Information Systems and Decision Sciences

The Option

Computer and information systems are at the forefront of most courses offered in the department. Every course deals with the development and use of information technology (IT) by managers in support of their decision-making roles. Those interested in specializing in the Information Systems (IS) option can choose from a broad set of courses designed to prepare them for challenging, productive, and well-paying jobs in one of the fastest growing career paths. The IS graduate is qualified for literally hundreds of different jobs being performed by IT professionals. Graduates of this department have found successful employment at prestigious firms such as Andersen Consulting, Hewlett-Packard, Siemens, and Gallo.

The IS option provides students with the knowledge, skills, and modern tools in the area of IT. Students will learn about the strategic role of IS in business decision making. They will also learn how to design systems to solve management problems in all functional areas of business. Included in the curriculum are courses in data communication, network administration, database systems, geographic information systems, end-user computing, expert systems, Web page design, programming, and systems analysis and design.

Job titles fall into three categories: application development, technical development, and systems support.

Applications developers (e.g. **systems analysts**) are responsible for creating and maintaining the business software and systems a company needs. Systems analysts' jobs require strong interpersonal skills, as they spend much of their time with the users determining needs and processing functions. In addition, they must have thorough knowledge of business application systems. They often know as much about the company's work (for example, banking) as anyone in the company. Many of our IS graduates are hired in this category.

Technical developers (e.g. **database administrators**, **network specialists**) work with the operating, database, and network systems. Their jobs are generally concerned with managing the computer environment. Usually, working in teams, they are responsible for integrating the different hardware and software systems within the company.

Systems support personnel (e.g. **Website managers**, **system administrators**) are responsible for the daily operation of all computer systems, both hardware and software. Support jobs differ with the computer environment. Support people often do not create, maintain, or develop software. They often move into technical development as they gain more on-the-job experience.

The **Certificate in Business Information Systems** is directed toward enhancing the knowledge of candidates for entry level IS-related positions. The program consists of five-course sequence involving the same IS core courses required for the IS option students. The details regarding this certificate are outlined on the next page.

The **Certificate in Network Administration** is designed to enhance the knowledge, practical experience, and employability of candidates who have had IS-related job experience and wish to expand their expertise. The details regarding this certificate are outlined on the next page.

Statistical and Computer Laboratories

Students who study in the Information Systems and Decision Sciences Department receive classroom instruction, listen to guest speakers, and enjoy field trips. They are also exposed to modern computer laboratories for the quantitative, computer, and business communication classes throughout the semester. The computer laboratories provide the student with the valuable opportunity of hands-on computer experience for such classes as computer programming and statistical analysis.

The Craig School of Business

Department of Information Systems and Decision Sciences
To Be Announced, *Chair*
Denise Biggert, *Department Administrative Assistant*
Peters Business Building, Room 287
(559) 278-2823
FAX: (559) 278-4911
http://www.craig.csufresno.edu

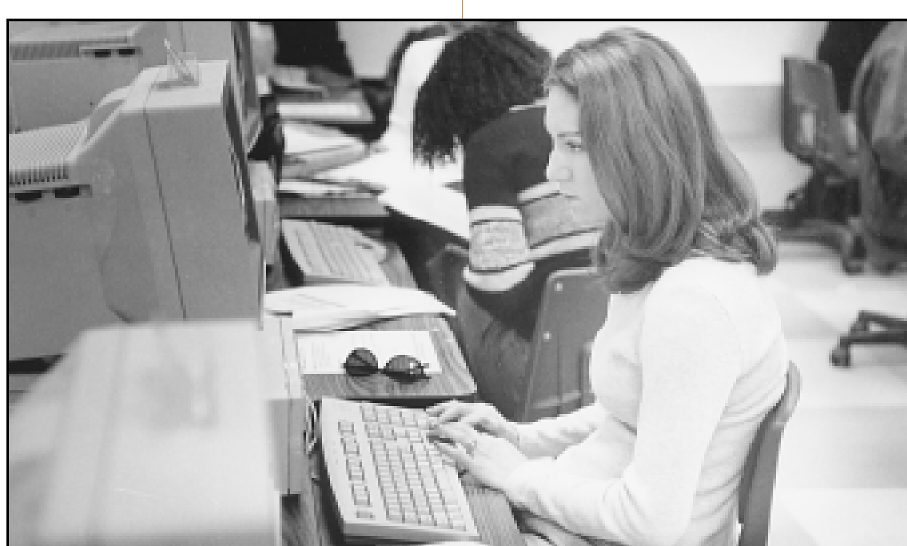
B.S. in Business Administration
Option: Information Systems

Certificate in Business Information Systems

Certificate in Network Administration

Faculty

The Department of Information Systems and Decision Sciences employs more than 20 full-time and part-time faculty with extensive expertise in statistics, systems analysis and design, computer programing, networking, telecommunications, geographic information systems, business communication, database systems, expert systems and Web page design. These faculty come from all over the world and have Ph.D. degrees from major American and foreign universities.



Faculty

To be announced, *Chair*

Randy J. Anderson	Wallace C. Liu
Donald L. Beringson	William S. Mallios
Kelly J. Black	Kathleen E. Moffitt
Priscilla M. Chaffe-Stengel	Arlene A. Motz
Mostafa Elhag	Sasan Rahmatian
Myron E. Hatcher	Peter Simis
James M. Henson	Rafael Solis
Richard C. Lacy	Donald N. Stengel
Patricia A. LaRosa	Tomasz R. Wielicki

Bachelor of Science Degree Requirements

Business Administration Major

All students in the Craig School of Business who are working toward the bachelor of science degree in business administration must complete, in addition to the university's General Education requirements, a ten-course group of pre-business courses, seven courses of upper-division core, and 23 to 32 units in an area of specialization or option. The pre-business classes include material considered essential for further study in business. The upper-division course classes provide a broad background and a breadth of knowledge and understanding. The option courses enable the students to specialize in a specific area of business and to prepare for effective performance in future employment.

Units

Pre-Business requirements **20***
ACCT 4A, 4B; B A 18; CSB 50; DS 71, 73; ECON 40 or AG EC 1; ECON 50; ENGL 1; IS 50
(See *Pre-Business Policy,* page 208.)

Upper-division core requirements **27**
DS 123; FIN 120; IS 130; MGT 110 or 104-106, 124, 187; MKTG 100
(See *Statement on Prerequisites,* page 208.)

Information Systems Option **24**
IS core .... (15)
IS 51, 158**, 162, 166**, 175**
Electives .... (9)

Approved electives
Elect from IS 106, 140, 150, 151, 156T, 164, 168, 181, 188, 189T, 190, 195; MGT 126 or any other approved upper-division IS elective.

General Education requirements **51**

Upper-division writing skills requirement **3-4**
Business majors must select either IS 105W or ENGL 160W (See Writing *Requirements*, page 208.)
Note: the Upper-Division Writing Exam is not an option for business administration majors.

Electives **0**

Total **125-126**

---

*This total indicates that 9 units for DS 71, ECON 50, and ENGL 1 are being used to satisfy the General Education requirement of 51 units.

** This is a three-semester sequence of classes that cannot be taken concurrently or out of order.

Requirements for Certificate Programs

Before entering either of the programs, students will need to demonstrate that they have completed at least 6 units of elementary accounting and are conversant in computer concepts (equivalent to IS 50 at the minimum). Approval of the certificate program coordinator or the department chair is necessary. Students must fill out the appropriate form in the department office prior to entering either certificate program. These certificates are not available to students currently enrolled in the IS option

Certificate in Business Information Systems

Students also need to meet either one of the following criteria:

1. a bachelor's degree in any field from an accredited institution or
2. an Associate of Arts degree from a two-year accredited college and a minimum of two years of business experience.

Units

Required Courses **12**
IS 150, 158, 162, 166

Elective Course **3**
Select a minimum of 3 units from: IS 106, 140, 151, 156T, 164, 168, 181, 190, 195

Certificate in Network Administration

Students must have a background in IS and a strong interest in computer network environment and be eligible to enroll into the Craig School of Business internship program.

Students also need to meet either one of the following criteria:

1. a bachelor's degree in any field from an accredited institution or
2. an associate of arts degree from a two-year accredited college and a minimum of two years of business experience.

Units

Required Courses **12**
IS 162, 181, 190, 195 (network-related internship)

Elective Courses **3**
Select a minimum of 3 units from: IS 106, 140, 151, 156T, 164, 168

COURSES

Decision Sciences (DS)

71. Quantitative Analysis I (3)
Prerequisite: students must take the ELM exam; students who do not pass the exam must record a grade of *C* or better in a college-taught intermediate algebra course. Quantitative formulation and solution of problems in various disciplines, including mathematics of finance, linear programming, probability, and differential calculus. G.E. Foundation B4.

73. Statistical Analysis I (3)
Prerequisites: ELM exam, DS 71 or equivalent; ECON 40, 50 recommended. Introduction to descriptive statistical tools as applied to management decision making. Central tendency and dispersion measures; index numbers (CPI, deflators); time series analysis (trends, seasonal variations); probability theory; probability and sampling distributions (normal, exponential, binomial, Poisson); central limit theorem.

123. Statistical Analysis II (3)
Prerequisites: DS 71, 73, IS 50. Statistical inference as applied to managerial problems and decision making. Emphasizes the inferential process; interval estimation, hypothesis testing, one- and two-way analysis of variance, regression, and correlation and related inferential analysis, nonparametric methods, Bayesian decision theory. (May include computer lab hours) (Formerly DS 173)

189T. Topics in Decision Sciences (1-3; max total 6 if no topic repeated)
Prerequisites: 12 units in decision sciences. Theory or application of statistics or operations research applied to current developments.

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

195. Internship (3; max total 6)
Prerequisite: permission of internship coordinator. Requires 150 hours of work at a prequalified, academically-related work station (business, government, or nonprofit agency.) Reflective journal, final report, and work station evaluation. ***CR/NC*** grading only. As a course substitution, prior department approval required. Only one internship may count towards option requirements.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program.*

Information Systems (IS)

1A. Office Applications — Word Processing (1)
Elementary concepts and practice in computer applications for the modern office. Five-week block. Current software in place includes Microsoft Word, Excel, and Access. (2 lab hours)

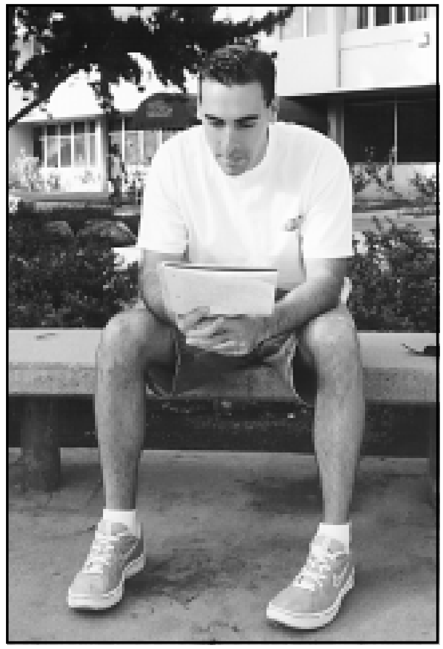
1B. Office Applications — Spreadsheet (1)
See IS 1A.

1C. Office Applications — Database (1)
See IS 1A.

3. Business Presentations (2)
Theory and practice of effective presentation of ideas in a business setting. Appropriate use of multimedia techniques and equipment in making presentations. Presentation software and techniques for its use. Current software in use is Microsoft PowerPoint. (4 lab hours)

50. Computer Concepts (3)
Introduction to computer hardware and software systems, impact of computers on society, ethical issues, application of computer technology in many career fields, hands-on laboratory experience with personal productivity software. (2 lecture, 2 lab hours)

51. Programming Fundamentals (3)
Prerequisite: IS 50 or equivalent. Structured program design using Visual Basic. Concepts of object-oriented and event-driving programming, user interface design, algorithm development, testing and debugging, and documentation using business examples. (2 lecture, 2 lab hours)



105W. Business Communication (3)
Prerequisites: satisfactory completion (*C* or better) of the ENGL 1 graduation requirement or approved equivalent, and junior standing. Business communication theory; analysis of communication alternatives; effective business writing and speaking; case studies. Meets the upper-division writing skills requirement for graduation.

106. Intermediate Website Design (3)
Prerequisites: IS 50. Theory and practice of Website design and authoring (HTML). Internet marketing concepts, and, in general, the Internet strategic significance for businesses. Introduces Web page usability, graphic design optimization concepts, and the basics of CGI, Java, and Javascript. (Formerly IS 156T)

130. Management Information Systems (3)
Prerequisites: IS 50 or demonstration of computer literacy; upper-division standing; IS 105W or ENGL 160W (may be taken concurrently). Management concepts in the role/administration of information/information system functions in organizations; enhancement of management with computers; management of systems development; planning and budgeting, analysis, design, implementation and operation of computer-based systems; measurement of operating performance. (Formerly IS 160)

140. Geographic Information Systems (GIS) for Business (3)
Prerequisites: solid computer skills. Application of geographic information systems to solution of business problems. Study of GIS concepts, software, management, ethical issues, and cases using local data and problems. (Formerly IS 156T)

150. End-User Computing (3)
Prerequisites: IS 50, 51. Use of data resources in business problem solving. Integration of microcomputer packages with systems development concepts to implement information systems. Topics include information centers, 4GLs, and decision support tools. (2 lecture, 2 lab hours)

151. Advanced Applications Software — Microcomputers (3)
Prerequisites: IS 51; either IS 150 or 158 is also a prerequisite and may be taken concurrently with IS 151. Advanced software development using the management of visual objects on microcomputers. Emphasis on structure and style, using visual environments, windows, and graphics. Program planning, logic structures, sorts and searches, variable passing, and file/database access. (2 lecture, 2 lab hours)

156T. Topics in Emerging Information Technologies (3; max total 6 if no topic repeated)
Prerequisites: IS 50. Overview of the most recent tools and techniques in information technology, and their utilization in the business environment with specific content of the course updated and refocused every year. (2 lecture, 2 lab hours)

158. Database Systems (3)
Prerequisites: IS 51; 150 recommended. Data structures; file design; database design concepts emphasizing the relational model; data administration; application of database management system software. (2 lecture, 2 lab hours) (Formerly IS 165)

162. Data Communications (3)
Resource sharing; computer traffic characterizations; multiplexing; network structure; packet switching and other switching techniques; computer network examples; routing and flow control; satellite and ground radio packet switching; transmission media and methods; line control procedures; line capacity assignment; communication processors. (Formerly IS 109)

164. Systems Configurations (3)
Prerequisite: IS 130. In-depth study of computer system technology: processors, storage devices, I/O devices; distributed processing; client-server; connectivity; LANs and WANs; selection, installation, and implementation processes.

166. Information Systems Analysis and Design (3)
Prerequisite: IS 158, ACCT 4A, 4B, and upper-division standing. Systems approach to problem solving; systems development life cycle; systems analysis; use of system modeling tools; logical systems design, including user interfaces, database, structure, and controls; implementation and testing. (2 lecture, 2 lab hours) (Formerly IS 161 through Spring 1999)

168. Information Systems Management (3)
Prerequisites: ACCT 4A, 4B, IS 130. Theories, costs, and problems associated with the operation of information systems. Organizational environments, security and legal issues, information center operations, end-user support, strategic information system planning, policy development, control and integration of information systems.

175. IS Practicum (3)
Prerequisites: IS 158, 166; senior standing. The application of IS skills learned in previous classes to a real-world problem. Students will act in groups as consultants on a problem solving opportunity provided by community business. The solutions will undergo competitive review and evaluation.

181. Computer Networks Management (3)
Prerequisites: IS 50, 130, 162. Theory and practice of computer network administration focusing on the role of the communications system in distributed computing network configuration; connectivity, network security, network hardware and software solutions; configuration of software in network environment, data transferability and access, routing, flow and congestion control. (2 lecture, 2 lab hours)

188. Decision Support and Expert Systems (4)
Prerequisites: IS 50, 130, 150. Overview of the basic topics in decision support and expert systems. Methodological foundation for integration of quantitative and expert knowledge with the computer for improving the decision-making process. Integrating databases, DSS models, and business analysis. Introduction to artificial intelligence and expert systems. (3 lecture, 2 lab hours) (Formerly DS 188)

189T. Topics in Information Systems (1-3; max total 6 if no topic repeated)
Prerequisite: permission of instructor. Theory or application of information systems or information management as applied to current developments in the field.

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for ***SP*** grading.

195. Internship (3; max total 6)
Prerequisite: permission of internship coordinator. Requires 150 hours of work at a pre-qualified, academically related work station (business, government, or nonprofit agency). Reflective journal, final report, and work station evaluation. As a course substitution, prior department approval required. Only one internship may count towards option requirements. ***CR/NC*** grading only.

200 Series Courses
Graduate courses are listed under *Business — Graduate Program.*