-3)
French 466 Introduction to French Linguistics (3)
French 500 Graduate Seminar: Advanced Structure and Style (3)
French 530 Graduate Seminar: Historical Linguistics (3)
French 599 Independent Graduate Research (1-3)
German 466 Introduction to German Linguistics (3)
German 500 Graduate Seminar: Advanced Structure and Style (3)
German 530 Graduate Seminar: Historical Linguistics (3)
German 599 Independent Graduate Research (1-3)
Japanese 466 Introduction to Japanese Linguistics (3)
Japanese 468 Japanese-English Contrastive Analysis (3)
Linguistics 599 Independent Graduate Research (1-3)
Spanish 466 Spanish Morphology and Dialectology (3)
Spanish 500 Graduate Seminar: Advanced Structure and Style (3)
Spanish 530 Graduate Seminar: Historical Linguistics (3)
Spanish 599 Independent Graduate Research (1-3)
TESOL 468 Language Transfer and TESOL (3)

*Communication and Semantics*
Anthro 599 Independent Graduate Research (1-3)
Human Comm 599 Independent Graduate Research (1-3)
Linguistics 416 Anthropological Linguistics (3)
Linguistics 417 Psycholinguistics (3)
Linguistics 442 Changing Words: History, Semantics and Translation (3)
Linguistics 599 Independent Graduate Research (1-3)

*Disorders of Communication*
Human Comm 461 Audiology and Audiometry (3)
Human Comm 472 Voice and Craniofacial Disorders (3)
Human Comm 475 Fluency Disorders (3)
Human Comm 599 Independent Graduate Research (1-3)
Linguistics 307 Speech/Language Development (3)
Linguistics 369 Language, Sex Roles, and the Brain (3)
Linguistics 417 Psycholinguistics (3)
Linguistics 599 Independent Graduate Research (1-3)
**Linguistics or a Related Field Elective (3 units)**
**Linguistics 597 Project (3 units)**

A minimum of 15 units in 500-level courses is required. Satisfactory completion of a written comprehensive examination is required at the conclusion of the program. The examination may be repeated only once. A reading list for the examination and specifications for the project are available in the program office.

For further information, consult the graduate adviser.

## LINGUISTICS COURSES

Courses are designated as LING in the class schedule.

**106 Language and Linguistics (3)**
The nature of language, its origin and development; language in culture, the structure of language and its systems of writing and transcription, and its application to other areas of humanistic and scientific knowledge.

**108 Linguistics and Minority Dialects (3)**
The sounds, meanings and vocabulary of Afro-American, Chicano, and other English dialects and their historical origin. (Same as Chicana/o Studies 108 and Afro-Ethnic Studies 108)

**206 Introduction to Language Structure and Language Use (3)**
(Same as English 206)

**301 Sanskrit (3)**
An introduction to the Devanagari script as well as the phonology, morphology and syntax of the Sanskrit language. A reading knowledge of Sanskrit will be the main goal of the course. (Same as Comparative Religion 301)

**305 The English Language in America (3)**
(Same as English 305)

**307 Speech/Language Development (3)**
(Same as Human Communication 307)

**351 Introduction to Linguistic Phonetics and Phonology (3)**
The nature and structure of sound systems in language. A thorough investigation of the International Phonetic Alphabet as applied to many different languages including English. Language Acquisition (L1) and Language Learning (L2); analytic methods and techniques.

**360 Nonverbal Communication (3)**
Prerequisite: Linguistics 106 or Human Communication 100. The physical actions, gestures and changes in the physiognomy that occur together with language and paralanguage in human communication; substitutions for language and modifications of it in varying cultures. (Same as Human Communication 360)

**369 Language, Sex Roles, and the Brain (3)**
Examines how gender socialization is reflected in the structure and use of language and whether gender differences in language are biologically based or a consequence of sex roles.

**406 Descriptive Linguistics (3)**
A study of the sounds (phonology), forms and meanings (morphology), and syntax of languages. Examples and problem-solving in various languages will be emphasized. (Same as Anthropology 406)

**408 Syntax (3)**

Prerequisite: one of the following: Linguistics 106, 406, or English 303. The study of sentence structure in human language. Practice in syntactic analysis in a variety of languages.

**412 Sociolinguistics (3)**

Prerequisite: Linguistics 406 or equivalent. Social dialects in relation to the surrounding communities. Social stratification, acculturation, language maintenance, standardization, language planning and language change.

**416 Anthropological Linguistics (3)**

(Same as Anthropology 416)

**417 Psycholinguistics (3)**

(Same as Psychology 417)

**430 Historical Linguistics (3)**

Prerequisite: Linguistics 406 or its equivalent. The comparative method in diachronic linguistic methodology and theory, graphemics, glottochronology, language families, dialect geography and internal reconstruction. Fulfills the course requirement of the university upper division baccalaureate writing requirement for linguistics majors.

**442 Changing Words: History, Semantics, and Translation (3)**

Prerequisite: Linguistics 351 or 430. Study of etymology, related problems of lexicography and translation. Recent developments in theory of semantic change as related to cultural shifts. Emphasis on words, collocations, idioms. (Same as English 442)

**492 Linguistic Fieldwork (3)**

Prerequisite: Linguistics 351 or 406. Methodology and practice of linguistic analysis and language description as practiced in the field. Data collection and processing of a non-Indo-European linguistic structure using native informants. May be repeated for credit.

**499 Independent Study (1-3)**

Supervised projects with consent of program coordinator. Topic varies with the student. May be repeated for credit.

**501 Research Methods and Bibliography (3)**

Prerequisites: graduate standing and Linguistics 406, or equivalent. Principal books, periodicals and collections in general linguistics, specific languages and related fields; techniques of preparing research papers and field reports in linguistics. Must be taken prior to Linguistics 597.

**505 Phonological Analysis (3)**

Prerequisites: Linguistics 351 and 406. Phonological systems that occur in languages; emphasis on terminology used to describe changes in the system and processes affecting it; problem solving of selected language data.

**507 Grammatical Analysis (3)**

Prerequisite: Linguistics 406. Word formation in a variety of languages with emphasis on the terminology used to describe morphological representation on various levels; problem solving of selected language data. (Same as Anthropology 507)

**508 Theories of Syntax (3)**

Prerequisite: Linguistics 408 or equivalent. Contemporary theories of grammar, such as transformational-generative, with emphasis on theoretical problems in the analysis of language structure.

**509 Advanced Principles of TESOL: Listening/Speaking Focus (3)**

(Same as TESOL 509)

**510 Advanced Principles of TESOL: Reading/Writing Focus (3)**

(Same as TESOL 510)

**530 Graduate Seminar: Historical Linguistics (3)**

Prerequisite: Linguistics 430 or its equivalent. The history of language, including principles and techniques for the historical study and classification of individual languages and language families, writing systems, lexicostatistical methods and linguistic geography.

**597 Project (3)**

Prerequisite: Linguistics 501. Preparation and completion of an approved project

**599 Independent Graduate Research (1-3)**

Prerequisites: graduate standing and consent of program coordinator. May be repeated for credit.


## INTRODUCTION

Managers are needed in a wide variety of different types of organizations – business and non-business, large and small, foreign and domestic. In all of these organizations, managers need technical, human and conceptual skills to help achieve organizational goals.

Management courses are designed to teach the fundamental principles underlying organizations, to emphasize education which will improve students' thought processes, to provide familiarity with the analytical tools of management, and to develop in the student an ability to use the techniques involved in analyzing and evaluating managerial problems and making sound decisions.

Students may pursue a wide variety of academic and career interests through four different management emphases. These emphases include: (1) general management, (2) human resources management, (3) operations management, and (4) law. The entrepreneurship concentration is also housed in the management department.

**Advisers**

The Business Advising Center, Langsdorf Hall 731, provides information on admissions, curriculum and graduation requirements; registration and grading procedures; residence and similar academic matters. In addition, the Management Department provides advising on career opportunities within the Management and Entrepreneurship Concentrations:

| | |
|---|---|
| Business Law | Richard Parry |
| Entrepreneurship | Michael Ames |
| General Management | Farouk Abdelwahed |
| International Management | Peng Chan |
| Human Resources | Treena Gillespie/Paula Silva |
| Operations Management | Seungwook Park |
| Graduate Program | Ellen Dumond |

**Credential Information**

For students interested in a teaching credential, the Management Department offers courses which may be included in the Subject Matter Preparation and Supplementary Authorization Programs for secondary teaching.

Further information on the requirements for teaching credentials is found in the Teaching Credential Programs section of this catalog and is also available from the Department of Secondary Education. Students interested in exploring careers in teaching at the elementary or secondary school levels should contact the Office of Admission to Teacher Education (714-278-3352).

**Awards in Management**

The Gus Berger Award/Operations Management

The H. Peter Guertin/APICS Orange County Chapter Scholarship

Outstanding Management Student Award

Human Resource Management Scholarship

## BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

See "Business Administration Degrees, Concentrations in Entrepreneurship and Management."

## MASTER OF BUSINESS ADMINISTRATION

See "Business Administration, MBA"

## DEPARTMENT CHAIR

Ellen Dumond

## DEPARTMENT OFFICE

Langsdorf Hall 640

## DEPARTMENT WEBSITE

www.business.fullerton.edu/management

## PROGRAMS OFFERED

Bachelor of Arts in Business Administration

- Concentration in Entrepreneurship
- Concentration in Management

Master of Business Administration

- Concentration in Entrepreneurship
- Concentration in Management

## FACULTY

Farouk Abdelwahed, Michael Ames, Thomas Apke, Peng Chan, Paul Choi, Ellen Dumond, Harold Fraser, Adelina Gnantlet, Gamini Gunawardane, Thomas Johnson, Dmitry Khanin, Casey Kleindienst, Brian Kleiner, Elliot Kushell, David Leibsohn, Raj Mahto, Gus Manoochehri, Thomas Mayes, Seungwook Park, Richard Parry, Goli Sadri, Paula Silva, Charles Smith, Don Smith, Hamid Tavakolian

## MANAGEMENT COURSES

Courses are designated as MGMT in the class schedule.

**246 Business and Its Legal Environment (3)**

Examines laws and regulations affecting the business environment and managerial decisions including the legal system and methods of dispute resolution. Topics include torts, crimes, contracts, product liability, business organization, employment, antitrust, environmental protection; incorporates ethical considerations and international perspectives. Uses case studies.

**335 Family Business Dynamics (3)**

Prerequisite: completion of lower-division business core. This course is devoted to the study of the unique issues faced by family-owned and operated businesses. The textbooks, lecture, and outside real world projects explore the business, personal, and interpersonal issues associated with family-owned businesses.


**339 Principles of Management and Operations (3)**

Corequisites: Business Admin 301 and InfoSys/DecSci 361A. This course integrates selected general management concepts with operations management concepts and techniques. Emphasis is placed on the development of competencies required for effective planning, designing, operating, controlling and improving processes that produce and deliver quality goods and services.

**340 Organizational Behavior (3)**

Prerequisites: General Education in Social Sciences. Corequisites: Business Admin 301 and InfoSys/DecSci 361A. Social and cultural environments of business. Business ethics. Communication, leadership, motivation, perception, personality development, group dynamics and group growth. Human behavior and organizational design and management practice in American and world wide business.

**343 Human Resource Management (3)**

Prerequisites: Business Admin 301 and Management 340 or equivalent. A survey of the Human Resource Management function in organizations. Topics include the following: Selection, Recruiting, Training, Compensation and Performance Appraisal.

**346 International Law for Business (3)**

Prerequisite: Management 246 or equivalent. Study of the international legal environment in which firms operate. Case studies in the areas of treaties and laws, EU, NAFTA, international contracts, regulation of imports, exports and competition, government policies, enforcement of property rights and issues involving ethical responsibilities.

**348 Commercial Law (3)**

Prerequisite: Management 246 or equivalent. The philosophy, institutions and role of law and ethical considerations in commercial transactions. Case studies in sales, storage and shipment of goods, commercial paper, debtor and creditor rights and remedies, bankruptcy, secured transactions and suretyship.

**349 Law for Small Business (3)**

Prerequisites: Business Admin 301 and Management 246. The philosophy, institutions, and role of law and their practical applications in the areas of interest to the small business person. Product liability, consumer rights, workers' compensation and other topics.

**350 International Business and Management (3)**

Prerequisite: Management 339 or Management 340. This is the fundamental course in international business and international management. It seeks to provide an overview of international business and emphasizes a managerial approach which involves examining the various roles of managers in an international setting.

**421 Operations and Systems Design (3)**

Prerequisite: Management 339. Key management methodologies for design of high-performing service and manufacturing organizations. Focus is on achieving competitiveness and profitability through excellent management of service and product design, process analysis and reengineering, capacity and facility planning, work systems, and technology management.

**422 Operations Planning and Control (3)**

Prerequisite: Management 339. Presents the concepts and techniques to plan output, schedule product and employees, manage inventory, and coordinate activities to better meet customer demand. The use of ERP systems is discussed. Uses cases, research projects, and/or computer software.

**423 Purchasing and Supply Management (3)**

Prerequisites: Management 339. Addresses the operational and strategic role of purchasing/supply management in organizations. Develops skills and knowledge in supplier selection/evaluation, negotiation, cost/price analysis, contract management, global sourcing, commodity analysis, value analysis. Exercises, cases, guest speakers will be used.

**425 Quality Management and Improvement (3)**

Prerequisite: Management 339. Measurement and improvement of productivity and quality in organizations. Focus on problem-solving and process management tools. Case analyses and research projects address issues of people and technology. Learn how to improve your organization: manufacturing or service, department or company.

**426 Global Operations (3)**

Prerequisite: Management 339. Focuses in on the managerial issues related to the "international division of labor" and the resulting operational challenges in the generation and exchange of goods and services across international borders. Issues discussed include outsourcing, benchmarking, facilities and partnerships.

**427 Management of Technology and Innovation (3)**

Prerequisites: Management 339. Focuses on strategic and operational management of technology and innovation decisions, activities, interfaces, policies and programs in contemporary organizations. Issues such as technology development/deployment, innovation dynamics and strategic/economic payoffs are discussed.

**430 Integrated Supply Chain Management (3)**

Prerequisites: Management 339 (or equivalent) and Marketing 351. Study of managing materials, capital and information flows throughout multiple organizations in a supply chain from acquisition of materials to delivery of finished goods and services to the final customers. Presentation and case studies on various issues in supply chain management.

**432 Staffing (3)**

Prerequisite: Management 343 or equivalent. This course examines the theories and techniques related to employee staffing. Topics include the following: planning, legal issues, job analysis, measurement, internal and external recruitment and selection, and decision-making.

**433 Current Issues in Human Resource Management (3)**

Prerequisite: Management 343. Contemporary concepts and procedures in compensation and staffing. Current topics and controversial issues of critical importance to human resource management will be covered.

**434 Compensation (3)**

Prerequisite: Management 343 or equivalent. This course focuses on the development of equitable compensation and benefit programs in order to retain a productive workforce. Topics include the following: job analysis and evaluation, pay structures, salary survey, individual compensation, incentive systems, and benefits.

**435 Management of Service Organizations (3)**

Prerequisite: Management 339. This course presents a highly focused set of concepts required for the successful management of service organizations. Subjects included are service concepts, service delivery processes, strategic positioning, service personnel and technologies, global/regulatory issues, work and quality systems, and performance metrics.

**436 Training and Development (3)**

Prerequisite: Management 343. This course examines the theoretical and practical issues involved in designing and implementing training and development programs in work organizations. Topics include planning and assessment, design and delivery of training initiates to meet organizational needs and evaluation of training effectiveness.

**440 Emerging Issues in Management (3)**

Prerequisites: Management 339 and 340. For upper-division and graduate students. Business and management in America. The interrelationships of technological, economic, political and social forces with the business enterprises and their ethical obligations to owners, employees, consumers and society at large. Open to nonbusiness majors.

**441 Labor-Management Relations (3)**

Prerequisite: Management 340. Impact of labor-management relations upon labor, management, and the public. Proper grievance procedure, collective bargaining and settlement of disputes.

**443 Team Leadership Skills (3)**

Prerequisites: Management 339 and 340 or equivalent. Managerial skills in group dynamics as they relate to team performance. Cultural diversity including value differences and perception. Leadership: problem solving, idea generation, communications and conflict management. Organization change and designs that enhance team effectiveness.

**444 Project Management (3)**

Prerequisite: Management 339. This course presents the principles and techniques of effective project management. It focuses on managerial, organizational and behavioral concepts as well as effective tools, techniques and software for planning, communications, coordination and control of the project.

**445 Employment Law (3)**

Prerequisites: Management 246. Corequisite: Management 343. The study of legal and ethical issues of the employment relationships and environment. Case studies in the area of agency, independent contractors, responsibilities of managing offers, the hiring process, discrimination, wages, hours and benefits, termination, OSHA, workers compensation and other regulations affecting employment. International implications of employment will also be discussed.

**446 Entertainment Business Law (3)**

Prerequisite: Management 246. Study of the legal/business issues of the Entertainment Industry. Topics include: Copyright, trademark, publicity and privacy right, artistic credit, defamation, entertainment contracts, creator control, moral rights, entertainment guilds, business and legal representation of artists, performing rights societies and government regulation.

**447 Internet Legal Issues (3)**

Prerequisites: Management 246; junior, senior or graduate standing in Business Administration. Study of the legal and ethical issues relating to the internet and information technology. Case studies in the areas of intellectual property, e-commerce, on-line contracting, taxation, securities, privacy, obscenity, defamation, information security, network crimes, and global issues.

**449 Seminar in Strategic Management (3)**

Prerequisites: Business Admin 301, all other College of Business and Economics core courses. Integrative cases from top management viewpoint. Administrative processes, ethical-legal-economic implications of business decisions, international applications; organization theory and policy formulation. Individual and team efforts.

**455 Cross-Cultural Management (3)**

Prerequisite: Management 339 or Management 340. This course is designed to challenge you to develop a more comprehensive understanding of the ways in which culture affects management decisions. Not available for graduate degree credit.

**461 Entrepreneurial Management (3)**

Prerequisites: Accounting 201B and Management 339 for CBE students. Accounting 201A and Business Admin 301 for non-CBE students. How to plan organize and control new ventures. Emphasis on setting up business level strategy and corresponding systems to improve venture performance. Casework, research and fieldwork with selected local businesses. Not applicable for graduate degree credit.

**464 Entrepreneurial Leadership (3)**

Prerequisite: Management 340 for CBE students. Coverage of leadership roles, organizational development and human resource management of new ventures. Emphasis on setting up systems to improve venture performance that comply with related laws and regulations. Casework, research and fieldwork with selected local businesses. Not applicable for graduate degree credit.

**465A New Venture Creation and Funding (3)**

Prerequisites: Management 461, Marketing 462, Accounting 463, Management 464. How to develop product and service concepts for new ventures, test the concepts, set business strategy, design operating systems, and develop financial forecasts, while complying with related laws and regulations. Venture teams will prepare business plans and make funding presentations.

**465B New Venture Launch (3)**

Prerequisite: Management 465A. Venture teams will launch new ventures. The new ventures may be start up businesses or new profit centers within existing businesses. Final report and oral presentation on venture results.

**480 Global Strategic Management (3)**

Prerequisites: Business Admin 301, completion of all other International Business core courses. This course deals primarily with the conceptualization, formulation, and implementation of successful global business strategies. Other topics include managing cultural differences, strategic alliances, and strategies for the Pacific Rim and Europe.

**495 Internship (1-3)**

Prerequisites: six units of upper-division management courses including Management 339; concentration in management or international business; consent of department internship adviser; at least junior standing, 2.5 GPA and one semester in residence at the university. Planned and supervised work experience. May be repeated for credit up to a total of six units. Credit/No Credit only.

**499 Independent Study (1-3)**

Prerequisites: senior standing and approval by the Department Chair. Open to qualified students desiring to pursue directed independent inquiry. May be repeated for credit. Not open to students on academic probation.

**515 Management of Information in the Corporate Environment (3)**

Prerequisite: classified CBE status. Review and application of management information systems in business. System planning, system design and analysis, use of files, decision support systems, expert systems, and implementation of management information systems.

**516 Operations Management (3)**

Prerequisites: classified CBE status, InfoSys/DecSci 513 (may be taken concurrently), Role of the operations management function in the modern manufacturing and service organization and its interaction with the other functions. Formulation of operations strategy consistent with organizational strategy, operations planning, organization, directing and control activities. Long term and short term decision areas in operations management and decision-making tools and techniques. Global, environmental and ethical issues.

**518 Legal and Ethical Environment of Business (3)**

Prerequisite: classified CBE status. The legal system and case studies in areas of contracts, torts, products liability, employment, business organizations and trade regulation, with consideration of ethical theories and implications as they apply to business practices.

**520 International Legal Environment of Business (3)**

Prerequisite: classified CBE status. Study of the international legal environment in which firms operate. Case studies in the areas of treaties and laws. World Trade Organization, EU, NAFTA, international contracts, dispute resolutions, regulation of imports, export and competition, government policies, enforcement of property rights and issues involving ethical responsibilities.

**524 Seminar in Organizational Behavior and Administration (3)**

Prerequisites: classified CBE status, Management 516 and 518 or equivalent. Human behavior in organizations, studies in organizational theories, and administrative action.

**525 Seminar in Team Leadership Skills (3)**

Prerequisite: Management 524 or equivalent (with instructor's consent). Graduate seminar and workshop to develop hands-on leadership skills to manage high-performance work teams. Topics include methods for self-awareness, making oral presentations, interviewing, stress management, supportive communication, problem solving, influencing and motivating others, managing conflict, empowering, delegating, and team building.

**535 Production/Operations Management (3)**

Prerequisites: Management 516 and InfoSys/DecSci 514. An in-depth study of selected POM topics. Discussions of the operations function role and its importance, identification of the problem areas, and reviewing of the related concepts and techniques, including computer applications. Emphasizing the current POM topics of interest to top management.

**539 Supply Chain Management: Making E-Business Happen (3)**

Prerequisite: Management 516 or equivalent. This course briefly introduces the mechanics and impact of E-business and then focuses on the development of the E-supply chain, a key component of E-business. It discusses the strategic design of E-business and the supply chain, methods of integration throughout the supply chain, and the means by which to develop differentiation of competitive advantage through the supply chain. Articles and cases from both services and manufacturing will be used.

**540 New Venture Leadership and Management (3)**

Prerequisite: Management 516. Coverage of leadership roles, organizational development and human resource management, planning, and control issues for new ventures. Emphasis on setting up operations, and engaging human resources, to better serve customers and improve venture performance. Casework, research and fieldwork with selected local businesses.

**542 Labor and Employment Relations Seminar (3)**

Prerequisites: classified CBE status, Management 516 and 518. An exploration and review of traditional labor relations as well as the developing issues in employment relations involving non-union employees, with a special focus on the various ways of resolving both labor and employment disputes. The seminar will explore collective bargaining, bargaining by objectives, dispute resolution methods in both interest and rights disputes: arbitration, mediation, and fact-finding of both traditional labor disputes involving salaried and professional employees.

**543 Seminar in Human Resource Management (3)**

Prerequisites: classified CBE status, Management 516 and 518. Cases, problems and significant personnel administration literature in personnel administration and human relations.

**547 Comparative Management (3)**

Management practices and processes in five geographical areas; market-structures and management characteristics different from those in the United States. Constraints which vary between countries because of cultural, legal, economic and/or political differences.

**582 Organizational Development and Change (3)**

(Same as Political Science 582)

**599 Independent Graduate Research (1-3)**

Prerequisites: classified CBE status, consent of instructor, consent of the department chair and Associate Dean. May be repeated for credit. Not open to students on academic probation.


## DEPARTMENT CHAIR

Dr. Irene Lange

## DEPARTMENT OFFICE

College Park 900

## DEPARTMENT WEBSITE

www.business.fullerton.edu/marketing

## PROGRAMS OFFERED

Bachelor of Arts in Business Administration
Concentration in Marketing
Master of Business Administration
Concentration in Marketing

## FACULTY

Catherine Atwong, Kevin Bao, Tom Boyd, Susan Cadwallader, Neil Granitz, Scott Greene, Katrin Harich, Paul Hugstad, Mary Joyce, Chiranjeev Kohli, Matthew Lancellotti, Irene Lange, Sunil Thomas

## ADVISERS

The Business Advising Center, Langsdorf Hall 731, provides information on admissions, curriculum and graduation requirements, registration and grading procedures, residence and similar academic matters. In addition, the Marketing Department provides advising on curriculum content and career opportunities.

## INTRODUCTION

Marketing is a basic business function covering a wide range of activities. It includes studying markets, planning products, pricing them, promoting them, selling them, and then delivering these products to customers. People in wholesaling, retailing, advertising agencies, research firms and transportation companies are all working in the marketing area. Any firm which is reviewing its product policies needs marketers to identify the market, choose the products, find where they can be sold and decide on a price for them.

**Credential Information**

For students interested in a teaching credential, the Department of Marketing offers courses which may be included in the Subject Matter Preparation Program for secondary teaching.

Further information on the requirements for teaching credentials is found in the Teaching Programs section of the catalog and is also available from the Department of Secondary Education. Students interested in exploring careers in teaching at the elementary or secondary school levels should contact the Office of Admission to Teacher Education.

**Scholarships and Awards in Marketing**

The Michael T. Ashton Memorial Leadership Award

The Robert M. Olsen Outstanding Marketing Major Award

Honors Networking Program Outstanding Student Award

Anaheim/Orange County Visitor & Convention Bureau Scholarship

Enterprise Rent-A-Car Scholarship

## BACHELOR OF ARTS IN BUSINESS ADMINISTRATION

See "Business Administration, Marketing Concentration."

## MASTER OF BUSINESS ADMINISTRATION DEGREE

See "Business Administration, Marketing Concentration."

## MARKETING COURSES

Courses are designated as MKTG in the class schedule.

**351 Principles of Marketing (3)**

Prerequisite: Economics 202. Corequisites: Business Admin 301, InfoSys/DecSci 361A. Application of current theories and concepts in effectively marketing goods and services to define target customers from a domestic and global perspective. Includes market research, identifying target customers, developing product offers, branding, pricing, marketing communications, and distribution channels. Marketing is critically examined from the perspective of the consumer, economy, technology, legal/political issues, and ethical/social responsibility.

**353 Marketing Information Technology (3)**

Prerequisites: Business Admin 301, InfoSys/DecSci 361A, Marketing 351. Examines information sources, databases and tools applied by marketers to transform data into useful formats for the strategic decision-making process. Includes segmentation, target marketing and positioning, media selection, market share, break-even analysis, pricing, sales forecasting, and profit scenario analysis. Extensive use of Excel spreadsheets, the Internet, and other technology resources.

**370 Consumer Behavior (3)**

Prerequisite: Business Admin 301. Corequisite: Marketing 351. Consumer buying patterns, motivation and search behavior. The consumer decision-making process. Inter-disciplinary concepts from economics, sociology, psychology, cultural anthropology and mass communications. Case analyses and research projects.

**379 Marketing Research Methods (3)**

Prerequisites: Business Admin 301, Marketing 351 and InfoSys/DecSci 361A. Marketing research process. Problem formulation, identifying data sources, data collection, analysis techniques, preparing research reports and application of these concepts to marketing research projects.

**401 Professional Selling (3)**

Prerequisite: Marketing 351. The steps of the sales cycle as an interpersonal influence process. Selling skills and techniques based on communication and buyer behavior concepts. Written sales projects and oral presentations are expected.

**405 Integrating Marketing Communications (3)**

Prerequisite: Marketing 351. Corequisites: Marketing 370 and 379. Examines advertising, public relations, and other marketing communication elements. Students learn to set communication objectives; build IMC budgets; develop, execute and evaluate creative strategies; build media plans; and develop press kits and releases.

**415 Managing the Sales Force (3)**

Prerequisite: Marketing 351. Sales manager's role in organizing and deploying a field sales force, developing effective sales training programs, designing complete motivation and compensation plans, asserting strong leadership and evaluating sales people's performance. Relies heavily on case studies and group discussion.

**425 Retail Marketing Strategy (3)**

Prerequisite: Marketing 351. Evolution of retailing into a global, high technology industry; developing integrated marketing and financial strategies. Strategically positioning the retail offer to establish and maintain relationship with target customers. Examining evolving market conditions, buying behavior, retail venues, channel relationships, information, communication and decision support systems, and merchandise management.

**430 Sports Marketing (3)**

Prerequisite: Marketing 351. Develops understanding of Sports Marketing, its role in business and society. Develops understanding of different functional areas. Students develop the ability to apply theories and knowledge to solve problems faced by Sports Marketers.

**445 International Marketing (3)**

Prerequisites: Business Admin 301 and Marketing 351. Theories of international trade and role of marketing decisions across national boundaries and markets. Focuses on concepts and principles of marketing strategies in organizations from recognition of environmental differences, market assessments, entry alternatives, positions of global interdependence, marketing problems and critical implications. Integrative cases, individual and team efforts emphasized.

**455 Strategic Internet Marketing (3)**

Prerequisite: Marketing 351. Marketing of goods, services, and ideas on the Internet. Integrating e-commerce into a total marketing strategy for businesses ranging from entrepreneurial to multinational corporations. Includes history and emergence of e-commerce, utility of the Internet as a tool to increase effectiveness, efficacy, and competitiveness. Designing effective Web pages.

**462 Marketing for Entrepreneurs (3)**

Prerequisites: Accounting 201B and Marketing 351. Coverage of market analysis for new products and services, competitive analysis, alternatives for entering markets, associated costs, and launch feasibility. Casework, research, and fieldwork with selected local businesses.

**465 Managing Services Marketing (3)**

Prerequisite: Marketing 351. Unique marketing needs and challenges faced by service firms in an increasingly challenging global environment. Specific strategies for marketing services in a variety of industries including entertainment, tourism, hospitality, health care, and financial services. Also includes strategies used by manufacturing firms using service as a competitive strategy.

**475 Export/Import Marketing Strategies (3)**

Prerequisite: Marketing 351. Export and import strategies, including international logistics. In-depth knowledge of the export and import process for both large companies and small international businesses. Understanding of logistics planning and choosing the best incoterms, the export process and the evaluation of alternative export strategies. Understanding import process including outsourcing and other government regulatory requirements and documentation.

**489 Developing Marketing Strategies (3)**

Prerequisites: Marketing 351, 353, 370, 379 and senior standing. Focuses on the development of marketing strategies involving products as well as services. Relies heavily on the case analysis and group interaction. Students will finalize and present portfolio of projects and internships completed over the duration of marketing program.

**495 Internship (3)**

Prerequisites: six units of upper-division marketing courses, including Marketing 351, concentration in marketing or in international business, consent of department chair, at least junior standing, 2.5 GPA and one semester in residence at Cal State Fullerton. Planned and supervised work experience. May be repeated for credit up to a total of six units. Credit/No Credit only.

**499 Independent Study (1-3)**

Prerequisites: senior standing and approval by the Department Chair. Open to undergraduate students desiring to pursue directed independent inquiry. May be repeated for credit. Not open to students on academic probation.

**519 Marketing Management (3)**

Prerequisites: Accounting 510, Economics 515, InfoSys/DecSci 513, 514, Management 516, 518 (may be taken concurrently) and classified CBE status. Examines key marketing concepts and their applications to marketing research, segmentation, selecting target Markets, product development, pricing, promotion and distribution. Develops senior-level executive decision-making skills from global, ethical and socially responsible perspectives. Requires understanding and application in a major project.

**535 Marketing New Ventures (3)**

Prerequisite: Marketing 519. Coverage of market analysis for new products and service, competitive analysis, alternatives for entering markets, associated costs, and launch feasibility. Casework, research, and fieldwork with selected local businesses.

**555 E-Marketing Strategy (3)**

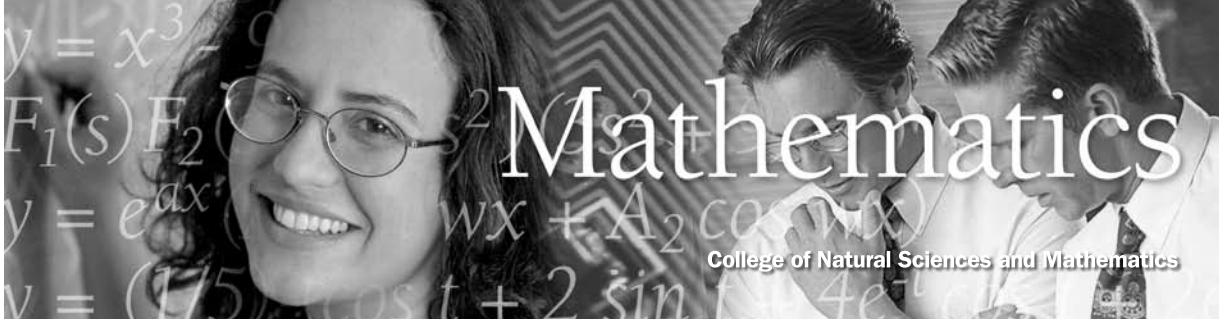
Prerequisite: Marketing 519. Current theory and practice in the area of Internet marketing which presents new opportunities and challenges to traditional marketing approaches. Includes case analyses and development of an integrated marketing plan for an e-commerce business.

**596T Contemporary Topics in Marketing (formerly 596) (3)**

Prerequisites: Marketing 519 or equivalent and classified CBE status. Topics in areas such as information strategy, business-to-business marketing, customer relationship marketing, services consulting, and others. May be repeated three times for credit.

**599 Independent Graduate Research (1-3)**

Prerequisites: classified CBE status, consent of instructor and approval by the Department Chair and Associate Dean. May be repeated for credit. Not open to students on academic probation.




**DEPARTMENT CHAIR**

Paul De Land

**VICE CHAIR**

Martin Bonsangue

**DEPARTMENT OFFICE**

McCarthy Hall 154

**DEPARTMENT WEBSITE**

http://math.fullerton.edu

**PROGRAMS OFFERED**

Bachelor of Arts in Mathematics

- Pure Mathematics Concentration
- Applied Mathematics Concentration
- Probability and Statistics Concentration
- Teaching Mathematics Concentration

Minor in Mathematics

Minor in Mathematics for Teacher Education

Master of Arts in Mathematics

- Teaching Option
- Applied Mathematics Option
- Special Topics Program

Subject Matter Preparation Program for the Single Subject Credential

**FACULTY**

Alfonso Agnew, Gulhan Alpargu, Scott Annin, George Arthur, Martin Bonsangue, Alain Bourget, Cherlyn Converse, Paul De Land, Harriet Edwards, Nicole Engelke, James Friel, Gerald Gannon, William Gearhart, Stephen Goode, Mortaza Jamshidian, Margaret Kidd, Vuryl Klassen, Charles H. Lee, Gerald Legé, Kathy Lewis, HeeJeong Lim, Armando Martinez-Cruz, John Mathews, Tyler McMillen, A. Loc Nguyen, David Pagni, John Pierce, Angel Pineda, Maijian Qian, Nashat Saweris, Harris Shultz, Ernie Solheid, Bogdan Suceava, Yun-Cheng Zee

**INTRODUCTION**

The Department of Mathematics offers a standard undergraduate major program in mathematics with concentrations in pure mathematics, applied mathematics, probability and statistics, and teaching mathematics. Courses are provided to satisfy the needs of:

- Students planning graduate study in mathematics;
- Students planning to use mathematics in a career in business, industry or government;
- Students planning to teach at the elementary or secondary level;
- Students majoring in a discipline using mathematics as an analytic or descriptive tool.

All major programs are designed to give sufficient breadth and depth in the study of mathematics to prepare students for subsequent graduate study in mathematics or related areas.

**BACHELOR OF ARTS IN MATHEMATICS**

The requirements for the Bachelor of Arts in Mathematics consist of:

- The core mathematics courses for the major (28 units).
- Courses in one of four possible concentrations: Pure Mathematics, Applied Mathematics, Probability and Statistics, or Teaching Mathematics (18-20 units). The Pure Mathematics concentration is designed for students planning on graduate study. The Applied and the Probability and Statistics concentrations provide the mathematics needed for certain careers in industry and government. For students interested in teaching in elementary or secondary schools, the Teaching concentration may be combined with programs leading to a teaching credential to meet both university degree requirements and California credential law.
- A computer programming course selected from Mathematics 320 Introduction to Mathematical Computation, Comp Sci 120 Introduction to Programming or Comp Sci 121 Programming Concepts (3 units).
- Courses in one of nine cognates selected from the disciplines of Actuarial Science, Chemistry, Civil Engineering, Computer Science, Economics, Information Systems and Decision Sciences, Mathematics, Physics or Research (9-12). Those students selecting the Computer Science cognate are required to take Comp Sci 120 or 121. Students may not double count Mathematics 320 for the Mathematics cognate and the programming requirement.
- Math 380, the History of Mathematics, which fulfills the University's upper division writing requirement (3 units).

Total units needed to complete the B.A. in Mathematics are 120, which include the 61–66 units required for the major, the 51 units required for general education, and units earned in elective courses (3-8 units). Each course required for the major must be completed with a grade of "C" (2.0) or better, and may not be taken on a credit/no credit basis. Courses required for the major may not be challenged by examination.

During their first year of study each student will develop an individual study plan in consultation with an academic adviser in the Mathematics Department. Normally mathematics majors take Math 150A and Math 150B in their first year. In the second year mathematics majors normally take Math 250A, Math 250B and Math 280. Mathematics 150A may also be used to satisfy the general education requirement in Disciplinary Learning.

**Core Requirements (28 units)**

All students are required to complete the following 28 units:

Math 150A,B Calculus (8)

Math 250A Multivariate Calculus (4)

Math 250B Introduction to Linear Algebra and Differential Equations (4)

Math 280 Strategies of Proof (3)

Math 307 Linear Algebra (3)

Math 335 Mathematical Probability (3)

Math 350 Advanced Calculus I (3)

**Additional Requirements (18-20 units)**

Each student is required to complete one of the following concentrations:

***Pure Mathematics Concentration (18 units)***

Math 302 Modern Algebra (3)

Math 414 Topology (3)

Math 450 Advanced Calculus II (3)

*Three of the following courses:*

Math 407 Abstract Algebra (3)

Math 412 Complex Analysis (3)

Math 425 Differential Geometry (3)

Math 430 Number Theory (3)

Math 471 Combinatorics (3)

***Applied Mathematics Concentration (18 units)***

Math 306 Vector and Tensor Analysis (3)

Math 310 Ordinary Differential Equations (3)

Math 340 Numerical Analysis (3)

*Three courses from the following list, with at least two at the 400 level:*

Math 302 Modern Algebra (3)

Math 370 Mathematical Model Building (3)

Math 375 Discrete Dynamical Systems and Chaos (3)

Math 406 Introduction to Partial Differential Equations (3)

Math 412 Complex Analysis (3)

Math 425 Differential Geometry (3)

Math 435 Mathematical Statistics (3)

OR Math 438 Introduction to Stochastic Processes (3)

Math 440 Advanced Numerical Analysis (3)

Math 450 Advanced Calculus II (3)

Math 470 Advanced Mathematical Model Building (3)

***Probability and Statistics Concentration (20 units)***

Math 338 Statistics Applied to Natural Sciences (4)

Math 435 Mathematical Statistics (3)

Math 436 Advanced Applied Statistics (4)

Math 438 Introduction to Stochastic Processes (3)

Math 439 Intermediate Data Analysis (3)

*And one of the following three courses:*

Math 340 Numerical Analysis (3)

Math 370 Mathematical Model Building (3)

Math 390 Introduction to Actuarial Science (3)

***Teaching Mathematics Concentration (18-19 units)***

Math 302 Modern Algebra (3)

Math 338 Statistics Applied to Natural Sciences (4)

OR Math 370 Mathematical Model Building (3)

OR Math 375 Discrete Dynamical Systems and Chaos (3)

Math 401 Algebra and Probability for the Secondary Teacher (3)

Math 402 Logic and Geometry for the Secondary Teacher (3)

*Two of the following courses:*

Math 407 Abstract Algebra (3)

Math 414 Topology (3)

Math 417 Foundations of Geometry (3)

Math 430 Number Theory (3)

Math 471 Introduction to Combinatorics (3)

**Cognates (9-11 units)**

Each student is required to complete one of the following cognates:

***Actuarial Cognate (9 units)***

Finance 320 Business Finance (3) and
One of the following options:

*Two of the following courses:*

Finance 332 Theory of Corporate Finance (3)

Finance 340 Introduction to Investments (3)

Finance 360 Principles of Insurance (3)

OR InfoSys/DecSci 361B Quantitative Business Analysis: Statistics and Management Science (3) and

InfoSys/DecSci 440 Integrative Decision Tools for Business Operations (3)

***Computer Science Cognate (10 units)***

Comp Sci 131 Data Structures Concepts (3)

Any one of the Comp Sci 223 courses (3)

Comp Sci 240 Computer Organization and Assembly Language (3)

OR Comp Sci 332 File Structures and Database Systems (3)

Comp Sci 253U Workshop in UNIX (1)

***Economics Cognate (9 units)***

Economics 201 Principles of Microeconomics (3)

Economics 202 Principles of Macroeconomics (3)

*One of the following:*

Economics 310 Intermediate Microeconomic Analysis (3)

Economics 320 Intermediate Macroeconomics Analysis (3)

Economics 440 Econometrics (3)

Economics 441 Mathematical Economics (3)

***Information Systems and Decision Sciences Cognate (9 units)***

*Three courses from the following list:*

InfoSys/DecSci 422 Surveys and Sampling Design and Applications (3)

InfoSys/DecSci 465 Linear Programming in Management Science (3)

InfoSys/DecSci 467 Statistical Quality Control (3)

InfoSys/DecSci 472 Design of Experiments (3)

InfoSys/DecSci 474 Data Mining (3)

InfoSys/DecSci 475 Multivariate Analysis (3)

InfoSys/DecSci 490 Queuing and Stochastic Models in Management Science (3)

***Physics Cognate (11 units)***

Physics 225 Fundamental Physics: Mechanics (3)

Physics 225L Fundamental Physics: Laboratory (1)

Physics 226 Fundamental Physics: Electricity and Magnetism (3)

Physics 226L Fundamental Physics: Laboratory (1)

Physics 227 Fundamental Physics: Waves, Optics and Modern Physics (3)

***Chemistry Cognate (10 units)***

Chemistry 120A General Chemistry (5)

Chemistry 120B General Chemistry (5)

***Civil Engineering Cognate (9 units)***

EGCE 201 Statics (3)

EGCE 301 Mechanics of Materials (3)

One of the following:

EGCE 302 Dynamics (3)

EGCE 325 Structural Analysis (3)

***Mathematics Cognate (9 units)***

Three upper-division courses in Mathematics from one of the four concentrations of the Mathematics major other than the student's own concentration.

***Research Cognate (9 units)***

The research cognate is intended for students who would benefit more from research and a thesis than a standard cognate, for example, a student intending to enter graduate school in mathematics. The research student/adviser connection must be established by mutual consent, and prior to enrollment in cognate courses, the undergraduate research committee must approve a cognate plan. The student must pass a thesis defense at the end of the term in which the final cognate courses are completed. Although only one unit of seminar is formally required, it is strongly encouraged that the seminar course be taken during the entire research cognate process. Students should begin the cognate no later than their junior year.

Math 491 Research Seminar (1)

Math 497 Undergraduate Research (3,3)

Math 498 Senior Thesis (2)

**Writing Requirement**

Math 380 will satisfy the University's upper-division writing requirement for mathematics majors.

**Internships in Mathematics**

Internships in applied mathematics provide work experience in advanced mathematics through positions in business, industry or government. Students should contact the Center for Internships and Cooperative Education, LH-209.

## MINOR IN MATHEMATICS

The mathematics minor consists of 25 units of course work which must include Math 150A,B, 250A,B and at least nine units of upper-division mathematics. Math 303A,B, 380, 401, 402, 403A,B, 495, 496 or 499 may not be used to fulfill the requirements for the minor in mathematics. All courses must be completed with a grade of "C" (2.0) or better.

## MINOR IN MATHEMATICS FOR TEACHER EDUCATION

A. For elementary education the minor consists of 20 units of course work selected from the courses offered by the Department of Mathematics. The courses must include Mathematics 150B or 338, and Mathematics 303A,B. All courses must be completed with a grade of "C" (2.0) or better.

B. For secondary education the minor consists of 22 units of course work selected from the courses offered by the Department of Mathematics. The courses must include Mathematics 250B and six units of upper-division courses in mathematics. All courses must be completed with a grade of "C" (2.0) or better.

## SINGLE SUBJECT TEACHING REQUIREMENT IN MATHEMATICS

The Department of Mathematics offers coursework meeting the requirements for California single subject credential in mathematics. For CSUF to recommend this credential, an individual must have completed the department's state-approved Single Subject Matter Preparation Program or equivalent, and have completed the two-semester math education and teacher education program, which includes methodology coursework and the student teaching experience. Students may enter this program in either the fall or spring semester. Students should contact the Department of Secondary Education for information on the application process and orientation meetings.

## MASTER OF ARTS IN MATHEMATICS

The M.A. in Mathematics provides advanced study for students with one or more of the following interests: a Ph.D. program in mathematics or mathematics education, teaching in high school or community college, or using mathematical analysis in government, business or industry. Two options are offered under the M.A. program: Teaching and Applied Mathematics, as well as a Special Topics program.

The Teaching option is designed for those individuals who are presently teaching mathematics at the secondary or community college level. Students must have completed courses in linear algebra, modern algebra and advanced calculus with at least a "B" (3.0) average. In addition, students should have completed a minimum of one year of full-time teaching.

The Applied Mathematics option is designed specifically for individuals who are seeking, or who currently hold positions that involve mathematics or quantitative applications. Students must have completed one semester of mathematical probability and one semester of advanced calculus with grades of "B" (3.0) or better in each course.

The Special Topics program allows the student under certain circumstances to develop a personalized study plan in order to pursue advanced work in mathematics. The courses must be selected from our regular offerings at the undergraduate and graduate level.

**Admission Requirements**

Students are admitted in conditionally classified standing when the following requirements have been met:

- A bachelor's degree from an accredited institution
- A grade-point average of at least 2.5 in the last 60 semester units attempted
- Good standing at the last college attended
- An undergraduate major in mathematics with a 3.0 in all upper-division mathematics courses or a combination of previous course work and work experience approved as equivalent by the graduate committee of the Mathematics Department.

**Classified Standing**

A student's status is changed to classified standing when the following requirements have been met:

- Completion of all prerequisites and/or deficiencies including the University Writing Requirement.
- Development of a study plan approved by the Mathematics Department and Academic Programs. The study plan should be developed prior to the completion of 9 units.

**Teaching Option**

This option, designed for mathematics teachers, requires 30 units of graduate study approved by the graduate committee. At least sixteen of these units must be 500-level mathematics courses. The following course work must be included:

Math 581 Studies in Geometry (3)

Math 582 Studies in Algebra (3)

Math 584 Studies in Analysis (3)

Math 586 Studies in Discrete Mathematics (3)

Math 587 Studies in Mathematical Problem Solving (3)

Math 599 Independent Graduate Research (3-6)

Each student will be required to take adviser-approved mathematics electives to meet the 30-unit requirement, and pass a set of four comprehensive exams. Comprehensive exams may be taken no more than twice.

**Applied Mathematics Option**

The courses for this option have been developed in consultation with mathematicians and scientists in the local industrial community and are specifically intended for individuals who are seeking positions, or who currently hold positions, that involve mathematics or quantitative applications. The subject matter emphasizes modern practical applied mathematics, modeling, problem solving and computation. The culminating experience is a project in which students have the opportunity of working in teams on a real world problem, contracted and paid for by a local industrial firm. Students normally begin this program in the fall semester. All classes are scheduled in the evening and can be taken in sequence in two calendar years, summers included.

Math 489A,B Applicable Analysis and Linear Algebra (3,3)

Math 501A,B Numerical Analysis and Computation I and II (3,3)

Math 502A,B Probability and Statistics I and II (3,3)

Math 503A,B Mathematical Modeling I and II (3,3)

Math 504A,B Simulation Modeling and Analysis (3,3)

Math 597 Project (6)

**Special Topics Program**

The Special Topics program requires a study plan with a minimum of 30 units of course work, planned by the student and the student's adviser, and approved by the graduate committee of the Mathematics Department. At least 16 of these units must be 500-level mathematics courses. Some of the 500-level courses may be accompanied by one unit of Mathematics 599 Independent Graduate Research. Students will also be required to pass a set of comprehensive exams or complete a six-unit project.

**Application Deadline**

The deadlines for completing online applications are March 1st for the fall semester and October 1st for the spring semester (see http://www.csumentor.edu). Mailed applications need to be postmarked by the same deadlines. However, deadlines may be changed based upon enrollment projections. Check the university graduate studies website for current information at http://www.fullerton.edu/graduate/.

**Additional Information**

Part-time teaching opportunities and research assistantships are available for selected graduate students. For more information, contact the Department of Mathematics.

## MATHEMATICS COURSES

Courses are designated as MATH in the class schedule.

**030A Intermediate Algebra-ILE (3)**

Prerequisite: A score of 30 or below on the ELM exam. An intermediate algebra course designed specifically for students who have taken but not passed the ELM exam. Equations and inequalities, algebraic expressions, functions, and sequences and series. Degree credit is not awarded for these courses. Successful completion of Math 30A and 30B satisfies the ELM requirement.

**030B Intermediate Algebra-ILE (3)**

Prerequisite: Math 30A and a score of 30 or below on the ELM exam. An intermediate algebra course designed specifically for students who have taken but not passed the ELM exam. Equations and inequalities, algebraic expressions, functions, and sequences and series. Degree credit is not awarded for these courses. Successful completion of Math 30A and 30B satisfies the ELM requirement.

**040 Intermediate Algebra (3)**

Prerequisite: a score of 32-48 on the ELM exam. An intermediate algebra course designed specifically for students who have taken but not passed the ELM exam. Linear equations and inequalities, polynomial, rational, and radical expressions, quadratic functions, exponential and logarithmic functions, and sequences and series. Degree credit is not awarded for this course. Successful completion satisfies the ELM requirement.

**045 Intermediate Algebra Minicourse (1)**

Prerequisite: a score between 36 and 48 on the ELM exam. An intermediate algebra course designed specifically for students who have taken but not passed the ELM exam. Linear equations, polynomials, rational expressions, radical expressions, quadratic formulas, exponential functions and logarithmic functions. Degree credit is not awarded for this course. Successful completion satisfies the ELM requirement. Offered via Internet only.

**110 Mathematics for Liberal Arts Students (3)**

Prerequisites: passing score on the ELM or exemption and three years of high school mathematics, including two years of algebra and one year of geometry. Survey of traditional and contemporary topics in mathematics, such as elementary logic, counting techniques, probability, graph theory, codes and coding, and the mathematics of the social sciences. For non-science majors. (CAN MATH 2)

**115 College Algebra (4)**

Prerequisites: passing score on the ELM or exemption and three years of high school mathematics, including two years of algebra and one year of geometry. For students planning to take Math 130 or 135. Equations, inequalities, and systems of equations. Properties of functions and their graphs, including polynomial functions, rational functions, exponential and logarithmic functions, with applications. Sequences and series. If both Math 115 and Math 125 are taken, credit is given for second course only. (CAN MATH 10)

**120 Introduction to Probability and Statistics (3)**

Prerequisites: passing score on the ELM or exemption and three years of high school mathematics, including two years of algebra and one year of geometry. Set algebra, finite probability models, sampling, binomial trials, conditional probability and expectation. Recommended for students of economics, business, the biological, geological and social sciences.

**125 Precalculus (5)**

Prerequisites: passing score on the ELM or exemption and three years of high school mathematics, including two years of algebra and one year of geometry. For students planning to take Math 150A. Functions and their use in mathematical models, including linear functions, polynomial and rational functions, exponential and logarithmic functions, and trigonometric functions. If both Math 115 and Math 125 are taken, credit is given for second course only. (CAN MATH 16)

**125W Precalculus Workshop (1)**

Corequisites: Math 125 and consent of instructor. Supplementary problem-solving workshop in a collegial setting. (3 hours workshop)

**130 A Short Course in Calculus (4)**

Prerequisites: three years of high school mathematics, including two years of algebra and one year of geometry; a passing score on the ELM or exemption; and a passing score on the MQE or exemption. Math 115 or Math 125 (with a grade of "C" (2.0) or better) is an MQE exemption. A survey of differential and integral calculus and applications. For students of biological and social sciences, business and economics. If both Math 130 and Math 135 are taken, credit is given for second course only. Six units of credit are given if both Math 130 and Math 150A are taken. (CAN MATH 30)

**135 Business Calculus (3)**

Prerequisites: three years of high school mathematics, including two years of algebra and one year of geometry; a passing score on the ELM or exemption; and a passing score on the MQE or exemption. Math 115 or Math 125 (with a grade of "C" (2.0) or better) is an MQE exemption. A survey of differential and integral calculus with applications, including derivatives, integrals and max-min problems. For students of business and economics. If both Math 130 and Math 135 are taken, credit is given for the second course only. Six units of credit are given if both Math 135 and 150A are taken. (CAN MATH 34)

**150A Calculus (4)**

Prerequisites: four years of high school mathematics, including geometry, two years of algebra and trigonometry; a passing score on the ELM or exemption; and a passing score on the MQE or exemption. Math 125 (with a grade of "C" (2.0) or better) is an MQE exemption. Properties of functions. The limit, derivative, and definite integral concepts; applications of the derivative, techniques and applications of integration. Six units of credit are given for both Math 150A and Math 130 or for both Math 150A and Math 135. (150A = CAN MATH 18, 150B = CAN MATH 20; 150A + 150B = CAN MATH SEQ B; 150A, 150B, + 250A = CAN MATH SEQ C)

**150B Calculus (4)**

Prerequisite: Math 150A or equivalent. Techniques of integration, improper integrals and applications of integration. Introduction to differential equations. Parametric equations; sequences and series; vectors and the geometry of 3-space. (150A = CAN MATH 18, 150B = CAN MATH 20; 150A + 150B = CAN MATH SEQ B; 150A, 150B, + 250A = CAN MATH SEQ C)

**151A Calculus I Workshop (1)**

Corequisites: Math 150A and consent of instructor. Supplementary problem-solving in a collegial setting. (3 hours workshop)

**151B Calculus II Workshop (1)**

Corequisites: Math 150B and consent of instructor. Supplementary problem-solving in a collegial setting. (3 hours workshop)

**196 Student-to-Student Tutorials (1-3)**

Consult "Student-to-Student Tutorials" in this catalog for more complete course description. May be taken Credit/No Credit only.

**250A Multivariate Calculus (4)**

Prerequisites: Math 150A,B or equivalent. Calculus of functions of several variables. Partial derivatives and multiple integrals with applications. Parametric curves, vector-valued functions, vector fields, line integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem. (CAN MATH 22; 150A + 150B + 250A = CAN MATH SEQ C).

**250B Introduction to Linear Algebra and Differential Equations (4)**

Prerequisite: Math 250A. An introduction to the solutions of ordinary differential equations and their relationship to linear algebra. Topics include matrix algebra, systems of linear equations, vector spaces, linear independence, linear transformations and eigenvalues.

**270A Mathematical Structures I (3)**

Prerequisite: four years of high school mathematics. First of two semesters of fundamental discrete mathematical concepts and techniques needed in computer-related disciplines. Logic, truth tables, elementary set theory, proof techniques, combinatorics and Boolean algebra.

**270B Mathematical Structures II (3)**

Prerequisite: Math 270A. Second of two semesters of fundamental discrete mathematical concepts and techniques needed in computer-related disciplines. Graph theory, algebraic structures and linear algebra.

**280 Strategies of Proof (3)**

Prerequisite: Math 150B. Logic, set theory, and methods for constructing proofs of mathematical statements. A bridge to the rigors of upper-division mathematics courses containing significant abstract content.

**302 Modern Algebra (3)**

Prerequisites: Math 250B and Math 280. The integers, rational numbers, real and complex numbers, polynomial domains, introduction to groups, rings, integral domains and fields.

**303A Fundamental Concepts of Elementary Mathematics (3)**

Prerequisite: Completion of a mathematics course that satisfies the General Education requirement. Structure and form of the mathematics that constitutes the core of the K-8 mathematics curriculum, including the real number system, number theory and equations.

**303B Fundamental Concepts of Elementary Mathematics (3)**

Prerequisites: Completion of a mathematics course that satisfies the General Education requirement and a grade of "C" (2.0) or better in Math 303A. Structure and form of the mathematics that constitutes the core of the K-8 mathematics curriculum, including the real number system, number theory and equations.

**306 Vector and Tensor Analysis (3)**

Prerequisite: Math 250B. Vector analysis, including coordinate bases, gradient, divergence, and curl, Green's, Gauss' and Stokes' theorems. Tensor analysis, including the metric tensor, Christoffel symbols and Riemann curvature tensor. Applications will be drawn from differential geometry, continuum mechanics, electromagnetism, general relativity theory.

**307 Linear Algebra (3)**

Prerequisite: Math 250B. Corequisite: Math 280. Introduction to the theory of vector spaces. Linear equations and matrices, determinants, linear transformations and eigenvalues, norms and inner products.

**310 Ordinary Differential Equations (3)**

Prerequisite: Math 250B. Theory and methods of solutions for ordinary differential equations, including Laplace transform methods and power series methods. Oscillation theory for second order linear differential equations and/or theory for systems of linear and nonlinear differential equations.

**320 Introduction to Mathematical Computation (3)**

Corequisite: Math 250B. Introduction to problem-solving on the computer using modern interactive software. Numerical and symbolic computation. A variety of problems arising in mathematics, science, and engineering will be explored. Also serves as preparation for subsequent computer-based courses in mathematical modeling.

**335 Mathematical Probability (3)**

Prerequisite: Math 250A. Probability theory; discrete, continuous, and multivariate probability distributions, independence, conditional probability distribution, expectation, moment generating functions, functions of random variables, and the central limit theorem.

**337 Introduction to Experimental Design and Statistics in the Laboratory Sciences (3)**

Prerequisite: passing score on the ELM or exemption; completion of one of the following courses: Biology 241, 261; Chemistry 120; or Physics 211, 225. Graphical and numerical descriptive statistics; experimental design, randomization, replication, block designs, stratified samples, controlled experiments versus observational studies. Fundamental inference for proportions, means, variances. Analysis of variance, regression. Computer analysis of data from the laboratory sciences, e.g., biology, chemistry, geology.

**338 Statistics Applied to Natural Sciences (4)**

Prerequisite: Math 130 or 150B or consent of instructor. Introduction to the theory and application of statistics. Elementary probability, estimation, hypothesis testing, regression, analysis of variance, non-parametric tests. Computer-aided analysis of real data. Graphical techniques, generating and interpreting statistical output, presentation of analysis (3 hours lecture, 2 hours activity).

**340 Numerical Analysis (3)**

Prerequisites: Math 250B and one of the following: Math 320, Comp Sci 120, Comp Sci 121 or equivalent. Approximate numerical solutions of systems of linear and nonlinear equations, interpolation theory, numerical differentiation and integration, numerical solution of ordinary differential equations. Computer coding of numerical methods.

**350 Advanced Calculus I (3)**

Prerequisite: Math 250B. Corequisite: Math 280. Development of the theoretical foundations of calculus with an emphasis on mathematical rigor and formal proof. Algebraic and topological properties of the real numbers; limits of sequences and functions; continuity, differentiation, and integration of functions of one variable; infinite series.

**368 First Course in Symbolic Logic (3)**

(Same as Philosophy 368)

**370 Mathematical Model Building (3)**

Prerequisite: Math 250B or consent of instructor and one of the following: Math 320, Comp Sci 120, Comp Sci 121 or equivalent. Introduction to mathematical models in science and engineering: dimensional analysis, discrete and continuous dynamical systems, flow and diffusion models.

**375 Discrete Dynamical Systems and Chaos (3)**

Prerequisite: Math 250B or consent of instructor. Analysis of the evolution of linear and nonlinear deterministic discrete systems with emphasis on long range behavior, stability and instability of stationary states and periodic orbits, chaotic orbits, strange attractors, fractional dimension and Lyapunov exponents; examples from current research literature.

**380 History of Mathematics (3)**

Prerequisite: Math 250B. The history of mathematics through its methods and concepts. Designed to help the student become proficient in writing and reading mathematical literature. Satisfies the upper-division writing requirement for mathematics majors.

**390 Introduction to Actuarial Science (3)**

Prerequisite: Math 150B. Corequisites: Math 335 or 338 or InfoSys/DecSci 361A. Fundamentals of actuarial science, including risk theory, interest theory, rate making, loss reserve, and actuarial modeling. Selective corporate finance, investment and insurance topics, such as amortization, bonds, sinking funds, securities, annuities, and pensions.

**401 Algebra and Probability for the Secondary Teacher (3)**

Prerequisites: 12 units of upper-division mathematics exclusive of Math 303A,B and Math 403A,B. Overview of mathematical topics relevant to the teacher of secondary mathematics. Problem-solving approach to areas including algebra, number theory, combinatorics and probability while maintaining an historical perspective.

**402 Logic and Geometry for the Secondary Teacher (3)**

Prerequisites: 12 units of upper-division mathematics exclusive of Math 303A,B and Math 403A,B. A course parallel to Math 401 but with emphasis on geometry, trigonometry and the theory of equations.

**403A Fundamental Concepts of Middle School Mathematics I (3)**

Prerequisite: Math 303B. Designed to provide content background in mathematics to help satisfy credentialing requirements for teaching mathematics at the middle school level. Focuses on gaining a thorough understanding of algebra, including patterns, functions and the use of technology.

**403B Fundamental Concepts of Middle School Mathematics II (3)**

Prerequisite: Math 403A. Designed to provide content background in mathematics to help satisfy credentialing requirements for teaching mathematics at the middle school level. Focuses on gaining a thorough understanding of advanced algebra, geometry, probability and statistics, and the use of technology.

**406 Introduction to Partial Differential Equations (3)**

Prerequisite: Math 306. First order linear and quasi-linear partial differential equations. Classification of second order linear partial differential equations. Fourier analysis, Sturm-Liouville theory, integral transforms, and their application to boundary-value problems for the potential, wave, and diffusion equations.

**407 Abstract Algebra (3)**

Prerequisite: Math 302. Sets, mappings, groups, rings, modules, fields, homomorphisms, advanced topics in vector spaces and theory of linear transformations, matrices, algebras, ideals, field theory, Galois theory.

**412 Complex Analysis (3)**

Prerequisite: Math 350. Complex differentiation and integration, Cauchy's theorem and integral formulas, maximum modulus theorem, harmonic functions, Laurent series, analytic continuation, entire and meromorphic functions, conformal transformations and special functions.

**414 Topology (3)**

Prerequisite: Math 350. Topological spaces and continuous functions, connectedness and compactness, metric spaces and function spaces.

**417 Foundations of Geometry (3)**

Prerequisite: Math 307. A study of the foundations of Euclidean and non-Euclidean geometries through transformations and formal axiomatics.

**425 Differential Geometry (3)**

Prerequisite: Math 307. The differential geometry of curves and surfaces. Frenet-Seret formulas, the Gauss-Weingarten equations, the Gauss-Bonnet theorem.

**430 Number Theory (3)**

Prerequisite: Math 302. Basic concepts of classical number theory with modern applications. Divisibility, congruences. Diophantine approximations and equations, primitive roots, continued fractions. Applications to public key cyprotography, primality testing, factoring methods, and check digits.

**435 Mathematical Statistics (3)**

Prerequisite: Math 335 or equivalent. Statistical theory and its applications, based on the use of calculus.

**436 Advanced Applied Statistics (4)**

(Same as Biology 436)

**438 Introduction to Stochastic Processes (3)**

Prerequisite: Math 335. Stochastic processes including Markov chains, the Poisson Process, the Wiener Process. Applications to birth and death processes and queuing theory.

**439 Intermediate Data Analysis (3)**

Prerequisite: Math 250B or 270B, and 338. Simple and multiple linear regression, testing hypotheses, dummy variables, ANOVA, ANCOVA, confounding and interaction, diagnostics, influence and outliers, transformation and weighting, and model selection. Introductory nonlinear and logistic regression. SAS statistical software will be used.

**440 Advanced Numerical Analysis (3)**

Prerequisite: Math 340. Advanced topics in numerical analysis selected from iterative methods for linear systems, approximation of eigenvalues and eigenvectors, numerical methods for ordinary and partial differential equations, optimization methods and approximation theory. Error and convergence analysis and computer coding.

**450 Advanced Calculus II (3)**

Prerequisite: Math 350. Sequences and series of functions. Continuity, differentiation, and integration of functions of several variables. Advanced topics in analysis, such as Lebesgue integration or the theory of metric spaces.

**470 Advanced Mathematical Model Building (3)**

Prerequisites: Math 307, 335, and 370. A capstone course for students with strong mathematical preparation. Topics may include stochastic models, Monte Carlo integration, simulation of discrete event systems, simulation software, and further studies in dynamic systems and flow and diffusion models.

**471 Combinatorics (3)**

Prerequisite: Math 302 or 307. Analysis of discrete structures, including existence, enumeration, and optimization. Permutations and combinations, combinatorial identities, the inclusion-exclusion principle, recurrence relations, Polya counting. Basic definitions and properties of graphs, Eulerian and Hamiltonian graphs, trees, graph colorings and chromatic number, planar graphs.

**489A Applicable Linear Algebra (3)**

Prerequisites: undergraduate calculus, linear algebra, advanced calculus and consent of instructor. Corequisite: Math 489B. Topics from linear algebra useful in graduate studies in applied mathematics. Finite and infinite dimensional vector spaces, linear transformations and matrices. An introduction to Hilbert spaces. The projection theorem and some of its applications.

**489B Applicable Analysis (3)**

Prerequisites: undergraduate calculus, linear algebra, advanced calculus and consent of instructor. Corequisite: Math 489A. Topics from analysis useful in graduate studies in applied mathematics. Topics may include initial and boundary value problems, including series solutions, eigenvalues and eigenfunctions, Fourier analysis, generalized functions, an introduction to the calculus of variations, and transform methods.

**491 Research Seminar (1)**

Prerequisite: consent of instructor. Corequisite: Math 497 or 498. Students are required to attend the weekly undergraduate research seminars and give at least one seminar presentation as determined by the faculty adviser. May be repeated for credit.

**495 Internship in Applied Mathematics (1-3)**

Prerequisites: 15 units of upper-division mathematics and consent of instructor. Work experience in advanced mathematics through positions in business, industry or government.

**496 Student-to-Student Tutorials (1-3)**

Consult "Student-to-Student Tutorials" in this catalog for more complete course description. May be taken Credit/No Credit only.

**497 Undergraduate Research (1-3)**

Prerequisites: nine units of upper-division math and consent of instructor. Methods of research in the mathematical sciences through a research project supervised by a departmental faculty. May be repeated for up to 6 units credit towards major.

**498 Senior Thesis (2)**

Prerequisites: six units Math 497 (up to 2 units concurrently) and consent of instructor. Preparation, presentation, and defense of thesis. Topic approved by the undergraduate research committee. Thesis formatted in accordance with journal in field. May not be repeated for credit.

**499 Independent Study (1-3)**

Prerequisite: consent of instructor. Special topic in mathematics, selected in consultation with and completed under supervision of instructor.

**501A Numerical Analysis and Computation I (3)**

Prerequisites: Math 489A,B. Corequisite: Math 501B. Numerical methods for linear and nonlinear systems of equations, eigenvalue problems. Interpolation and approximation, spline functions, numerical differentiation, integration and function evaluation. Error analysis, comparison, limitations of algorithms.

**501B Numerical Analysis and Computation II (3)**

Prerequisites: Math 489A,B. Corequisite: Math 501A. Numerical methods for initial and boundary-value problems for ordinary and partial differential equations. The finite element method. Error analysis, comparison, limitations of algorithms.

**502A Probability and Statistics I (3)**

Prerequisites: Math 335, 489A,B. Corequisite: Math 502B. Theory and applications of probability models including univariate and multivariate distributions; expectations and transformations of random variables. Must be taken prior to or concurrently with Math 502B.

**502B Probability and Statistics II (3)**

Prerequisite: Math 335, 489A,B. Corequisite: Math 502A. Theory and applications of sampling theory, statistical estimation, and hypothesis testing. Must be taken after or concurrently with Math 502A.

**503A Mathematical Modeling I (3)**

Prerequisites: Math 489A,B and 501A,B. Mathematical modeling concepts. Topics may include: dimensional analysis, scaling, and sensitivity; system concepts, state space, observability, controllability, and feedback; dynamical systems, models and stability analysis; optimization models.

**503B Mathematical Modeling II (3)**

Prerequisite: Math 503A. Development and analysis of mathematical models in such areas as mechanics, economic planning, operations management, environmental and ecological sciences, biology and medicine.

**504A Simulation Modeling and Analysis (3)**

Prerequisites: Math 501A,B; 502A,B; 503A,B. Corequisite: Math 504B. Advanced techniques of simulation modeling, including the design of Monte Carlo, discrete event, and continuous simulations. Topics may include output data analysis, comparing alternative system configurations, variance-reduction techniques, and experimental design and optimization.

**504B Applications of Simulation Modeling Techniques (3)**

Prerequisites: Math 501A,B; 502A,B; 503A,B. Corequisite: Math 504A. Introduction to a modern simulation language, and its application to simulation modeling. Topics will include development of computer models to demonstrate the techniques of simulation modeling, model verification, model validation, and methods of error analysis.

**581 Studies in Geometry (3)**

Prerequisites: Math 307, graduate standing, plus one year of full-time teaching in secondary school mathematics. Topics relating to the high school curriculum from an advanced standpoint including the axiomatic method and non-Euclidean geometry.

**582 Studies in Algebra (3)**

Prerequisites: Math 302, graduate standing, plus one year of full-time teaching in secondary school mathematics. Topics relating to the high school curriculum from an advanced standpoint including algorithms, fields and polynomials.

**583 Topics in Statistics (3)**

Prerequisite: Math 338, graduate standing, plus one year of full-time teaching in secondary school mathematics. Calculus based course is designed to teach appropriate strategies and tools to effectively address problems in statistics. Includes project design, exploratory data analysis and interpretation, and effective communication of results.

**584 Studies in Analysis (3)**

Prerequisites: Math 350, graduate standing, plus one year of full-time teaching in secondary school mathematics. Topics relating to the high school curriculum from an advanced standpoint including limits, continuity, differentiation and integration.

**586 Studies in Discrete Mathematics (3)**

Prerequisites: Math 335 and one of the following: Math 320, Comp Sci 120, Comp Sci 121 or equivalent; graduate standing and one year of full time teaching in secondary school mathematics. Topics relating to the high school curriculum from an advanced standpoint including combinatorics, probability, matrices, and linear programming.

**587 Studies in Mathematical Problem Solving (3)**

Prerequisites: Math 302, graduate standing, plus one year of full-time teaching in secondary school mathematics. Problem solving via non-routine and enrichment-type problems from several branches of mathematics.

**597 Project (3)**

Prerequisite: consent of instructor. May be repeated for credit. Students in the Applied Master's Program earn a total of 6 units

**599 Independent Graduate Research (1-3)**

Prerequisites: graduate standing and consent of instructor. One unit required for each regular graduate course. Also offered without being attached to any course. May be repeated for credit.

## MATHEMATICS EDUCATION COURSES

Courses are designated as MAED in the class schedule

**442 Teaching Mathematics in Secondary School (3)**

Prerequisite: admission to Teacher Education Program in Mathematics or consent of instructor. Objectives, methods, and materials and technology for teaching mathematics. Required before student teaching, of mathematics majors for the general single subject credential. (2 hours lecture, 2 hours activity)

**449E Externship in Secondary Teaching (3)**

See description under Department of Secondary Education.

**449I Internship in Secondary Teaching (10)**

See description under Department of Secondary Education.

**449S Seminar in Secondary Teaching (3)**

See description under Department of Secondary Education.

**499 Independent Study (1-3)**

Prerequisite: consent of instructor. Special topic in mathematics education, selected in consultation with and completed under supervision of the instructor. May be repeated for credit.

**530 Teaching Problem Solving in Middle School (3)**

Prerequisite: Math 403B. Seminar to explore techniques of problem solving for mathematics teachers of grades 5-9. Review of research on problem solving at the middle school level. Review of state and national documents on middle school mathematics education. Emphasis on problem solving in algebra, geometry and probability.


**DEPARTMENT CHAIR**

Hossein Moini

**DEPARTMENT OFFICE**

Engineering 100

**PROGRAMS OFFERED**

Bachelor of Science in Mechanical Engineering

Manufacturing Engineering Emphasis

Master of Science in Mechanical Engineering

**DEPARTMENT WEBSITE**

http://www.fullerton.edu/ecs

**FACULTY**

Andy Bazar, Jesa Kreiner, Timothy Lancey, Hossein Moini, Peter Othmer, James Rizza, Hasan Sehitoglu

**ADVISER**

Undergraduate/Graduate Program Adviser: (Vacant)

## MECHANICAL ENGINEERING VISION, MISSION, STRATEGIES AND EDUCATIONAL OBJECTIVES

**Mechanical Engineering Vision Statement**

The Mechanical Engineering Department's vision is to be recognized as one of the high quality mechanical engineering programs in Southern California.

**Mechanical Engineering Mission Statement**

Consistent with the University's Mission, learning is the first priority in the Mechanical Engineering Department. To implement our mission, we provide the best qualities of teaching, scholarship and professional practice. The Department is committed to facilitating the education of the mechanical engineering undergraduate and graduate students by following the Department's Program Educational Objectives.

**Mechanical Engineering Strategies**

The Mechanical Engineering Department wishes to realize its vision, and accomplish its mission by:

- strengthening the Department's partnerships with its stakeholders and community;
- enhancing the quality of the Mechanical Engineering program through systematic assessments and feedback; and
- integrating emerging fields within the curriculum.

**Program Educational Objectives**

1. To prepare mechanical engineering students for successful careers and lifelong learning.
2. To educate mechanical engineering students thoroughly in methods of analysis including the mathematical and computational skills appropriate for engineers to use when solving problems.
3. To develop skills pertinent to the design process, including the students' ability to formulate problems, to think creatively, to communicate effectively, to synthesize information and to work collaboratively.
4. To teach mechanical engineering students to use current experimental and data analysis techniques for mechanical engineering applications.
5. To instill in our students an understanding of their professional, social and ethical responsibilities.

## INTRODUCTION

The mechanical engineering program at CSUF provides a foundation for professional engineering careers in private industry and government. Mechanical engineers are employed in a wide range of industries such as manufacturing, transportation, energy, food, biomedical and others. In general, mechanical engineers are involved with the design, research, development, manufacture, testing, distribution, support, maintenance, and recycling of devices and products. Automobiles, airplanes, home appliances, robots, rockets, space capsules, printers, and computer hard disk drives are some of the various products that have been customarily designed and developed by mechanical engineers. Mechanical engineers possess a firm understanding of science, mathematics and engineering needed to carry out these complex tasks which are so important to a modern technological society.

The graduate curriculum is designed to provide a specialized education for career advancement or further work towards a doctoral degree.

**2 + 2 Articulated Programs with Community Colleges**

The Mechanical Engineering Department has developed 2+2 articulation agreements with community colleges to provide students seamless transfer to CSUF's Mechanical Engineering program. This allows the full-time students taking the courses specified by the department adviser to graduate in two years following transfer to CSUF.

**High School Preparation**

The entering high school student should have a preparation which includes two years of algebra, geometry, trigonometry, and one year of physics or chemistry. Students deficient in mathematics or chemistry must take special preparatory courses, i.e., Mathematics 125 and Chemistry 115, which will not carry credit for the major. (See Mathematics Section for Entry Level Mathematics test and Math-Science Qualifying Examination requirements.)

**Transfer Students**

A transfer student shall complete a minimum of 30 units in residence of which at least 15 units shall be taken in upper-division engineering courses. Courses taken at another college or university with a grade of "D" (1.0) will not be accepted as substitute for upper-division courses.

## BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

The undergraduate program requirements for the bachelor of science in mechanical engineering are comprised of four major segments: foundation courses in mathematics and physical sciences; basic engineering courses; general education courses in the arts, humanities, social sciences, biological sciences and other related areas; and a sequence of courses to fulfill the requirements of the Mechanical Engineering degree or the emphasis in Manufacturing Engineering.

Undergraduate students are required to meet with their academic adviser every semester during the first year and at least once a year thereafter. Students are strongly encouraged to see their academic advisers frequently. All courses taken in fulfillment of the requirements for the bachelor's degree must be taken for a letter grade, i.e., under grade Option 1. All mathematics and physical science courses required for the degree must be completed with at least a "C" (2.0) grade to count as prerequisite courses to engineering courses or as credit towards the degree. Graduate courses are not open to undergraduate students without approval of the program coordinator.

**Mathematics and Science Courses (30)**

Mathematics 150A Calculus (4)

Mathematics 150B Calculus (4)

Mathematics 250A Multivariate Calculus (4)

Mathematics 250B Introduction to Linear Algebra and Differential Equations (4)

Chemistry 120A General Chemistry (5)

Physics 225, 225L Fundamental Physics: Mechanics and Lab (4)

Physics 226, 226L Fundamental Physics: Electricity and Magnetism and Lab (4)

Physics 227 Fundamental Physics: Waves, Optics, and Modern Physics (1)

**Engineering Core Courses (24)**

EGME 102 Graphical Communications (3)

EGCE 201 Statics (3)

EGEE 203 Electric Circuits (3)

EGME 205 Digital Computation (3)

EGCE 302 Dynamics (3)

EGME 304 Thermodynamics (3)

EGME 306A Unified Laboratory (1)

EGGN 308 Engineering Analysis (3)

EGME 314 Engineering Economy (2)

**General Education Courses**

*I. Core Competencies (9)*

A. Oral Communication (3)
Honors 101B, Human Comm 100, or Human Comm 102

B. Written Communication (3)
English 101

C. Critical Thinking (3)
Honors 101A; Human Comm 235; Philosophy 105, 106; Psychology 110; or Reading 290

*II. Historical and Cultural Foundations (9)*

A. Development of World Civilization (3)
History 110A or 110B

B. American History, Institutions and Values (6)

1. American History (3)
Afro Ethnic Studies 190, American Studies 201, Chicano 190, History 180, 190, or Honors 201A

2. Government (3)
Poli Sci 100

*III. Disciplinary Learning (31)*

A. Mathematics and Natural Sciences (16)

1. Mathematics
Mathematics 150A (4)

2. Natural Sciences

a. Physical Science
Chemistry 120A and Physics 225, 225L

b. Earth and Astronomical Sciences
Not applicable for engineering majors

c. Life Science
Biology 101 (3)

3. Implications and Explorations in Mathematics and Natural Sciences
Not applicable for mechanical engineering majors

B. Arts and Humanities (9)

1. Introduction to the Arts (3)
Art 101, 201A, 201B, 311, 312, Dance 101, Music 100, Theater 100

2. Introduction to the Humanities (3)
Any lower-division course in this category listed in the current class schedule

3. Implications, Explorations and Participatory Experience in the Arts and Humanities (3)
   Any upper-division course in this category in the current class schedule

C. Social Sciences (6)

1. Introduction to the Social Sciences (3)
   EGME 314 and one of EGCE 490, EGEE 490 or EGME 490
2. Implications, Explorations and Participatory Experience in the Social Sciences (3)
   Any upper-division course in this category listed in the current class schedule

*IV. Lifelong Learning*

This category is not applicable to engineering majors

*V. Cultural Diversity*

Take at least one star (*) course in Sections III.B.3 or III.C.2

**Upper-Division Writing Requirement**

In addition to a passing score on the Examination in Writing Proficiency (EWP), the following courses are required by all mechanical engineering majors: EGME 306A, 306B, 376A, and 376B. Written work for these courses must meet professional standards and requires completion with a grade of "C" (2.0) or better.

**Required Courses in Mechanical Engineering (39 units)**

EGEE 303 Electronics (3)
EGEE 303L Electronics Laboratory (1)
EGME 306B Fluids and Thermal Laboratory (1)
EGME 322L Introduction to Computer-Aided Design (3)
EGME 331 Mechanical Behavior of Materials (3)
EGME 333 Fluid Mechanics & Aerodynamics (3)
EGME 335 Introduction to Mechanical Design (3)
EGME 376A Dynamic Systems and Controls Lab (2)
EGME 376B Energy and Power Lab (2)
EGME 407 Heat Transfer (3)
EGME 414 Design Project I (3)
EGME 419 Design Project II (2)
EGME 421 Mechanical Design (3)
EGME 426 Design of Thermal and Fluid Systems (3)
EGME 431 Mechanical Vibrations (3)
EGME 490 Seminar in Engineering (1)

**Technical Electives in Mechanical Engineering (11 units)**

Before enrolling in any elective course, approval of the adviser must be obtained.

*Power and Energy*

EGGN 403 Computer Methods in Numerical Analysis (3)
EGME 417 Computational Heat Transfer (3)
EGME 424 Data Acquisition and Instrumentation Using LabVIEW (3)
EGME 447 Piping Selection and Piping Network Design (3)
EGME 451 Heating, Ventilating and Air Conditioning Systems (3)
EGME 452 Fluid Machinery (3)
EGME 454 Optimization of Engineering Design (3)

Design and Materials for Manufacturing

EGME 301L Advanced Auto CAD for Design Documentation (2)
EGGN 403 Computer Methods in Numerical Analysis (3)
EGME 410 Introduction to the Finite Element Method and Applications (3)
EGME 411 Mechanical Control Systems (3)
EGME 418 Space and Rocket Engineering (3)
EGME 438 Analytical Methods in Engineering (3)
EGME 454 Optimization of Engineering Design (3)
EGME 456 Introduction to Mechatronics for Engineers (3)
EGME 457L Intelligent Systems Lab (2)
EGME 459 Plastics and Other Non-Metallics (3)
EGME 460 Failure of Engineering Materials (3)
EGME 461 Fabrication Methods (3)
EGME 462 Composite Materials (3)
EGME 463 Introduction to Robotics (3)
EGME 475 Acoustics and Noise Control (3)
EGME 480 Human Factors in Engineering (3)
EGME 483 Computer-Aided Manufacturing (3)
EGME 486 Introduction to Electronics Packaging (3)
EGME 487 Thermal Control of Electronic Packaging (3)

*Thermal and Fluids Engineering*

EGME 410 Introduction to the Finite Element Method and Applications (3)
EGME 417 Computational Heat Transfer (3)
EGME 424 Data Acquisition and Instrumentation Using LabVIEW (3)
EGME 447 Piping Selection and Piping Network Design (3)
EGME 451 Heating, Ventilating and Air Conditioning Systems (3)
EGME 452 Fluid Machinery (3)
EGME 454 Optimization of Engineering Design (3)
EGME 486 Introduction to Electronics Packaging (3)
EGME 487 Thermal Control of Electronic Packaging (3)

*Robotics, Controls, and Automated Manufacturing*

EGGN 403 Computer Methods in Numerical Analysis (3)
EGME 410 Introduction to the Finite Element Method and Applications (3)

EGME 411 Mechanical Control Systems (3)

EGME 424 Data Acquisition and Instrumentation Using LabVIEW (3)

EGME 454 Optimization of Engineering Design (3)

EGME 456 Introduction to Mechatronics for Engineers (3)

EGME 457L Intelligent Systems Lab (2)

EGME 461 Fabrication Methods (3)

EGME 463 Introduction to Robotics (3)

EGME 483 Computer-Aided Manufacturing (3)

EGME 486 Introduction to Electronics Packaging (3)

### MANUFACTURING ENGINEERING EMPHASIS

See the Bachelor of Science in Mechanical Engineering section of this catalog for requirements in mathematics and science foundation courses (30 units), engineering core courses (24 units) and general education course work.

**Required Courses (43 units)**

EGEE 303 Electronics (3)

EGEE 303L Electronics Lab (1)

EGME 306B Fluids and Thermal Laboratory (1)

EGME 322L Introduction to Computer-Aided Design (3)

EGME 331 Mechanical Behavior of Materials (3)

EGME 333 Fluid Mechanics and Aerodynamics (3)

EGME 335 Introduction to Mechanical Design (3)

EGME 376A Dynamic Systems and Controls Lab (2)

EGME 407 Heat Transfer (3)

EGME 414 Design Project I (3)

EGME 419 Design Project II (2)

EGME 421 Mechanical Design (3)

EGME 426 Design of Thermal and Fluid Systems (3)

EGME 461 Fabrication Methods (3)

EGME 463 Introduction to Robotics (3)

EGME 483 Computer-Aided Manufacturing (3)

EGME 490 Seminar in Engineering (1)

**Technical Electives (9 units)**

Approval of the adviser must be obtained before enrolling in any elective course.

EGME 410 Introduction to the Finite Element Method and Applications (3)

EGME 411 Mechanical Control Systems (3)

EGME 454 Optimization of Engineering Design (3)

EGME 459 Plastics and Other Non-Metallics (3)

EGME 460 Failure of Engineering Materials (3)

EGME 462 Composite Materials (3)

EGME 480 Human Factors in Engineering (3)

EGCE 408 Reinforced Concrete Design (3)

EGEE 323 Engineering Probability and Statistics (3)

EGEE 404 Introduction to Microprocessors and Microcomputers (3)

EGEE 404L Microprocessor Lab (1)

EGEE 445 Digital Electronics (3)

EGEE 465 Introduction to VLSI Design (3)

### MASTER OF SCIENCE IN MECHANICAL ENGINEERING

To qualify for admission to a conditionally classified standing, applicants must meet the following university and departmental requirements:

1. Bachelor's degree from a regionally accredited institution, e.g., Western Association of Schools and Colleges (WASC).
2. Bachelor's degree in mechanical engineering from an institution accredited by the Accreditation Board for Engineering and Technology (ABET).
3. Minimum GPA of 2.5 in the last 60 semester units.
4. Good standing at the last institution attended.

Students not meeting the above requirements may be admitted at the discretion of the department head and will be required to take an additional six or more units of adviser-approved prerequisite coursework. The student must demonstrate potential for graduate study by earning a grade point average of 3.0 or higher in these courses.

Any student entering the Master of Science degree program without a B.S. in Mechanical Engineering will also be required to complete one or more courses in the areas where the student is deemed to be deficient, prior to beginning course work for the Master's degree.

**Application Deadlines**

The deadlines for completing online applications are March 1st for the fall semester and October 1st for the spring semester (see http://www.csumentor.edu). Mailed applications need to be postmarked by the same deadlines. However, deadlines may be changed based on enrollment projections. Check the university graduate studies website for current information at http://www.fullerton.edu/graduate.

**Classified Standing**

Students meeting the following additional requirements will be advanced to classified standing and are eligible to take graduate courses for which they are qualified:

1. Completion of all deficiency work specified by the graduate adviser with a grade of "B" (3.0) or better.
2. Development of an approved study plan. Before completing nine units at CSUF toward the M.S. degree, the student must meet with an adviser for preparation of a study plan which must be approved by the department chairman and the Office of Graduate Studies.
3. Fulfillment of the university writing requirement prior to completing nine units at CSUF toward the M.S. degree. Students must demonstrate writing ability commensurate with the baccalaureate degree. Please refer to the "Graduate Regulations" section of this catalog for further information on how this requirement can be met.

**Study Plan**

The study plan consists of a minimum of 30 units of adviser-approved upper-division or graduate-level course work which must be completed with an overall grade-point average of at least 3.0. At least half the units required for the degree must be in approved graduate (500-level) courses.

**Required Courses (3 units)**

Adviser-approved math-oriented course (3)

**Concentration Courses (15 units)**

A student is required to select a minimum of 15 units in mechanical engineering.

These units may be 400-level and 500-level courses and are selected according to the student's area of interest. Course work is designed to meet the student's professional career goals and may focus on the following areas: Power and Energy, Design and Materials for Manufacturing, Thermal and Fluids Engineering, Robotics, Controls, and Automated Manufacturing.

**Other Courses (9 units)**

Elective units should be taken in mechanical engineering or a related engineering field and are subject to adviser approval.

**Exam/Thesis/Project Option (3-6 units)**

Subject to approval by the adviser, students may select one of the following three options for final review by a department committee:

1. Oral comprehensive examination
2. EGME 597 Project (3-6 units)
3. EGME 598 Thesis (3-6 units)

Students enrolling in less than six units of Thesis/Project will be required to take an oral comprehensive exam. Students enrolling in six units of thesis or project may defend their thesis or project instead of taking an oral comprehensive exam.

## MECHANICAL ENGINEERING COURSES

Courses are designated as EGME in the class schedule.

**102 Graphical Communications (3)**

Graphics as a fundamental means of communication in design. Development of spatial visualization. Freehand sketching and use of instruments, orthographic projection, pictorials. Dimensioning, tolerances, descriptive geometry, CAD principles and applications, AutoCAD, design procedure, cost analysis and freshman design project. (1 hour lecture, 6 hours laboratory) (CAN ENGR 2)

**205 Digital Computation (3)**

Prerequisites: college algebra or 3 years of high school math including a 2nd course in algebra. Computers and their numerical applications. Programming languages, digital computation methods in statistics, and solving algebraic equations. Applications of general purpose software for engineering analysis. (Same as EGGN 205)

**214 Basic Machine Shop Practice and Safety (2)**

Prerequisites: Mathematics 115, 125 or equivalents. Introduction to machine shop practices and drill press, grinding wheel, lathe, vertical mill and band saw. Thorough safety procedures instruction on each machine. Student demonstrates safe practices on each machine. Introduction to measurement and tolerancing. Discussion and laboratory practice. (1 hour lecture, 3 hours laboratory.) Does not count toward fulfilling degree requirements. Credit/No Credit only.

**286 Technology-Based Graphical Communication (3)**

Prerequisite: Mathematics 130 or Mathematics 150A. Introduction to the techniques used in three-dimensional graphics, design and visualization to conceptualize, apply, analyze, synthesize, evaluate and communicate information concepts using available technology. No credit for Engineering/Computer Science majors. (2 hours lecture, 2 hours laboratory)

**304 Thermodynamics (3)**

Prerequisites: Chem 120A, Math 150B and Physics 225. Energy and its transformation; heat and work; conservation of mass and energy, system properties, irreversibility and availability. Ideal gases, heat engines and refrigeration (both ideal and actual), equipment selection and sizing.

**306A Unified Laboratory (1)**

Prerequisites: Physics 225 and EGME 102. Corequisite: EGGN 205. Observations and measurements as an introduction to the experimental method. Static and dynamic measurements on engineering systems (beams, columns, pendulums, gyroscopes) using mechanical and electrical transducers. Principles of probability and statistics and their applications to experimental measurements. Report writing. Must be passed with a grade of "C" (2.0) or better to count towards the upper division writing requirement. (3 hours laboratory)

**306B Fluids and Thermal Laboratory (1)**

Prerequisites: EGME 306A and 333. Corequisite: EGME 407. Continuation of EGME 306A. Flow measurement techniques using orifice plates, venturimeters. Pitot probes and nozzles. Temperature and pressure measurement. Experimental studies of fluid friction and heat exchanger performance. Use of microcomputers in data acquisition, reduction and analysis. Technical report writing. Must be passed with a grade of "C" (2.0) or better to count towards the upper division writing requirement. ("C-minus" is not a passing grade). (3 hours laboratory)

**308 Engineering Analysis and Statistics (3)**

(Same as Civil Engineering 308, Electric Engineering 308 and Engineering 308)

**314 Engineering Economy (2)**

(Same as EGGN 314)

**315 Basic Fabrication Techniques and Manufacturing Practices (3)**

Prerequisite: EGME 102. Conventional fabrication techniques, measuring, referencing and tolerances applied to manufacturing such as tooling, computer numerical control machining and process indices. Safety instruction for use of campus machine shop equipment. (2 hours discussion and 2 hours laboratory)

**322L Introduction to Computer-Aided Design (3)**

Prerequisite: EGME 331, EGCE 302. Introduction to modeling, assembly, design documentation and analysis using typical commercial CAD/CAE software. Use of online resources in the collaborative design process. Design file transfer protocols. Design project using a technology based team environment. CAD/CAE system selection criteria. (1 hour discussion, 6 hours laboratory). (Same as Computer Science 322L)

**331 Mechanical Behavior of Materials (3)**

Prerequisites: Chem 120A, Math 250A, EGCE 201; Corequisite: EGME 306A. Engineering properties of materials. Toughness and fatigue. Creep phenomena. Corrosion. Energy concepts. Beams and columns. Torsion. Combined stresses. Pressure vessels. Failure theories. Design of machine elements.

**333 Fluid Mechanics and Aerodynamics (3)**

Corequisites: EGGN 205 and EGME 304. Principles of fluid mechanics and their applications; fluid properties; fluid statics; one-dimensional incompressible flow; concepts of multi-dimensional flows including conservation principles; similitude and dimensional analysis; internal and external viscous flow; elements of compressible flow; design considerations in fluid mechanics.

**335 Introduction to Mechanical Design (3)**

Prerequisites: EGGN 205, EGCE 302 and EGME 102. Kinematics and dynamics of mechanisms; design and analysis of linkages, gears, and cams through the use of analytical, graphical and computer-aided techniques.

**350 Living and Working in Space (3)**

Prerequisite: junior standing. History of space flight. Space travel in literature and films. Space pioneers. The Moon Race. Space tourism and space hotels. Colonization of Moon and Mars. Space art. Economic, social, psychological, technological and global issues in space habitats.

**407 Heat Transfer (3)**

Prerequisites: Mathematics 250B and EGME 333. Principles of heat transfer and their applications: introduction to conductive, convective and radiation heat transfer; one-dimensional heat conduction; concepts of multi-dimensional conduction; convective heat transfer in conduits and external surfaces; heat exchangers and thermal system design.

**410 Introduction to the Finite Element Method and Applications (3)**

Prerequisite: approved study plan. Basic concepts of integral and matrix formulation of boundary value problems. One dimensional finite element formulation of heat transfer, truss beam and vibration problems. Applications of commercial finite element programs. Selection criteria for code, element and hardware. CAD system interfaces.

**411 Mechanical Control Systems (3)**

Prerequisites: EGGN 205 and 308, and EGCE 302. Mechanical control system design and analysis. Pneumatic, hydraulic, electro-mechanical actuators and devices. Stability criteria, root locus plots, transfer functions, introduction to feedback control and microprocessor applications.

**414 Design Project I (3)**

Prerequisites: EGME 322L and 421. Corequisite: EGME 426. Design methodology, CAD/CAE philosophy, optimization, product liability, probability/statistical principles, ASME codes, safety, human factors, material selection, legal aspects of design, professional ethics. Design project to be completed in EGME 419, feasibility study, preliminary design, assembly drawings, interim project report. Oral presentation. (1 hour lecture and 6 hours laboratory)

**417 Computational Heat Transfer (3)**

Prerequisites: EGGN 205 and 308, and EGME 407. Computer visualization of 2-D/3-D temperature fields. Steady and unsteady conduction heat transfer. Incompressible free and forced convective boundary layer flows. Multiple surface radiation analysis. Boiling and condensation. Emphasis on design aspects of computational heat transfer and use of CFD codes.

**418 Space and Rocket Engineering (3)**

Prerequisites: EGCE 201, EGME 304, 331, and 333. Principles of rocket propulsion systems. Single and multi-stage rockets. Theory and application of orbital mechanics. Space flight maneuvers. Boosting a satellite into orbit. Spacecraft guidance and control. Trajectories to Moon and Mars.

**419 Design Project II (2)**

Prerequisite: EGME 414. Completion of the design project initiated in EGME 414. Construction of prototype, model or components. Testing of the proposed design, and preparation of a final design report. Teamwork and communications skills are emphasized. Oral presentation is required. (6 hours laboratory)

**421 Mechanical Design (3)**

Prerequisites: EGCE 301 or EGME 331, and 335. Design and application of machine components such as brakes, clutches, gears, springs, fasteners, lubrication of machine elements, bearings, gaskets, seals, "O" rings, methods for study of impact, dynamic loading and fatigue; comprehensive treatment of failure, safety and reliability.

**422 Mechanical Design Using Pro/ENGINEER (3)**

Prerequisite: EGME 322L or equivalent. Modeling, assembly and design documentation using Pro/ENGINEER. Design of mechanical components and assemblies using Advanced Pro/ENGINEER features such as blends, drafts, user defined features, relations, family tables and assembly management. Collaborative design project, utilizing online resources. May be repeated for one credit.

**424 Data Acquisition and Instrumentation Using LabVIEW (3)**

Prerequisite: EGME 306A or equivalent. Graphical programming; design and development of virtual instruments using LabVIEW programming environment; building applications for data acquisition, measurement, testing, and control of engineering systems; collaborative term project. (2 hours discussion, 3 hours laboratory)

**426 Design of Thermal and Fluid Systems (3)**

Prerequisite: EGME 407. Integration of fundamental principles of thermodynamics, fluid mechanics, heat transfer and related subjects in the design of thermal and fluid systems. The design process is applied to pumps, fans, turbines, boilers, and heat exchangers using economics and optimization with case studies.

**431 Mechanical Vibrations (3)**

Prerequisites: EGGN 205 and 308, and EGCE 302. Modeling and analysis of single and multiple degrees of freedom systems. Response to forcing functions. Vibrations of machine elements. Design of vibration isolation systems. Balancing of rotating machinery. Random excitation and response of mechanical structures.

**438 Analytical Methods in Engineering (3)**

Prerequisite: EGGN 308. Ordinary and partial differential equations with constant and variable coefficients; orthogonal functions; conformal mapping; potential theory; engineering applications.

**447 Piping Selection and Piping Network Design (3)**

Prerequisites: EGME 333 and EGCE 301 or EGME 331. Pressure losses in piping networks; selection of piping based upon fluid, temperature, pressure and economic considerations; piping connections, fittings and components; stress analysis; review of national piping codes.

**451 Heating, Ventilating and Air Conditioning Systems (3)**

Prerequisites: EGME 304 and 407. The fundamentals of controlling heating, ventilating, and air conditioning systems. Theory and analysis of fundamental thermodynamics relating to these systems. Laboratory demonstrations of actual systems.

**452 Fluid Machinery (3)**

Prerequisites: EGME 304 and 333. Thermal and hydraulic design and analysis of pumps, fans, turbines and compressors. Component selection, system design and performance evaluations.

**454 Optimization of Engineering Design (3)**

Prerequisite: EGGN 308. Application of analytical and computer optimization techniques to engineering design problems. Presentation of design as an optimization task. One dimensional minimization. Unconstrained and constrained nonlinear programming. Approximation concepts. Duality. Computer applications to design problems using a general purpose optimization program.

**456 Introduction to Mechatronics for Engineers (3)**

Prerequisites: EGGN 308, EGEE 303L, and EGME 306A. Introduction to mechatronics. Design issues. Sensors, actuators, programmable controllers. Hardware components for control systems. System performance. Data acquisition and control. Mechatronic control in automated manufacturing. Advanced applications and case studies. Design project.

**457L Intelligent Systems Laboratory (2)**

Prerequisite: EGEE 456. Design and assembly of microprocessor-based mechanisms. Lab experiments encompass machine/high level programming, and interfacing of microcontrollers with sensors and actuators. Design project. (1 hour lecture, 3 hours laboratory)

**459 Plastics and Other Non-Metallics (3)**

Prerequisite: EGME 331. Simplified chemistry of plastics. Applications. Manufacturing processes. Methods for preventing deterioration of nonmetallic materials. Composites. Ceramics. Refractories. Wood. Destructive and nondestructive testing of nonmetallic materials.

**460 Failure of Engineering Materials (3)**

Prerequisite: EGME 331. Imperfections in solids; fracture initiation and crack propagation; dislocations; yield point phenomenon; fatigue; creep; ultrasonic effects; radiation damage; stress corrosion; hydrogen embrittlement; composite materials.

**461 Fabrication Methods (3)**

Prerequisite: EGME 331. Manufacturing processes. Metal joining processes. Casting, forging, powder metallurgy, machining and machining tools, finishing, coating, plating, non-metallic materials inspection and gaging, and tolerances.

**462 Composite Materials (3)**

Prerequisites: EGCE 301 or EGME 331. Application, mechanical properties and fabrication studies of fiber reinforced composite materials, stress analysis of laminated anisotropic composite structures. Studies of special problems unique to composites.

**463 Introduction to Robotics (3)**

Prerequisites: EGME 335. Corequisite: EGME 376A. Kinematic, dynamic, control and programming fundamentals associated with industrial robots and programmable manipulators. Trajectory planning, application of robotics in manufacturing and integration of robots into flexible manufacturing systems.

**475 Acoustics and Noise Control (3)**

Prerequisite: Physics 227. Basic phenomena on the propagation, absorption and generation of acoustic waves, specification and measurement of noise, effects of noise on speech and behavior, legal aspects of industrial and building noise, principles and application of noise control.

**476A Dynamic Systems and Controls Laboratory (2)**

Prerequisites: EGME 431. Dynamic systems, vibration, acoustics and other mechanical components; computer simulation of dynamic systems; robotics, computer controlled machining and automatic data acquisition. Must be passed with a grade of "C" (2.0) or better to count towards the upper division writing requirement. ("C-minus" is not a passing grade). (6 hours laboratory) (Not available for graduate degree credit.)

**476B Energy and Power Laboratory (2)**

Prerequisites: EGME 304 and 407; and EGME 306B as a prerequisite or corequisite. Mass transfer, heat transfer, and thermodynamic phenomena and their interaction with mechanical systems. Team projects, engineering reports. Must be passed with a grade of "C" (2.0) or better to count towards the upper division writing requirement. ("C-minus" is not a passing grade). (6 hours laboratory) (Not available for graduate degree credit.)

**480 Human Factors in Engineering (3)**

Prerequisite: Approved study plan. Principles of design for making products and systems faster, easier, and more effective to use. Design project using these principles that consider human capabilities and limitation of senses and responses to sensory stimuli. Physiological, psychological and work factors are evaluated for design of equipment, work methods, environments and standards.

**483 Computer-Aided Manufacturing (3)**

Prerequisite: EGME 376A or equivalent. Introduction to computer-aided manufacturing processes. CNC machines, robot and PLC programming. Design for CIM. Fixed and flexible manufacturing systems. Process planning and scheduling. Simulation software for manufacturing systems. Laboratory experiments. (1 hour discussion, 4 hours laboratory)

**486 Introduction to Electronics Packaging (3)**

Prerequisites: EGEE 303 and EGME 306A. Electronic components and devices. The chip carrier, packaging and production of printed circuit boards. First, second and third level packaging. Introduction to thermal analysis and vibration of electronic equipment.

**487 Thermal Control of Electronic Packaging (3)**

Prerequisites: EGME 407. Fluid mechanics and heat transfer as related to the thermal control of electronic packages of varying sizes. Analysis of individual components, complete, boards, and complete systems is considered. Both liquid and gas cooling mediums are covered.

**490 Seminar in Engineering (1)**

Prerequisite: senior standing in engineering. The engineering profession, professional ethics, and related topics. May be repeated once for credit with the approval of the department.

**497 Senior Project (1-3)**

Prerequisite: Consent of instructor, adviser and department head. Directed independent design project.

**499 Independent Study (1-3)**

Prerequisite: Approval of study plan by adviser and department head. Specialized topics in engineering, selected in consultation with and completed under the supervision of the instructor. May be repeated for credit.

**508 Advanced Inviscid Fluid Flow (3)**

Prerequisites: EGGN 205 and 308, and EGME 333. Study of two- and three-dimensional potential flow theory. Sources, sinks, vortices, Rankin bodies, free jets, channel flow, air foils. Introduction to computational fluid dynamics. Complex potential and various transformation techniques are used.

**511 Advanced Mechanical Vibrations (3)**

Prerequisite: EGME 431. Vibrations in rotating and reciprocating machines; noise and vibration in fluid machinery; continuous systems; random vibrations; transient and nonlinear vibration, computer applications.

**512 Advanced Mechanical Design and Management (3)**

Prerequisite: EGME 421 or equivalent. Advanced modern mechanisms. Analysis and synthesis of mechanisms. Advanced topics in computer-aided design of mechanical, thermal and fluid systems. Methodology of modern design. Optimization in design.

**516 Advanced Radiation Heat Transfer (3)**

Prerequisite: EGME 407. Radiation heat transfer including the study of the geometric factor, black and real systems, and energy transfer in absorbing, scattering and emitting media, and radiation combined with other modes of energy transfer.

**520 Advanced Viscous Fluid Flow (3)**

Prerequisite: EGME 333. The fundamental equations of viscous fluid flow. Viscous drag estimation. Drag reduction methods. Introduction to instability and transition.

**524 Advanced Thermodynamics (3)**

Prerequisite: EGME 304. Equilibrium and stability criteria, third law of thermodynamics, multiple component systems, ionization, equilibrium reaction, lower core "ideal" gases, thermodynamic cycles.

**526 Advanced Convective Heat Transfer (3)**

Prerequisite: EGME 407. Convective heat transfer; heat transfer in external and internal flow fields for both laminar and turbulent fluid flow, applications.

**530 Advanced Strength of Materials (3)**

Prerequisite: EGME 421. Energy methods. Castilian's theorem. Curved beams, beams on elastic supports, thick wall cylinders, shrink fits, localized stress, column instability, failure theories, bearings.

**536 Advanced Conduction Heat Transfer (3)**

Prerequisite: EGME 407. Conduction heat transfer; Bessel and Legendre functions, Fourier series solutions, heat sources and sinks, multidimensional problems, transient systems and numerical methods (finite difference and finite element methods).

**538 Advanced Engineering Analysis (3)**

Prerequisites: EGME 438. Partial differential equations in engineering, numerical techniques, integral equations, engineering applications.

**540 Computer Applications In Engineering Design (3)**

Prerequisite: EGME 410. Computers and microprocessors in engineering design. Design methodology, modeling and simulation. Geometric modeling. Design optimization. Expert systems in engineering design. Generalized programs and simulation languages are emphasized.

**541 Finite Element Method for Mechanical Engineers (3)**

Prerequisites: EGME 410. Matrix formulation of basic equations in steady state and transient heat conduction. Elements and interpolation functions. Non-linear problem formulation. Finite element computer programs in heat transfer, fluid dynamics and design.

**554 Applied Optimal Mechanical Design (3)**

Prerequisite: EGME 454 or equivalent. Formulation of design optimization problems in mechanical engineering. Review of mathematical programming methods. Practical aspects of optimization. Design of complex mechanical systems. Individual projects will be assigned to apply optimization techniques to an engineering system or component.

**576 Advanced Dynamics & Control of Mechanical Systems (3)**

Prerequisite: EGME 411. Advanced study of the dynamics and control of mechanical systems including: state space modeling, Lyapunov stability, modern design techniques and case studies.

**597 Project (1-6)**

Prerequisite: Consent of Graduate Program Adviser.

**598 Thesis (1-6)**

Prerequisite: Consent of Graduate Program Adviser.

**599 Independent Graduate Research (1-3)**

Prerequisite: Classified graduate status. Open to graduate students only by consent of Mechanical Engineering Graduate Program Adviser. May be repeated for credit only upon approval by the Graduate Program Adviser.

# Military Science

College of Health and Human Development

**DEPARTMENT CHAIR/PROFESSOR OF MILITARY SCIENCE**

Lieutenant Colonel William L. Howard, Jr.

**ENROLLMENT COUNSELOR**

Major Scott A. Murphy

**ENROLLMENT ADVISER**

Major Robert H. Medina

**SENIOR MILITARY INSTRUCTOR**

Master Sergeant Daniel T. Sturgell

**TRAINING OFFICER**

SFC Raul Rivas

**DEPARTMENT OFFICE**

Engineering 301
Phone: (714) 278-3007

**DEPARTMENT WEBSITE**

http://hhd.fullerton.edu/militaryscience/

**PROGRAMS OFFERED**

Summer Leadership Internships

Adventure/Leadership Training and Physical Training/Weight Lifting (No military obligation)

Minor in Military Science

Second Lieutenant Commission (U.S. Army, Reserves or National Guard)

## INTRODUCTION

Military Science provides a dynamic dimension to the university by offering an unmatched hands-on leadership and management education. Military Science is also a university endorsed co-ed club and offers various extra-curricular teams and activities such as: "Ranger Challenge" (intercollegiate competition based on physical fitness and agility, rifle marksmanship and map reading/land navigation), Paintball, one Field Training Exercise (overnight bivouac) per semester, rappelling demonstrations and a Color Guard team (presents flags at ceremonies and events) as well as several other exciting activities. All curriculum and activities are designed to build and enhance leadership, management and team building skills that apply in both military and civilian sectors and last a lifetime.

Military Science courses are accredited and available to students in all academic disciplines. Full-time students are also eligible to enroll as cadets in accordance with university and Department of the Defense policies. Several competitive financial assistance programs are available which include: three-year and two-year scholarships, Reserve Forces and National Guard duty, GI Bill and loan repayment options. Additionally, scholarship recipients and Advanced course students earn up to $400 per month.

Upon successful completion of the two or four-year Reserve Officers Training Corps (ROTC) program, cadets are commissioned as second lieutenants in the United States Army, United States Army Reserves or Army National Guard.

**Four-Year Program**

This program is comprised of a lower division "Basic Course" and an upper division "Advanced Course." The Basic Course refers to first and second year courses (MLSC 101, 102, 201 and 202) which are designed for beginning students who want to try Reserve Officers Training Corps (ROTC) without obligation. Once the Basic Course is completed, students qualify for entry into the upper-division Advanced Course (MLSC 301, 302, 401, 402) which prepares them to be commissioned as officers in the United States Army, the Army Reserves, or the Army National Guard. Upon entry into the Advanced Course, cadets are required to sign a contract with the Department of the Army agreeing to complete the ROTC program and accept a commission as a second lieutenant. Once the contract is signed, Advanced Course cadets will receive up to $400 per month, along with free uniforms for all military science courses.

**Two-Year Program**

This program is for those students who have at least four semesters of work remaining on campus as either an undergraduate or graduate student, and who did not participate in ROTC earlier. These students enter the Advanced Course of the program after attending a one week all expenses paid summer leadership internship or providing proof of completion of Military Basic Training, or three years JROTC. Students enrolled in the two-year program are eligible for contracting under the same benefits, requirements and guidelines as the four-year students.

**International Learning Opportunities in Military Science**

Advanced course students have an opportunity to attend overseas Cadet Troop leadership Training (CTLT) for three weeks between their junior and senior years. CTLT gives cadets a chance to serve as an acting platoon leader with an actual active duty U.S. Army unit. Many of the CTLT positions are with overseas units in Korea and Europe. Additionally, commissioned second lieutenants selected for active duty will have the opportunity to serve at duty stations all over the world, work with fellow military officers from other countries, attend foreign military schools, and immerse themselves in the culture of their host nation while they live and work there.

## MINOR IN MILITARY SCIENCE

The Military Science minor consists of a combination of courses from many disciplines totaling 23 units. Students interested in this program should seek additional information from the Military Science Program office.

## GENERAL REQUIREMENTS

All enrolled cadets will take courses corresponding to their academic standing in order to remain academically aligned.

Military Science 100 Army Physical Training (1) (this class can be repeated for credit up to 8 times.)

Kinesiology 146 Weight Lifting (1) (for cadets desiring extra conditioning)

*Freshmen*

Military Science 101 Leadership and Personal Development (3)

Military Science 102 Introduction of Tactical Leadership (3)

*Sophomores*

Military Science 201 Innovative Team Leadership (3)

Military Science 202 Foundations of Tactical Leadership (3)

*Juniors*

Military Science 301 Adaptive Tactical Leadership (4)

Military Science 302 Leadership in Changing Environments (4)

**ROTC Advanced Camp**

*Seniors*

Military Science 401 Developmental Leadership (4)

Military Science 402 Adaptive Leadership (4)

*Required for Commissioning*

Military Science 450 Military History Seminar (3)

## MILITARY SCIENCE COURSES

Courses are designated as MLSC in the class schedule.

**100 Army Physical Training (1)**

Required each semester of all students in the Military Science program. Designed strictly to improve and maintain the physical fitness level of the participants while teaching them the standards for the conduct of Army Physical Training (PT). The goals of the course are to develop a good understanding of the Army Physical Fitness Program in accordance with FM 21-20, to participate, to cooperate, have fun, and get in share. May be repeated for credit.

**101 Leadership and Personal Development (3)**

Introduces students to the personal challenges and competencies that are critical for effective leadership. Students learn how the personal development of life skills such as critical thinking, goal setting, time management, physical fitness and stress management relate to leadership, officership and the Army profession. (1.5 hours lecture, 3 hours laboratory)

**102 Introduction to Tactical Leadership (3)**

Focus on leadership fundamentals such as setting direction, problem solving, listening, presenting briefs, providing feedback and using effective writing skills. Students explore dimensions of leadership values, attributes, skills and actions in the context of practical, hands-on, and interactive exercises. (2 hours lecture, 3 hours laboratory)

**201 Innovative Team Leadership (3)**

Explores the dimensions of creative and innovative tactical leadership strategies and styles by examining team dynamics and two historical leadership theories that form the basis of Army leadership framework (trait and behavioral theories). Students/cadets practice aspects of personal motivation and team building in the context of planning, executing, and assessing team exercises. (2 hours lecture, 3 hours laboratory)

**202 Foundations of Tactical Leadership (3)**

Examines the challenges of leading tactical teams in the complex COE. The course highlights dimensions of terrain analysis, patrolling and operation orders. Further study of the theoretical basis of the Army leadership framework explores the dynamic of adaptive leadership in the context of military operations (2 hours lecture, 3 hours laboratory)

**301 Adaptive Tactical Leadership (4)**

Challenges cadets to study, practice and evaluate adaptive tactical leadership skills as they are presented with challenging scenarios related to squad tactical operations. Students receive systematic and specific feedback on their leadership attributes and actions. (3 hours lecture, 3 hours laboratory)

**302 Leadership in Changing Environments (4)**

Increasingly intense situational leadership challenges to build cadet awareness and skills in leading tactical operations up to platoon level. Students review aspects of combat, stability, and support operations. The focus is on exploring, evaluating and developing skills in decision-making, persuading, and motivating team members in the contemporary operating environment (COE). (3 hours lecture, 3 hours laboratory)

**401 Developmental Leadership (4)**

Develops student proficiency in planning, executing, and assessing complex operations, functioning as a member of a staff and providing performance feedback to subordinates. They are given situational opportunities to assess risk, make ethical decisions, and lead fellow ROTC cadets. Lessons on military justice and personnel processes prepare them to make the transition to becoming Army officers. (3 hours lecture, 3 hours laboratory)

**402 Adaptive Leadership (4)**

Explores the dynamics of leading in the complex situations of current military operations in the contemporary operating environment (COE). Cadets examine differences in customs and courtesies, military law, principles of war and rules of engagement in the face of international terrorism. They also explore aspects of interacting with non-governmental organizations, civilians on the battlefield and host nation support. (3 hours lecture, 3 hours laboratory)

**450 Military History Seminar (3)**

Examines selected case studies in military history as they relate to the modern challenges facing the American profession of arms. Emphasis will be on written reports, oral presentations, discussion and field study. This course satisfies commissioning requirements.