

Information Systems and Decision Sciences

The Craig School of Business

Department of Information Systems and Decision Sciences

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[www.craig.csufresno.edu/Departments/ISDS/
index.htm](http://www.craig.csufresno.edu/Departments/ISDS/index.htm)

B.S. in Business Administration

Option: Information Systems

Certificate in Business Information Systems

Certificate in Network Administration

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. **Web site 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.

Faculty

The Department of Information Systems and Decision Sciences employs full-time and part-time faculty with extensive expertise in statistics, systems analysis and design, computer programming, 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

Donald N. Stengel, *Chair*
 Randy J. Anderson
 Priscilla M. Chaffe-Stengel
 Myron Hatcher
 James M. Henson
 Jay Jung
 Ojoung Kwon
 Wallace C. Liu
 William S. Mallios
 Kathleen E. Moffitt
 Sasan Rahmatian
 Peter Simis
 Rafael Solis
 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 in Business Administration must, in addition to the university's General Education requirements, demonstrate computer competency, complete a seven-course group of pre-business courses, six or seven courses of upper-division core, 21 to 24 units in an area of specialization or option, and an integrative course requirement.

Computer literacy and computer software competency are considered essential to success in the program, which is heavily oriented in the use of technology. The pre-business courses include material considered essential for further study in business. The upper-division core courses provide a broad background and a breadth of knowledge and understanding. The option courses enable the student to specialize in a specific area of business and to prepare for effective performance in future employment.

Demonstration of computer competency. Complete IS 52 and 52L or equivalent courses with a grade of C or better or achieve a passing score on the CSB computer competency waiver examination. Students who pass the CSB computer competency waiver examination are considered to have satisfied stated prerequisites of IS 52 and 52L for any course offered by the department. See "computer competency waiver exam" at www.craig.csufresno.edu/Student_Info/USSI.

	<i>Units</i>
Pre-Business requirements.....	16*
ACCT 4A, 4B; BA 18; DS 71, 73; ECON 40 or AGEC 1; ECON 50; (See <i>Pre-Business Policy</i> , page 215.)	
Upper-division core requirements.....	24
DS 123; FIN 120; IS 130; MGT 110 or 104-106, MGT 124; MKTG 100	
Information Systems Option.....	21
IS 51, 158**, 166**, 181 (12) Select 9 units from the following courses: IS 106, 140, 150, 151, 156T, 162, 174, 182, 183, 184, 189T, 190, 195; MGT 126 or any other approved upper-division IS courses.... (9)	
General Education requirements.....	51
Grade Requirement	
A grade of C or better must be earned for each course used to satisfy the requirements for the major.	
Upper-division writing skills requirement	3-4
Business majors must select either BA 105W or ENGL 160W (See <i>Writing Requirements</i> , page 215.) <i>Note:</i> the Upper-Division Writing Exam is not an option for business administration majors.	
Integrative course requirement	3
IS 187**	
Elective and remaining degree requirements	1-2
Total	120

* This total indicates that 6 units for DS 71 and ECON 50 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

Prior to entering either of these programs, applicants will need to demonstrate that they have completed at least 6 units of elementary accounting and are conversant in computer concepts (equivalent to IS 52 and 52L at a minimum.) Applicants must also fill out the appropriate form in the ISDS Department office prior to entering either certificate program. Approval of

the certificate program coordinator or the department chair is required.

Eligibility. Applicants for either certificate will need to meet one of the following criteria:

- Have a bachelor's degree in any field from an accredited institution
- Have an associate of arts degree from a two-year accredited college and a minimum of two years of business experience
- Have a major in business (except IS) at an accredited four-year institution of higher education.

Note: Students majoring in IS (or an equivalent program) are *not* eligible for these certificates.

<i>Certificate in Business Information Systems</i>	<i>Units</i>
Required Courses	12
IS 150, 158, 162, 166	
Elective Course.....	3
Select a minimum of 3 units from the following: IS 51, 106, 140, 151, 156T, 181, 182, 183, 184, 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.

	<i>Units</i>
Required Courses.....	9
IS 162, 181, 182	
Elective Courses	6
Select a minimum of 6 units from the following: IS 51, 106, 140, 151, 156T, 183, 184, 190	

COURSES
Decision Sciences (DS)

DS 71. Quantitative Analysis (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.

DS 71L. Quantitative Analysis Lab (1)

Prerequisite: concurrent enrollment in DS 71. DS 71L is not required for DS 71. Extends instruction in DS 71, providing three hours of additional support per week. One-on-one tutoring. Small group and technology-enhanced instruction relating to DS 71 curriculum. *CR/NC* grading only. (Does not apply to major.)

DS 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.

DS 73L. Statistical Analysis I Lab (1)

Prerequisite: concurrent enrollment in DS 73. DS 73L is not required for DS 73. Extends instruction in DS 73, providing three hours of additional support per week. One-on-one tutoring. Small group and technology-enhanced instruction relating to DS 73 curriculum. *CR/NC* grading only. (Does not apply to major.)

DS 123. Statistical Analysis II (3)

Prerequisites: DS 71, 73; IS 52, 52L. 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)

DS 123L. Statistical Analysis II Lab (1)

Prerequisite: concurrent enrollment in DS 123. DS 123L is not required for DS 123. Extends instruction in DS 123, providing three hours of additional support per week. One-on-one tutoring. Small group and technology-enhanced instruction relating to DS 123 curriculum. *CR/NC* grading only. (Does not apply to major.)

DS 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.



DS 190. Independent Study (1-3; max total 6)

See *Academic Placement — Independent Study*. Approved for *RP* grading.

DS 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.

DS 200 Series Courses

Graduate courses are listed under *Business — Graduate Program*.

Information Systems (IS)

IS 51. Programming Fundamentals (3)

Prerequisite: IS 52 and 52L 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)

IS 52. Computer Concepts (2)

Introduction of computer hardware and software systems, impact of computers on society, ethical issues, and application of computer technology in many career fields. No credit if taken after IS 50. (Formerly IS 50)

IS 52L. Computer Concepts Lab (1)

Hands-on study of office productivity software to include elements of word processing, electronic spreadsheets, database, and presentation software. Modules may differ by major. Some sections use self-paced computer-based training. No credit if taken after IS 50. *CR/NC* grading only. (2 lab hours) (Formerly IS 50)

IS 106. Intermediate

Web Site Design (3)

Prerequisites: IS 52 and 52L. Theory and practice of Web site design and authoring (HTML). Web page usability, graphic design optimization concepts, and the basics of CGI, Java, and Javascript; introduction to Internet architecture concepts and protocols. (2 lecture, 2 lab hours)

IS 130. Management

Information Systems (3)

Prerequisites: IS 52 and 52L or demonstration of computer literacy; upper-division standing; BA 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.

IS 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. (2 lecture, 2 lab hours)

IS 150. End-User Computing (3)

Prerequisites: IS 51, 52, 52L. 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)

IS 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)

IS 156T. Topics in Emerging Information Technologies (3; max total 6 if no topic repeated)

Prerequisites: IS 52, 52L. 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)

IS 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)

IS 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.

IS 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)

IS 174. Decision, Knowledge, and Intelligent Systems (3)

Prerequisite: IS 130. Overview of the basic topics in decision support systems. Methodological foundation for integration of quantitative and expert knowledge with the computer for improving the decision-making process. Integrating databases, DSS models, business analysis, and systems. (2 lecture, 2 lab hours) (Formerly IS 188)

IS 181. Computer Networks Management (3)

Prerequisites: IS 52, 52L. Theory and practice of computer network design, installation, and management focusing on the role of the information communications system in a distributed business computing environment. Concepts include network operating systems, protocols, topologies, security, supporting services, applications, and disaster recovery. (2 lecture, 2 lab hours)

IS 182. Advanced Network Design and Management (3)

Prerequisites: IS 181. Design and management of advanced business telecommunications network components and services. Conceptual foundations and direct hands-on experience in designing, installing, and managing the relevant equipment, software, and services. (2 lecture, 2 lab hours) (Formerly IS 156T)

IS 183. Advanced Web Site Design and Management (3)

Prerequisites: IS 51, 158. Theory and practice of Web site design and authoring. Dynamic HTML and cascading style sheets; Web-based e-commerce application design (client-side scripting and server-side scripting with a back-end database.) Web development, project management, user interface design, interactivity design, and information design. (2 lecture, 2 lab hours) (Formerly IS 156T)

IS 184. Advanced Database (3)

Prerequisites: IS 158, 166. Not open to pre-business or undeclared majors. Advanced study of database systems. Possible topics include advanced database theory, database administration, physical design and implementation, query processing and optimization, transaction management, recovery, security, and other advanced topics. (2 lecture, 2 lab hours) (Formerly IS 156T)

IS 187. IS Practicum (3)

Prerequisites: IS 158, 166; senior standing. Integration and application of IS skills and knowledge across business functional areas. Students learn to deliver practical and strategic solutions in an integrative organizational environment. Students work in groups as consultants to solve real business problems. Course incorporates ethical considerations into decision-making. Students undergo competitive review and evaluation. (2 lecture, 2 lab hours) (Formerly IS 175)

IS 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.

IS 190. Independent Study

(1-3; max total 6)

See *Academic Placement — Independent Study*. Approved for *RP* grading.

IS 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.

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