Fall 2002

Program Announcement

SCHOOL OF
INFORMATION
MANAGEMENT &
SYSTEMS
Contact Information

Mail:
SIMS Administrative Office
102 South Hall
University of California, Berkeley
Berkeley, CA 94720-4600

Phone:
(510) 642-1464

Internet:
info@sims.berkeley.edu
http://www.sims.berkeley.edu

Revised 8/30/01
Table of Contents

Program Overview
  Message from the Dean ................................................................. 1
  Mission Statement ........................................................................... 2
  Faculty Profile .................................................................................. 2
  Background Information ................................................................. 5

Masters Program
  Course Work ..................................................................................... 7
  Degree Requirements ......................................................................... 8
  Admissions ......................................................................................... 10
  Application Forms ............................................................................. 14

Ph.D. Program
  Fields of Study .................................................................................. 15
  Degree Requirements ......................................................................... 16
  Admissions ......................................................................................... 17
  Application Forms ............................................................................. 19

Fees, Fellowships, & Financial Aid ..................................................... 20

Course Catalog .................................................................................... 21

University Policies ................................................................................ 31
Program Overview

Dean’s Message to Prospective Students

The School of Information Management and Systems is Berkeley’s newest school, now in its fifth year of operation. The development of the new program has been an exciting and challenging effort. We’ve worked with people from several other professional schools here at Berkeley to create a program that is truly interdisciplinary. We’ve talked with many employers in the information industry here in the Bay Area and elsewhere about the knowledge and skills that they want their employees to have.

We think that the program we have developed will prepare students for interesting, exciting, and meaningful jobs as information professionals. But we understand all too well that this discipline cannot be static. The pace of development of information technology is too rapid; we all must recognize that the field will continue to evolve and change in the future, and SIMS will evolve and change right along with it.

The most important requirement you will need as a student at SIMS will be a willingness to learn and to keep on learning throughout your professional career. We can provide you with the knowledge and skills to start you on that path, and we will work with you throughout your career to keep you up-to-date and informed. But you must provide the energy, the enthusiasm, and the drive to continue to acquire new knowledge and skills, building on what you will learn here, in order to succeed in the rapidly changing world of information management.

Dean Hal R. Varian
Mission

The information revolution has created the need for a new kind of professional: someone who is skilled in locating, organizing, manipulating, filtering and presenting information. The mission of the School of Information Management and Systems is to educate such information managers.

Information managers must be familiar with the technology used to store, organize and retrieve information in business, government, libraries and academic settings. However, technical expertise alone is not sufficient for success; SIMS graduates will be expected not only to manage technology but to manage information and people as well, and they need to acquire the necessary skills to do this effectively. For example, information managers will need to understand how to organize information; they will need to design front ends to information systems that allow for efficient and effective user interaction; they will need management skills to direct the development and deployment of software systems; and they must be able to assure the quality of information and its value to those who will use it to make decisions. Most importantly, they will need to understand the economic and social environment in which their organization functions and be familiar with the relevant issues in law, economics, ethics, and management.

Such a profession is inherently interdisciplinary, requiring aspects of computer science, cognitive science, business, law, library/information studies, and communications. We intend to create joint appointments and joint programs in these areas to provide students access to high quality professional guidance and expertise. Graduates of SIMS will find employment in major corporations, government offices, the media industry, libraries, and academic institutions--anywhere information is created and managed.

Faculty Profile

**Hal R. Varian** (Dean and Professor, Class of 1944 Chair)
S.B., Ph.D. Economics; M.A., Mathematics.
Focus: *Economics of information.*
Dr. Varian has worked in a variety of areas in economics, business, and information technology. His recent work has been concerned with the economics of the Internet, intellectual property, and electronic commerce. Dr. Varian holds joint appointments with the Haas School of Business and the Department of Economics.

**Robert Berring** (Law Librarian and Professor)
B.A., Government; M.L.S., Librarianship; J.D., Law
Focus: *Legal information.*
Professor Berring has authored a series of articles on the transformation of legal information from print to the electronic environment and how the change affects the way lawyers work and think.
Yale M. Braunstein  (Professor)  
B.S., M.A., Ph.D., Economics.  
Focus: Economics of information and communication. 
Dr. Braunstein specializes in the economics of information systems, communication industries, and regulation. He has authored papers and reports on the economics of libraries, the value and pricing of information, and the measurement of technological change in print and electronic publishing. Prior to coming to Berkeley, Dr. Braunstein was at New York and Brandeis Universities.

Michael Buckland  (Professor)  
B.A., History; Postgraduate Diploma, Ph.D., Librarianship.  
Focus: Library planning, management, academic libraries and information retrieval.  
Dr. Buckland's interests include online catalogs, library planning, and the social context of information services. His Library Services in Theory and Context, 2nd ed., (Pergamon, 1988), Information and Information Systems (Praeger, 1991), and Redesigning Library Services (ALA, 1992) are indicative of his research concerns.

John Chuang  (Assistant Professor)  
B.A., M.S., Electrical Engineering; M.S., Ph.D., Engineering and Public Policy.  
Focus: Network technologies, internet economics, telecommunications policy and the economics of information.  
Dr. Chuang's research and teaching encompass the technical and economic dimensions of data networking, with particular emphasis on the infrastructural foundations that support scalable and efficient delivery of content to a geographically diverse audience.

Michael D. Cooper  (Professor)  
B.A., Economics; M.S., Business Administration; Ph.D., Librarianship.  
Focus: Design of information systems, economics of information.  
Dr. Cooper's interests range over a number of areas including analysis, design, implementation and evaluation of information systems; database management systems; computer performance evaluation; and library automation. His recent research includes mathematical models of user behavior with office information systems, analysis of the costs of storage of library materials, and economic trends in academic libraries. His monograph, Design of Library Automation Systems, has just been published.

Marti A. Hearst  (Assistant Professor)  
B.A., Computer Science; M.S., Ph.D., Computer Science  
Focus: Human-computer interaction, information visualization, empirical computational linguistics, and information access systems.  
Dr. Hearst focuses on designing, building, and evaluating information access systems. She has designed several novel information visualization and text analysis techniques for this purpose, including TextTiling, TileBars, and the Cat-a-Cone.
Ray R. Larson  (Associate Professor)
B.A., English; M.S.L.S., Library Science; Certificate, Ph.D., Library and Information Studies.
Focus: Information retrieval system design and evaluation.
Dr. Larson specializes in bibliographical information systems, with an emphasis on the use of computers. He was involved in the design and development of UC public access online union catalog (MELVYL). He is the principal designer of the Cheshire prototype system, and is currently involved in Berkeley's NSF/ARPA/NASA Digital Libraries Project.

Peter Lyman  (Associate Dean and Professor)
B.A., Philosophy; M.A., Ph.D., Political Science.
Focus: The ethnographic study of communication & social formations in digital environments.
Dr. Lyman's interests include: the social construction of knowledge and information; the impact of technical design decisions on social communication and information; the sociology of technical decision making; and technology transfer and institutional change, particularly change in publishing and libraries.

Warren Sack  (Assistant Professor)
B.A., Computer Science and Psychology; M.S., Ph.D., Media Arts and Sciences.
Focus: Computer-mediated communication, online communities, architecture and design for online spaces, social networks, computational linguistics, media studies.
In his research, Dr. Sack explores how the Internet engenders new social and political formations. He designs software for the navigation, summarization and visualization of online, public space and discourse.

Pamela Samuelson  (Professor)
B.A. History; M.A., Political Science; J.D., Law
Focus: Intellectual property law.
Professor Samuelson has written and spoken extensively about the challenges that new information technologies are posing for traditional legal regimes. She is a Fellow of the Electronic Frontier Foundation and of the Cyberspace Law Institute. She also serves on the LEXIS-NEXIS Electronic Publishing Advisory Board and on the editorial boards of the Electronic Information Law & Policy Report and of the TechnoLaw Roundtable. Professor Samuelson holds a joint appointment in the School of Law.

Doug Tygar  (Professor)
A.B., Math and Computer Science; Ph.D., Computer Science
Focus: Electronic commerce, cryptography, security, and privacy.
Dr. Tygar is extremely active in the electronic commerce and computer security communities. He consults widely for both industry and government, has taught a number of professional seminars on these
topics, and has served as program chairman or program committee member for a number of conferences in these areas. Dr. Tygar holds a joint appointment with the Department of Computer Science.

**Nancy Van House  (Professor)**
A.B., English; M.L.S., Ph.D., Library and Information Studies.  
Focus: *Work practice-based design of digital libraries and information systems.*  
Dr. Van House's research centers around assessing user needs; understanding users' work; the role of information and information tools, artifacts, and representations in users' work; and information actions and intentions. She is currently a faculty investigator on the UC Berkeley NSF/ARPA/NASA Digital Libraries Project and is involved in the evaluation of the Museum Educational Site Licensing Project.

**Robert Wilensky  (Professor)**
Focus: *Digital information systems, user interfaces and artificial intelligence.*  
Dr. Wilensky is especially interested in natural language processing, common sense reasoning and knowledge representation. He has published articles on natural language understanding, planning and reasoning, knowledge representation and digital libraries. He is also the author of two texts on programming.

**Background Information**

In May 1995 the Regents of the University of California approved the creation of the School of Information Management and Systems. The Information Planning Group's *Proposal for a School of Information Management and Systems* described the program as follows:

What is unique about this program is the focus on the use and management of information through the merger of the technical and social sciences approaches. We believe that The University of California, Berkeley, has an opportunity to pioneer in the development of an emerging professional field of critical importance. Information is now one of the world's most important and rapidly changing resources. Rapidly growing capabilities in computing and telecommunications, the increasing importance of information in the professions, in scholarship and research, and in daily life, the expanding and multidimensional information industry, and the developing information infrastructure have created major new challenges and opportunities.

The issue now is often less the availability of information than its overabundance, and access to quality information for diverse users and uses. The challenge is to filter what is most useful out of the vast quantity of information available: to select, evaluate, describe, store, retrieve, manipulate, and present information in all its forms, including text, still and moving images, sound, and numeric data. The goal is to provide, not simply data, but information that enhances understanding.

We propose a program that will advance, through teaching and research, the organization, management and use of information and information technology, and enhance our understanding of the impact of information on individuals, institutions, and society. This mission has both a technical component, concerned with the design and use of information systems and services, and a social sciences component, concerned with understanding how people seek, obtain, evaluate, use, and categorize information. The proposed program will use the approaches of several social sciences and professional and technical disciplines to address a core set of information-related issues.
The primary educational mission of the program will be to prepare professionals for corporations, government agencies, and the academic world who can develop improved approaches to handling information, to design and manage information functions, and to merge them with other aspects of the organization. Evidence strongly suggests the existence of a very large demand for such professionals in business, government, and the academic world.

The research mission of the program will be to explore the design and operation of information systems and services, the nature and properties of information, and information-related behavior at the individual, group, and societal levels.

Berkeley is an ideal place to address this challenge, given our strength in such allied disciplines as computer science, business administration, cognitive science, and public policy; the existence of a substantial foundation from the School of Library and Information Studies; the proximity of leading firms in the information industry; and Berkeley's ability to attract an eclectic group of outstanding scholars.
Masters Program

The Master of Information Management and Systems program is a 42 unit, two-year program designed to train students in the skills needed to succeed as information professionals. Such professionals must be familiar with the theory and practice of storing, organizing, retrieving and analyzing information in a variety of settings in business, the public sector, and the academic world. Technical expertise alone is not sufficient for success; SIMS graduates will be expected to perform and manage a multiplicity of information related tasks. In order to function effectively they will need to:

- understand how to organize information analyze user information needs
- be able to design or evaluate information systems that allow for efficient and effective user interaction
- be able to provide and assure the quality and value of information to decision makers
- understand the economic and social environment in which their organization functions
- be familiar with relevant issues in law, economics, ethics, and management

Such a profession is inherently interdisciplinary, requiring aspects of computer science, cognitive science, psychology and sociology, economics, business, law, library/information studies, and communications.

Course Work

The first year of the program will consist of a core curriculum with coursework in organization of information and database design, analysis of information seeking behavior, technical and social aspects of the telecommunications infrastructure, project design and management.

The second year will involve further study in the core areas along with additional electives, with the expectation that the student will specialize in particular aspects of information management and systems.

During the summer between the two years, students will be able to participate in an internship program in order to use their newly acquired skills in real-world settings. Internships will be arranged in corporate, government, and non-profit institutions.

First Year Required Courses

There will be four required courses in the first year. During the first semester students take three courses: Information organization and retrieval, Communications networks and Information users
and society. During the second semester students will take a course in Analysis of Information Organizations and Systems intended to provide experience in project design and management. The remaining units for the second semester will be composed of electives.

**INFOSYS 202: Information Organization and Retrieval.**
Organization and representation of information and access to information. Categorization, indexing, and content analysis. Design and maintenance of databases, indexes, classification schemes, and thesauri. Use of codes, formats and standards. Analysis and evaluation of search and navigation techniques.

**INFOSYS 204: Information Users and Society.**
The impact of information and information systems, technology, practices, and artifacts on how people organize their work, interact, and understand experience. Social issues in information systems design and management: assessing user needs, involving users in system design, and understanding human-computer interaction and computer-mediated work and communication. Use of law and other policies to mediate the tension between free flow and constriction of information.

**INFOSYS 206: Distributed Computing Applications and Infrastructure.**
Technical side of distributed computing, including complexity management, concurrency, protocols, security, performance, networking, and middleware. Application examples including collaboration, electronic commerce, information access and control. Economics and policy considerations.

**INFOSYS 208: Analysis of Information Organizations and Systems.**
Project planning and scheduling, process design, project management and coordination. Analysis of information needs, specification of system requirements, analysis of alternatives, design of alternatives. Quantitative methods and tools for analysis and decision making. Documentation management. Design, implementation and evaluation of a project.

**The Second Year of the Program**
The second year of the program will be devoted to electives both within the School and in other units on campus. During the final semester of the second year, students will undertake group projects to design, build and evaluate an information system. This culminating project will give students an opportunity to use their experiences in the classroom and the workplace to create useful information systems and products.

**Degree Requirements**
A program of study including at least 42 semester units is required for the degree of Master of Information Management and Systems. Work toward the degree must be completed with a grade point average of at least B (3.0 on a 4.0 scale). Students may elect to take courses on a satisfactory/unsatisfactory basis up to a limit of one third (i.e., 14 units) of the total units applied toward the degree.
**Course Requirements**
Courses 202, 204, 206 and 208 are required of all students and must be taken on a letter grade basis; the S/U option is not allowed. During the second year of the program each student must complete a course identified as satisfying the final project requirement, which must be taken for a letter grade. Further courses to satisfy the 42 unit requirement may be chosen from the School's 200 series course offerings or from courses in other departments. A maximum of 10 units from other departments will be accepted as counting toward the MIMS degree. Additional outside units may be accepted by special arrangement with a faculty adviser. Courses from other departments must be upper division or graduate courses numbered in the 100-299 range and must be approved by a SIMS faculty adviser before credit will be accepted toward the degree. A maximum of 4 units of Individual Study (IS 299) will count toward the degree.

**Transfer of Units**
Courses taken before admission to the School will normally not be accepted as fulfilling degree requirements. Under certain conditions as many as four semester units of work taken while enrolled in a similar graduate program might be applied toward degree units.

**Length of MIMS Program and Academic Residence**
The MIMS program is considered a full time program; students are expected to enroll in 12 units of graduate work each semester and complete the program within the two year time frame. The Graduate Division requires that masters degree students complete a minimum of two semesters of academic residence. To meet the academic residence requirement for a single semester, a student must enroll in and complete a minimum of 4 units of upper division and/or graduate course work.

**Management of Technology Certificate**
The Management of Technology Certificate (MOT) is a joint program including the Haas School of Business, the College of Engineering, and the School of Information Management and Systems. Through this program students have the opportunity to attend a variety of courses offered by Haas, Engineering, and SIMS relating to management issues in the high-tech field. Once the student completes the required four MOT courses, they are eligible to receive the MOT Certificate in addition to their Masters or Ph.D. The MOT Certificate program is open only to students of Haas, Engineering, and SIMS and can only be taken in conjunction with a Masters or Ph.D. degree.
Students must complete a total of four courses to obtain the certificate. Two of the four must be MOT core courses. Students also have the following options: complete four core courses, complete two core and two related courses, or complete three core and one related course. There are a total of six core MOT courses and about twenty-one related courses, many of which are only offered one semester a year.

All MOT core courses are cross-listed with Engineering, SIMS, and Business Administration course numbers (and sometimes other course numbers as well). Cross listing ensures that there are seats allocated for engineering, information management, and business students. Related MOT courses are generally not cross-listed. All MOT courses are for letter grades only.

Non-MBA Students: There are a number of MOT-related courses offered by the Haas School that are not cross-listed. These courses are open to non-MBA students who have met prerequisites, provided there is space available.

Admissions

Graduate Division Requirements for Admission
Admission to the Masters program is contingent upon admission to graduate standing in the University of California, Berkeley, which requires:

- A bachelor’s degree or its recognized equivalent from an accredited institution;
- Sufficient undergraduate training to undertake graduate study in the chosen field;
- A satisfactory scholastic average; usually a minimum 3.0 (B) grade-point average in bachelor’s degree work completed after the first two years;
- Results of the General Test of the Graduate Record Examination, and in the case of international applicants whose academic work has been in a language other than English, the Test of English as a Foreign Language is required.

SIMS Requirements for Admission
Selection from among those who meet the Graduate Division’s requirements will be based on:

- Superior scholastic record, normally well above the 3.0 GPA;
• Evidence of potential success as indicated by GRE scores and letters of reference;
• Clear indication of professional career goals and reasons for seeking the degree described in the Statement of Purpose section of the application;
• Computer competency and proficiency sufficient for successfully completing SIMS course work. For further guidance on the competency requirement, see the Computer Competency Entrance Requirement section;
• Evidence of relevant work experience.
• Particular consideration will be given to: knowledge of qualitative and quantitative research skills; socioeconomic background; unusual aptitude as reflected in high GRE scores; advanced preparation in related fields as evidenced by successful graduate study; successful work experience in relevant fields.

We anticipate students from a diverse set of backgrounds; some will be technically educated, some educated in the humanities and social sciences. The purpose of the core curriculum offered in the first semester is to bring these diverse students to a common level of knowledge and prepare them for the electives.

**Required Entrance Examinations**
Applicants must submit results from the General Test of the Graduate Record Examination (GRE), and, in the case of international applicants whose academic work has been conducted in a language other than English, the Test of English as a Foreign Language (TOEFL).

**Graduate Record Examination (GRE)**
Applicants to graduate degree programs at Berkeley must submit test results from the General Test of the Graduate Record Examination. Application blanks and information on testing dates and examination centers for the Graduate Record Examination General Test are available from the offices of the Educational Testing Service. Check the GRE website or phone: 1-800-GRECALL about paper-based and computer-based exam possibilities. Mail requests for applications for the paper-based examination to either: P.O. Box 23470, Oakland, California 94623-0470, or P.O. Box 955, Princeton, New Jersey 08540. Application for the examination must be made at least at least three weeks before the test date. We advise all applicants to take the General Test of the Graduate Record Examination no later than the October prior to submission of an application.
Computer Competency Entrance Requirement

The School's academic program for the Master's degree includes a balance of courses such as individual and group approaches to information system use, user interface design and development, organization of information, management of information systems and services, economics of information, and principles of information retrieval. There are also extensive courses in information technology, systems analysis and design. The faculty expects entering students to have certain core competencies in the use of computing hardware and software.

A. Basic Level Competency
At the most basic level we expect entering students to be able to use personal computers and be familiar with microcomputer software including:

- Word processors (e.g. Microsoft Word, WordPerfect);
- Spreadsheets (e.g. Microsoft Excel);
- Network browsers & clients (e.g. Netscape, E-mail, Telnet, FTP);
- Database management (development using packages such as Access, Fox Pro, or dBase.)
- HTML tagging and editors for web document creation;
- Familiarity with the basics of UNIX and a UNIX text editor, such as pico, vi, or emacs is also highly recommended.

B. Programming Competency
Students graduating from the School will be leaders in organizing, accessing, and managing information. We expect all students enrolling in the program to understand the basics of programming in order to enhance their understanding of computing and to build on that understanding through coursework in the degree program.
Computer skills at a level comparable to those obtained in a college-level course on computer programming in a high-level language will be expected. This is a minimal requirement; additional course work and/or experience with computers, and familiarity with a scripting language is highly recommended.

- Recommended high-level programming languages are C, C++, and Java.
- Recommended scripting languages are perl, tcl/tk, and python.

Each applicant must submit a *Computer Competency Statement* describing specifically his/her level of proficiency with the requirements set forth in Parts A and B above along with a brief description of relevant courses completed. This statement should accompany the other application materials.

**Computer Ownership Requirement**

We require that students own a computer. No particular configuration is specified in this requirement. However, students will be expected to complete assignments using office productivity software (e.g. Microsoft Office, WordPerfect Office, Star Office), web browsers (e.g. Netscape Communicator, Internet Explorer) and the like, and should therefore own a computer capable of running such software.

Students may choose to own a desktop or laptop. The most common platform is an intel-based computer running Microsoft Windows. However, students are free to use another platform (e.g. an Intel-based computer running Unix/Linux or a Macintosh running MacOS). Students who do not already own a suitable computer will receive more specific guidance on selecting a new one upon acceptance to the program.
**Application Forms**

Application forms are available September through December of the year prior to the fall term for which one is applying. They can be obtained from the School of Information Management and Systems via:

An email request to: info@sims.berkeley.edu

Telephone: 510-642-1464

Mail:
102 South Hall
University of California
Berkeley, CA 94720-4600

The Graduate Division now offers an electronic version of the application forms and an on-line application. The forms are in Adobe Portable Document Format (PDF). Adobe Acrobat Reader ([http://www.adobe.com/acrobat](http://www.adobe.com/acrobat)) is required to view and print documents in this format. Both the forms and the on-line application can be found on the GradWeb website at: [http://www.grad.berkeley.edu/grad/admis/](http://www.grad.berkeley.edu/grad/admis/).

The application packet must include the following:

- A completed application form
- A completed Computer Competency Statement
- A resume of relevant work experience, if applicable

Applicants must also make arrangements for the submission of the following:

- Three letters of recommendation
- Appropriate transcripts
- Relevant test scores

Applicants must submit all application materials no later than 5 January of the year in which they are applying. Letters of recommendation, transcripts, and examination results should be submitted by the same deadline.
Ph.D. Program

The doctoral program is a research oriented program in which the student chooses specific fields of specialization, prepares sufficiently in the literature and research of those fields to pass written and oral examinations and completes original research culminating in the written dissertation. The degree of Doctor of Philosophy is conferred in recognition of a candidate's grasp of a broad field of learning and distinguished accomplishment in that field through the contribution of an original piece of research revealing high critical ability and powers of imagination and synthesis.

Fields of Study

The following are the fields for the Ph.D Qualifying Examination. Periodic changes to the list of fields and revisions to the descriptions can be expected and will be announced to all students.

(1) **Information users and society.** Cognitive and behavioral aspects of information creation seeking, use and transfer by individuals and groups. Information in society. Needs assessment. User-centered design and evaluation of content, functionality, and interfaces of information competence, statistics, systems, services and products. Ethics. Special competence: statistics.

(2) **Organization and representation of information.** Organization of and access to information resources. Presentation of information. Information modeling and design. Preservation and conservation of information resources. Multimedia. Special competence: statistics.

(3) **Management of information organizations and services.** Internal and external management practices in information organizations and units in corporations, government, and non-profit organizations. Organizational information policy. Organizational aspects of information technology. Information for competitive advantage. Strategic uses of information. Marketing. Information flows within organizations. Special competence: statistics.

(4) **Economics of information.** Microeconomic and macroeconomic analyses of the production, distribution and use of information. Economic methods for decision-making in information organizations. Special competence: statistics.


(7) **Systems analysis, design and implementation.** Analytical techniques for design and decision-making. Systems implementation with database management systems. Systems implementation. Special competence: statistics.


(9) **Law and information management.** Legal issues in information management, including trans-border data flow, privacy, libel, and constitutional rights. Intellectual property (copyright, patent, trade secrecy). Law, technology, standards and intellectual property.

**Degree Requirements**

In the first years of coursework, students gain a broad background in Information Management and Systems (IMS), then acquire an in-depth understanding of one Major and two Minor specific disciplines or research areas, and complete a Preliminary Project paper. In order to gain this broad foundation in IMS as well as detailed background knowledge sufficient to do research, each student should:

- Enroll in required core INFOSYS courses;
- Take the Doctoral Colloquium, INFOSYS 295, at least once, and attend one of the continuing research seminars in the School closest to your research interests; and,
- Work with your Advisory Committee to identify and take a set of advanced courses tailored to your interests from SIMS and other departments on campus.

As a capstone to the coursework, each student will submit a Preliminary Project paper to his or her Advisory Committee. Once the Preliminary Project paper is unanimously approved by the Advisory Committee, the student may continue to prepare their Dissertation Proposal and take the Qualifying examination.
Advancement to candidacy, which takes place on the recommendation of the School to the Graduate Council, requires these steps:

- Satisfactorily completing the Preliminary Project paper overseen by the student’s Advisory Committee;
- Passing an oral qualifying examination administered by a committee appointed by the Graduate Council;
- Approval of a dissertation proposal by an ad hoc committee of the faculty.

After advancement to candidacy, the candidate must complete a dissertation under the guidance of a committee appointed by the Graduate Council; the committee consists of three members, one of whom must be from a department other than Information Management and Systems. Before final action is taken on the dissertation, the committee may, if deemed necessary, require the candidate to defend the dissertation in a formal oral examination.

**Admissions**

**Graduate Division Requirements for Admission**
Admission to the doctoral program is contingent upon admission to graduate standing in the University of California, Berkeley, which requires:

- A bachelor's degree or its recognized equivalent from an accredited institution;
- Sufficient undergraduate training to undertake graduate work in a chosen field;
- A satisfactory scholastic average, usually a minimum of 3.0 (B);
- Results of the General Test of the Graduate Record Examination
- In the case of international applicants whose academic work has been in a language other than English, the Test of English as a Foreign Language (TOEFL).

**SIMS Requirements for Admission**
- Past academic performance as reflected by grade point averages (generally expected to be well over a 3.0);
- Evidence of potential academic success as reflected in GRE scores and letters of recommendation;
- Indication of appropriate research goals in the intended field of study as expressed in the application Statement of Purpose;
- Possession of other relevant advanced degrees, although at the discretion of the faculty, this requirement may be waived.

Enrollment in the doctoral program is limited, not only by the over-all maximum enrollment figure set by the Graduate Division, but by the availability of faculty resources for supervision of doctoral studies.
Required Entrance Examinations
All applicants must submit results from the General Test of the Graduate Record Examination (GRE), and in the case of international applicants whose academic work has been conducted in a language other than English, the Test of English as a Foreign Language (TOEFL).

Graduate Record Examination (GRE)
All applicants to graduate degree programs in the School of Information Management and Systems must submit test results from the General Test of the Graduate Record Examination. Application blanks and information on testing dates and examination centers for the Graduate Record Examination General Test are available from the offices of the Educational Testing Service. Check the GRE website or phone: 1-800-GRECALL about paper-based and computer-based exam possibilities. Mail requests for applications for the paper-based examination to either: P.O. Box 23470, Oakland, CA 94623-0470, or P.O. Box 955, Princeton, NJ 08540. Application for the examination must be made at least three weeks before a test date.

We advise all applicants to take the General Test of the Graduate Record Examination no later than the December preceding submission of an application and preferably before.

Test of English as a Foreign Language (TOEFL)
International applicants are expected to fulfill all previously stated admissions requirements and to have an excellent command of English before beginning graduate study at Berkeley. Applicants from countries in which the official language of instruction is not English are required to take the Test of English as a Foreign Language (TOEFL) and have the results sent directly to the Graduate Admission/Fellowship Office by the TOEFL authorities in Princeton, New Jersey. Applicants to Berkeley must attain a TOEFL score of 570 or higher. International applicants from any country in which the official language is English or those who have studied for one year or more in schools or universities where English is the language of instruction need not submit TOEFL scores but must take the General Test of the Graduate Record Examination. For more information about taking The Test of English as a Foreign Language (TOEFL), visit the TOEFL website or contact the TOEFL Office, P.O. Box 6155, Princeton, New Jersey 08541-6155.

Transfer from One Program to Another Within the Berkeley Campus
Application for admission to the doctoral program by students already enrolled in a graduate degree program of the Berkeley campus is formally accomplished by submitting a petition for a Change of Degree Goal. These petitions are considered along with other applications for admission to the doctoral program. A petition for Change of Degree Goal should be accompanied in all cases by a statement describing the reasons for the proposed change and the nature of the program of studies contemplated. Any applicants previously admitted to the Graduate Division must still submit the standard application form and required letters of recommendation.
Computer Ownership Requirement
SIMS requires all doctoral students to own a computer. Please consult page 13 for more details about the computer ownership requirement.

Application Forms

Application forms are available September through December of the year prior to the fall term for which one is applying. They can be obtained from the School of Information Management and Systems via:

An email request to: info@sims.berkeley.edu

Telephone: 510-642-1464

Mail:
102 South Hall
University of California
Berkeley, CA 94720-4600

The Graduate Division now offers an electronic version of the application forms and an on-line application. The forms are in Adobe Portable Document Format (PDF). Adobe Acrobat Reader (http://www.adobe.com/acrobat) is required to view and print documents in this format. Both the forms and the on-line application can be found on the GradWeb website at: http://www.grad.berkeley.edu/grad/admis/.

Applicants must submit a completed application and make arrangements for the submission of the following:

- Three letters of recommendation
- Appropriate transcripts
- Relevant test scores

Applicants must submit all application materials no later than 5 January of the year in which they are applying. Letters of recommendation, transcripts, and examination results should be submitted by the same deadline.
Fees

Detailed information on fees and expenses is found in the University's General Catalog. During 2000-01 graduate students who qualify as residents of California are required to pay $4,348.50 in fees per academic year. Nonresidents are required to pay the nonresident tuition plus fees, for a total of $15,242.50 per academic year. (Nonresidents, for purposes of registration, are those who have not been legal residents of California for more than one year immediately before the opening day of the semester for which they register. Legal residence is a combination of physical presence and the intention of making the state one's permanent home, coupled with the relinquishment of legal residence in any other state.)

Summer Session fees are variable, depending on the number of units of credit for which one enrolls. There is no nonresident tuition fee for registration in the Summer Session. Summer Session programs are open to qualified students who are not formally pursuing degree programs in the school.

Fellowships

A number of fellowships and graduate scholarships are offered on the Berkeley campus, open to all graduate students by competition. Other fellowships and graduate scholarships are restricted to students in particular fields of study. The School of Information Management and Systems has available a number of fellowships for masters and doctoral students. Applicants interested in applying for fellowship assistance must complete Part C of the application. Fellowships normally are awarded only for the first year of study, but a number of student research, teaching and reader appointments are available to qualified students. Students holding an appointment for a full semester receive a partial or full fee remission depending upon the number of hours worked. Inquiries about availability of student appointments should be made directly to the School of Information Management and Systems at the time of enrolling in the fall. All fellowships and many student research appointments are awarded for the nine-month academic year beginning with the fall semester.

Financial Aid

In addition to fellowship support, the University of California, Berkeley offers financial aid based on need. Applications for assistance are included with forms for application for admission.

University Grants-in-Aid, Federal and University loans are available to students through the Office of Financial Aid, 201 Sproul Hall, University of California, Berkeley; Berkeley, CA 94720-1960. Part-time, temporary, vacation, and odd-job employment is available to students both on and off the campus; application should be made in person to the Student Employment Services, 2111 Bancroft Way, Berkeley, CA.
Course Catalog

Numerals in parentheses indicate number of units of course credit.

Core Courses

202. Information Organization and Retrieval. (4)
Three hours of lecture per week. Organization, representation, and access to information. Categorization, indexing, and content analysis. Data structures. Design and maintenance of databases, indexes, classification schemes, and thesauri. Use of codes, formats and standards. Analysis and evaluation of search and navigation techniques.

204. Information Users and Society. (4)
Three hours of lecture per week. The impact of information and information systems, technology, practices, and artifacts on how people organize their work, interact, and understand experience. Social issues in information systems design and management: assessing user needs, involving users in system design, and understanding human-computer interaction and computer-mediated work and communication. Use of law and other policies to mediate the tension between free flow and constriction of information.

206. Distributed Computing Applications & Infrastructure. (4)
Three hours of lecture per week. Technical side of distributed computing, including complexity management, concurrency, protocols, security, performance, networking, and middleware. Application examples including collaboration, electronic commerce, information access and control. Economics and policy considerations.

208. Analysis of Information Organizations and Systems. (4)
Three hours of lecture per week. Prerequisites: 202, 204, 206, or consent of instructor. Project planning and scheduling, process design, project management and coordination. Analysis of information needs, specification of system requirements, analysis of alternatives, design of alternatives. Quantitative methods and tools for analysis and decision making. Document management. Design, implementation, and evaluation of a project.

Users and Society

210. Cognitive Approaches to Information. (3)
Three hours of lecture per week. Prerequisites: 204 or consent of instructor. Individual information behavior and use and their relation to information system design. Basics of cognitive psychology applied to information systems. Methods of cognitive psychology.
211. Group and Organizational Approaches to Information System Use. (3)
Three hours of lecture per week. Prerequisites: 204 or consent of instructor. The transmission and use of information within groups such as work groups and organizations. Information flows in organizations. Organizations as information processors. Collaboration. Computer assisted cooperative work. Influencing strategies. Adoption of innovation. The uses of information for coordination and communication within organizations.

212. Information in Society. (3)
Three hours of lecture per week. Prerequisites: 204 or consent of instructor. The role of information and information technology in organizations and society. Topics include societal needs and demands, sociology of knowledge and science, diffusion of knowledge and technology, information seeking and use, information and culture, and technology and culture.

213. User Interface Design and Development. (3)
Three hours of lecture per week. Prerequisites: 204 or consent of instructor. User interface design and human-computer interaction. Examination of alternative design. Tools and methods for design and development. Human computer interaction. Methods for measuring and evaluating interface quality.

Three hours of lecture per week. Prerequisites: 204 or consent of instructor. Concepts and methods of needs and usability assessment. Evaluation of information system content, functions. Social science research methods. User centered design; evaluation concepts and methods; evaluation criteria; identifying and describing user needs and requirements; usability assessment methods including experiments, usability testing, heuristic evaluation, walk through, protocol analysis, surveys and focus groups, and naturalistic methods; communicating usability findings; working with designers; managing the needs assessment/usability effort.

215. Information Services. (3)
Three hours of lecture per week. Prerequisites: 202, 204 or consent of instructor. Selection, analysis, synthesis, and evaluation of information resources to meet individual and collective needs. Analysis of information environments, information flows, and user needs. Strategic uses of information in organizations. Design, management, and evaluation of information services and products.

217. Information Skills for Professionals in the Public & Nonprofit Sector. (3)
Three hours of lecture per week. No prerequisites. Information related skills for policy formulation and decision making. Topics include: the role of information in decision making and policy formulation; diagnosing needs; the search process; using published and unpublished sources, key informants and experts; evaluating, synthesizing, presenting and using information. Includes extensive use of electronic information sources. Particularly appropriate for non-SIMS students.
219. Privacy, Security, and Cryptography. (3)
Three hours of lecture per week. Prerequisite: 206 or consent of instructor. Policy and technical issues related to insuring the accuracy and privacy of information. Encoding and decoding techniques including public and private key encryption. Survey of security problems in networked information environment including viruses, worms, trojan horses, Internet address spoofing.

Management and Policy

220. Management of Information Systems and Services. (3)
Three hours of lecture per week. Introduction to internal and external management issues and practices in information organizations. Internal issues: organizational behavior, organizational theory, personnel, budgeting, planning. External issues: organizational environments, politics, marketing, strategic planning, funding sources.

221. Information Policy. (3)
Three hours of lecture per week. An examination of the nature of corporate, non-profit, and governmental information policy. The appropriate role of the government in production and dissemination of information, the tension between privacy and freedom of access to information. Issues of potential conflicts in values and priorities in information policy.

222. Marketing Information Products and Services. (3)
Three hours of lecture per week. Prerequisites: 208 or consent of instructor. Approaches to the marketing of information products and services, including analysis of user needs, market structure, pricing, market behavior, and distribution.

224. Strategic Computing and Communications Technology. (3)
Three hours of lecture per week. Prerequisites: Grad. student in Engineering, Bus. Adm, SIMS, or consent of instructor. Factors strongly impacting the success of new computing and communications products and services (based on underlying technologies such as electronics and software) in commercial applications. Technology trends and limits, economics, standardization, intellectual property, government policy, and industrial organization. Strategies to manage the design and marketing of successful products and services.

Economics and Law

231. Economics of Information. (3)
Three hours of lecture per week. The measurement and analysis of the role information plays in the economy and of the resources devoted to production, distribution, and consumption of information. Economic analysis of the information industry. Macroeconomics of information.

235. Legal Issues in Information Management. (3)
Three hours of lecture per week. Introduction to legal issues in information management, antitrust, contract management, international law including intellectual property, trans-border data flow, privacy, libel, and constitutional rights.

237. Intellectual Property. (3)
Three hours of lecture per week. Prerequisites: 235 or consent of instructor. The philosophical, legal, historical, and economic analysis of the need for and uses of laws protecting intellectual property. Topics include: types of intellectual property (copyright, patent, trade secrecy), the interaction between law and technology, various approaches (including compulsory licensing), and the relationship between intellectual property and compatibility standards.

Organization, Retrieval and Representation of Information

240. Principles of Information Retrieval. (3)

245. Organization of Information in Collections. (3)
Three hours of lecture per week. Prerequisites: 202 or consent of instructor. Standards and practices for description and organization of bibliographic, textual, and nontextual collections. Design, selection, maintenance and evaluation of cataloging, classification, indexing and thesaurus systems for particular settings. Vocabulary control. Codes, formats & standards for data representation and transfer.

246. Multimedia Information. (3)
Three hours of lecture per week. Prerequisites: 202, 204 or consent of instructor. Concepts and methods of design, management, creation, and evaluation of multimedia databases. Organization and retrieval of digital multimedia. Issues of image and sound capture, storage and storage standards, display, networking, standards, copyright, and vocabulary control. Review of applicable digital technology.
247. Information Visualization and Presentation. (3)
Three hours of lecture per week. Prerequisites: 213, CS 160, or consent of instructor. The design and presentation of digital information. Use of graphics, animation, sound, visualization software, and hypermedia in presenting information to the user. Methods of presenting complex information to enhance comprehension and analysis. Incorporation of visualization techniques into human-computer interfaces.

248. Preservation and Conservation of Information Resources. (3)
Three hours of lecture per week. Management of digital and non-digital information resources including issues of authentication, integrity, version control, legacy control, storage, personal privacy, and rights of access. Conservation of paper, film, magnetic, and optical media. Conversion of information from one medium to another including data format conversion and digitization. Standards regarding quality of physical materials and digital surrogates.

**Information Technology**

250. Computer-Based Communications Systems and Networks. (3)
Three hours of lecture per week. Prerequisites: 206 or consent of instructor Communications concepts, network architectures, data communication software and hardware, networks (e.g. LAN, wide), network protocols (e.g. TCP/IP), network management, distributed information systems. Policy and management implications of the technology.

255. Foundations of Software Design. (4)
Three hours of lecture, one hour of programming laboratory per week. Introduction to programming paradigms, including object-oriented design. Introduction to design and analysis of algorithms, including algorithms for sorting and searching. Analysis, use, and implementation of data structures important for information processing systems, including arrays, lists, strings, b-trees, and hash tables. Introduction to formal languages including regular expressions and context-free grammars.

257. Database Management. (3)
Three hours of lecture per week. Introduction to relational, hierarchical, network, and object oriented database management systems. Database design concepts, query languages for database applications (such as SQL), concurrency control, recovery techniques, database security. Issues in the management of databases. Use of report writers, application generators, high level interface generators.
Systems Analysis and Design

265. Systems Implementation: Use of Database Management Systems. (3)
Three hours of lecture per week. Prerequisites: 208, 257 or consent of instructor. Group development of database applications using a commercial database management system. Includes developing functional specifications, data model, database design, interface design, system implementation, documentation.

267. Systems Implementation: Use of Programming Languages. (3)
Three hours of lecture per week. Prerequisites: 208, 250, 255 or consent of instructor. Group development of software package using a programming language such as C, C++, or JAVA as a basis. Includes developing functional specifications, design, interface design, system implementation, documentation.

268. System Implementation: Use of Authoring Tools. (3)
Three hours of lecture per week. Prerequisites: 202, 204, 208 or consent of instructor. Development of informational or instructional resources or products using authoring tools. Development of specifications based on user needs. System design, implementation, evaluation and testing. Development of documentation.

Research Methods

271. Quantitative Research Methods for Information Management. (3)

272. Qualitative Research Methods for Information Management. (3)

Application Areas

282. Design of Library Automation Systems. (3)
Three hours of lecture per week. Prerequisites: 255 and 257 or consent of instructor. The design of computer software for library automation, including acquisitions, serials, circulation systems, and library catalogs. Group development of a library automation software package including functional specifications, design, programming, testing, and system implementation.
284. Geographical Information Systems. (3)
Three hours of lecture per week. Prerequisites: 202 or consent of instructor. Spatial and geographic information: georeferencing, projections, gazetteers, mapping and overlays of socio-economic, environmental and political data. Spatial database operations. Codes, formats and standards for data representation and transfer.

Seminars, Colloquia, Individual/Group Study

290. Special Topics in Information Management and Systems. (1-3)
Specific topics, hours and credit may vary from section to section, year to year. May be repeated for credit with change in content.

295. Doctoral Colloquium. (1)
One hour lecture per week. Prerequisites: consent of instructor. Colloquia, discussion and readings designed to introduce students to the range of interests of the School.

296A-B. Seminar. (2-4)
Prerequisites: Consent of instructor. Topics in information management and systems and related fields. Specific topics vary from year to year. May be repeated for credit, with change of content. May be offered as a two semester sequence.

297. Field Study in Information Management and Systems. (2-4)
Regular consultation with faculty supervisor. Prerequisites: consent of instructor. Individual or group study of specific problems in information management and systems with emphasis on field projects and studies.

298. Directed Group Study. (1-3)
Prerequisites: Consent of instructor. Group projects on special topics in information management and systems.

299. Individual Study. (1-12)
Prerequisites: Consent of instructor. Individual study of topics in information management and systems under faculty supervision.

602. Individual Study for Doctoral Students. (1-12)
Prerequisites: Consent of instructor. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. degree.
Management of Technology Program Core Courses

Introduction to Management of Technology. (3)
This course is designed to give students a broad overview of the main topics encompassed by management of technology. It includes the full chain of innovative activities beginning with research and development and extending through production and marketing. Why do many existing firms fail to incorporate new technology in a timely manner? At each stage of innovation, we examine key factors determining successful management of technology. What constitutes a successful technology strategy? The integrating course focus will be on the emergence of the knowledge economy and technology as a key knowledge asset. The course introduces students to Haas and COE faculty working in the relevant areas and will include student projects at leading high-tech firms including internet start-ups. It will involve both general readings and cases.

Strategic Computing and Communications Technology. (3)
Three hours of lecture per week. Prerequisites: Grad. student in Engineering, Bus. Adm, SIMS, or consent of instructor. Factors strongly impacting the success of new computing and communications products and services (based on underlying technologies such as electronics and software) in commercial applications. Technology trends and limits, economics, standardization, intellectual property, government policy, and industrial organization. Strategies to manage the design and marketing of successful products and services.

Managing New Product Development Processes.(3)
Management of processes from definition through ramp-up of manufacturing. Teams composed of business and engineering students redesign an existing product or design a new product.

Marketing for High-Tech Entrepreneurs.(3)
Marketing in entrepreneurial high technology start-ups. Topics include market research, product definition, managing strategic alliances, and identifying distribution channels.
Undergraduate Courses

39. Freshman/Sophomore Seminar. (2-3)
Course may be repeated for credit as topic varies. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

101. Introduction to Information Systems. (3)
Three hours of lecture per week. Introduction to information and information systems: concepts (information, data, documents); processes (inquiry, retrieval, use); social context (demand, provision, control, influence on social values). Retrieval based information services such as archives, databases, libraries, information centers, MIS.

106. Introduction to Network Applications and Computing (3)
Three hours of lecture per week. Prerequisites: Experience with personal computing and productivity applications; IS110 is recommended; programming experience desirable, but not required. Introduction to applications of networked computers, especially social, educational, and information management. Understanding of the networking, computing, and software infrastructure enabling and constraining these networked applications, with the goal of empowering the student to use these technologies effectively in their personal and professional life. Related policy, legal, economic, and industry issues.

138. Introduction to Database Management. (3)
Three hours of lecture per week. Introduction to principles of information design and to the use of database management systems. Design considerations and evaluation; data modeling and implementation planning. Characteristics and evaluation of general and specialized database management systems. Design, implementation, and evaluation of a database using commercial database management software.

142. Access to American Cultural Heritages. (3)
Three hours of lecture per week. An introduction to issues in the preservation, description, and use of tangible forms of cultural heritage. Documentation, ownership, and control of access to cultural heritage resources in the U.S.A. Cultural groups, cultural identity, cultural policies, and cultural institutions (libraries, media, museums, schools, historic sites, etc.). This course satisfies the American cultures requirement.

182. Print, Literacy, and Power in America to 1900. (3)
Three hours lecture per week. Focus on European Americans, Native Americans, African Americans, and in the western United States, Asian Americans and Chicano/Latinos. The course explores the nature of oral and print societies as found in the focus cultures to assess the impact of the dominant print culture on oral cultures. This course satisfies the American cultures requirement.
190. Special Topics in Information Management and Systems. (3)
Course may be repeated for credit. Three hours of seminar per week. Prerequisites: consent of instructor. A seminar focusing on topics of current interest. Topics will vary. A seminar paper will be required. Open to students from other departments.

198. Directed Group Study for Advanced Undergraduates. (1-4)
Course may be repeated for credit. On to four hours of lecture per week. Meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: consent of instructor.
University Policies

Access to Opportunity

Berkeley has a long-standing commitment to promoting access to graduate education to a diverse population. This commitment involves reviewing applicants' achievements in the context of their life experiences. If you choose, you may share aspects about your background that have not been reflected in the main application. This may include information regarding your achievements, in spite of economic, social or educational disadvantages. If you would like to include this information, attach an additional page bearing your name to your Statement of Purpose.

University Policy on the Student's Right to an Appeals Procedure

Procedures have been established for appeal of administrative or academic decisions that terminate or otherwise impede the progress of a Berkeley graduate student toward his or her academic or professional degree goal. A number of different procedures apply to appeals of decisions concerning grades in courses of instruction, student employment, student discipline, and dismissal from graduate standing or placement on probationary status. The School's Appeals Procedure as well as Graduate Appeals Procedures from the Graduate Division are posted on departmental bulletin boards and are also available in the School's office.

Nondiscrimination Statement

The University of California, in compliance with Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, does not discriminate on the basis of race, color, national origin, sex, handicap, or age in any of its policies, procedures, or practices; nor does the University discriminate on the basis of sexual orientation. This nondiscrimination policy covers admission and access to, and treatment and employment in University programs and activities, including but not limited to, academic admissions, financial aid, educational services, and student employment. Inquiries regarding the University's equal opportunity policies may be directed to Assistant Chancellor-Affirmative Action and Special Projects, 200 California Hall, University of California at Berkeley; Berkeley, CA 94720, telephone (510) 642-1991. Inquiries regarding Title IX (sex discrimination) may be directed to Elaine Kim, Faculty Assistant for the Status of Women, 200 California Hall (510) 642-7609 or Carmen McKines, Title IX Compliance Officer, 200 California Hall (510) 643-7985. Inquiries regarding Section 504 (handicap discrimination) may be directed to the Executive Officer, Office of Undergraduate Affairs (Section 504 Compliance Coordinator) 200 California Hall, (510) 642-6727 or TTY 642-6376.