

DEPARTMENT OF INFORMATION SYSTEMS

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Associate professor and interim chair

business.vcu.edu/academics/information-systems (<https://business.vcu.edu/academics/information-systems>)

The Department of Information Systems provides an innovative, high quality curriculum that is recognized nationally and internationally and maintains the ability to rapidly respond to the dynamic, changing needs of the academic discipline, industry and community.

The department offers degree programs at both the undergraduate and graduate level, as well as continuing education programs that support alumni and the community. Additionally, courses in information systems are offered to meet the needs of students in other curricula offered by the university as well as those who are seeking to enhance their knowledge of information systems.

Departmental faculty offers expertise in information technology and has wide-ranging research and teaching interests. As part of the department, the Information Systems Research Institute provides opportunities for sponsored research, innovative teaching initiatives and faculty development.

Traditional program options

- Computer and Information Systems Security, Master of Science (M.S.) (<http://bulletin.vcu.edu/graduate/school-business/information-systems/computer-information-systems-security-ms>)
- Information Systems, Master of Science (M.S.) (<http://bulletin.vcu.edu/graduate/school-business/information-systems/information-systems-ms>)
- Information Systems, Master of Science (M.S.) with a concentration in health care management (<http://bulletin.vcu.edu/graduate/school-business/information-systems-ms-concentration-health-care-management>)
- Information Systems, Master of Science (M.S.) with a concentration in information risk, security and assurance (<http://bulletin.vcu.edu/graduate/school-business/information-systems/information-systems-ms-concentration-information-risk-security-assurance>) (admission temporarily suspended)

Executive program option

- Information Systems, Master of Science (M.S.) with a concentration in information technology management [Executive] (<http://bulletin.vcu.edu/graduate/school-business/information-systems/information-systems-ms-concentration-information-technology-management-fast-track-executive>)

Dual degree programs

- Business Administration, Master of (M.B.A.)/Information Systems, Master of Science (M.S.) [dual degree] (<http://bulletin.vcu.edu/graduate/school-business/information-systems/business-administrationmba-information-systems-ms>)
- Business Administration, Master of (M.B.A.)/Information Systems, Master of Science in (M.S.) with a concentration in information technology management [Executive] [dual degree] (<http://bulletin.vcu.edu/graduate/school-business/information-systems/business-administrationmba-information-systems-ms-concentration-information-technology-management-fast-track-executive-combined>)

bulletin.vcu.edu/graduate/school-business/information-systems/business-administration-mba-information-systems-ms-concentration-information-technology-management-fast-track-executive)

- Business Administration, Master of (M.B.A.) [Executive]/Information Systems, Master of Science (M.S.) with a concentration in information technology management [Executive] [dual degree] (<http://bulletin.vcu.edu/graduate/school-business/information-systems/business-administration-mba-executive-information-systems-ms-information-technology-management-fast-track-executive-combined>)
- Health Administration, Master of (M.H.A.)/Information Systems, Master of Science (M.S.) [dual degree] (<http://bulletin.vcu.edu/graduate/school-business/information-systems/health-administration-mha-information-systems-ms>)
- Information systems (INFO) (p. 1)
- Information technology management (ISTM) (p. 4)

Information systems

INFO 609. Data-centric Re-engineering Analysis/Planning. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Teaches methods of monetizing or otherwise valuing intangible data practice improvement opportunities in the context of organizational strategy as part of (potentially) semester-long participation with regional organizations. Students use data-centric re-engineering-based business case development to gain practical experience. Sets of students will work closely with organizational leadership during the projects to articulate a specific business case. Teams will evaluate data-centric means of improving operational effectiveness and/or innovation opportunities and recommend specific approaches and estimated benefits.

INFO 610. Analysis and Design of Database Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 364. Designed to prepare students for the development of information systems using databases and database management techniques.

INFO 611. Data Re-engineering. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Re-engineering data from one form structure to another – including big data technologies, network, hierarchical, relational and other types. This material exposes students to a range of methods, tools and techniques for understanding existing structures and using these as the basis for designing the next versions. Appropriate tools for data re-engineering and a real-world project provide students with practical experience.

INFO 614. Data Mining. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 302, SCMA 302, SCMA 524 or permission of the instructor. A data mining process has the goal of discovering nontrivial, interesting and actionable knowledge from data in databases. The course introduces important concepts, models and techniques of data mining for modern organizations. Students gain a deeper understanding of concepts and techniques covered in lectures by doing a practical term project that applies one or more of the data mining models and techniques. Students also are given the opportunity to gain knowledge on the features and functionalities of state-of-the-art data mining software through their preparation of a research report.

INFO 616. Data Warehousing. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 610. Covers important concepts and techniques in the design and implementation of a data warehouse. Topics include the data warehouse architecture, the logical and physical design issues in the data warehousing development process, technical factors (i.e., hardware, client/server technology, data warehousing and DBMS technologies) and implementation considerations (i.e., data extraction, clean-up and transformation tools). Introduces online analytical processing and data mining. Crosslisted as: CISS 616.

INFO 620. Data Communications. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 370. Computer network design, communication line control, and communication hardware and software.

INFO 622. Internet Security Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Studies the principles of network security and secure operating systems. Included are topics relating to the use of intrusion detection, intrusion prevention and other related tools.

INFO 630. Systems Development. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 361 and 364. Covers business process and data requirements modeling for information systems, using advanced methods and techniques. Students will gain hands-on experience developing specifications and a functional prototype application with current CASE and development tools.

INFO 632. Business Process Engineering. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Critically reviews business process (re)engineering methods and practices. The discipline of Business Process and Application Architectures and modularization are examined. Issues in the implementation of application support for business processes are discussed. The discussion includes strategy visioning, performance benchmarking, process modeling and analysis, and planning organizational change. State-of-the-art business engineering tool-sets such as SAP Business Engineer and J.D. Edwards Business Engineering tool-sets are extensively used to provide practical experience.

INFO 640. Information Systems Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. A detailed study of the issues, principles, techniques and best practices in managing information systems and enterprise knowledge as organizational resources. Managing enterprise knowledge and information systems involves taking a disciplined approach to managing the infrastructures and harnessing the collective knowledge capital and brain-power of individuals and organizations. Topics include: IT operations, issues in strategic management, establishing standards and procedures, performance evaluation and benchmarking, hardware and software acquisition, physical environments and security issues, outsourcing and partnerships, personnel, knowledge ontology, meta-knowledge and others.

INFO 641. Strategic Information Systems Planning. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or INFO 661. Focuses on developing, implementing and evaluating strategic plans for corporate information systems. Assesses the role of information systems as a competitive tool. Methods and frameworks for strategic analysis are introduced. Mechanisms for establishing an information systems strategy are presented. Emphasis placed on understanding change management issues in IS planning for organizations.

INFO 642. Decision Support and Intelligent Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 610 and 630. Focuses on the design and deployment of decision technology of two broad types: decision support systems, which are meant to be employed in an advisory capacity by their human users, and intelligent systems, which are generally designed as autonomous decision agents and so intended to displace human functionaries.

INFO 643. Information Technology Project Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or 661 or permission from the director of graduate studies in the School of Business. Provides a clear understanding of project management techniques. Covers aspects of planning, organizing, controlling and implementing IT projects. IT project management processes, project scheduling and links with information systems strategy and change management are explored.

INFO 644. Principles of Computer and Information Systems Security. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or INFO 661. Explores issues related to protecting information resources of a firm. Various tools and techniques useful for assessing CISS security concerns in organizations are introduced. Principles and models for CISS security and security management are presented and selected computer and CISS security topics are introduced. Material is presented and discussed from a management frame of reference. Crosslisted as: CISS 644.

INFO 646. Security Policy Formulation and Implementation. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Course covers aspects of policy formulation and implementation. A security policy is considered as a vehicle for executing good strategy. The course analyzes current problems with security strategy formulation and compliance. The content and context of security policies is evaluated to ensure effectiveness.

INFO 654. Systems Interface Design. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or 661. Analyzes factors important in designing the interface for business information systems. Includes designing and developing systems for the Internet. Requires students to work in teams to produce prototype interactive systems.

INFO 658. Securing the Internet of Things. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 661 or INFO 640. Overviews the emerging field of the Internet of Things with emphasis on how information infrastructure and networks will change the exchange of goods and services in a socially connected world. Specific topics include technological (including hardware/software) infrastructures, types of IoT applications, key IoT policy issues and future trends, IoT security, and privacy challenges in a socially connected world.

INFO 661. Information Systems for Managers. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the importance and role of information systems in modern business decision making. Emphasizes choices about information technology and managing projects.

INFO 664. Information Systems for Business Intelligence. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Provides students with techniques and practices for modern decision-making in support of business/corporate performance. Includes hands-on experience with various information analysis, business intelligence and decision support techniques and tools with applications to various business-problem scenarios, such as portfolio analysis, project selection, market research and supply-chain optimization.

INFO 690. Research Seminar in Information Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by graduate studies office in the School of Business. This course is designed to provide research experience for candidates not following the INFO 798-799 program.

INFO 691. Topics in Information Systems. 1-3 Hours.

Semester course; 1-3 lecture hours. 1, 2 or 3 credits. Study of current topics. Topics may vary from semester to semester.

INFO 693. Field Project in Information Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by graduate studies office in the School of Business. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

INFO 697. Guided Study in Information Systems. 1-3 Hours.

Semester course; 3 lecture hours. 1, 2 or 3 credits. Prerequisite: Approval of proposed work is required by graduate studies office in the School of Business. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

INFO 700. Survey of Information Systems Research. 3 Hours.

Semester course; 3 lecture hours. 3 credits. This course is designed to provide incoming Ph.D. students with an introduction to information systems research. Students will survey various research streams in the field of information systems by familiarizing themselves with the research undertaken by faculty in the IS department. During the semester, students will learn about the various research areas in light of theories that support research and the primary research methods used in these areas. In addition, students will review literature to identify critical research issues in a specific topic area chosen for research and propose solutions to address those issues.

INFO 701. Qualitative Research in Information Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Enrollment requires permission of instructor. The course is designed to cover qualitative research published in the information systems discipline and an array of qualitative research methods, including but not limited to grounded theory, positivist case studies, interpretive case studies, hermeneutics, ethnography, action research and interviewing methods. Students will be exposed to the published literature of qualitative research in the IS discipline, as well as to the principles that distinguish qualitative research from other types of IS research. The research methods and techniques will be discussed using published examples of such research. Including a project, the course will help students conduct their own qualitative research.

INFO 702. Design Science Research and Methods in Information Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Enrollment requires permission of instructor. The course is designed to explore the theories and methods that are used in the various phases of design science research. Students will be exposed to the principles that distinguish design science research from other types of information Systems research. The research methods and techniques used in the various phases of design science research will be discussed using examples from IS analysis and design, database, IS security, decision support and intelligent systems, knowledge management, or other subfields.

INFO 710. Database Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Explores advanced concepts related to management of modern organizations' data resources. Focuses on data administration and the technical aspects of database systems. Some of the database research issues covered include: data quality, design, security, metadata, XML databases and data warehousing. Prepares students for further research into aspects of database systems.

INFO 720. Analysis and Design of Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Covers the philosophical and theoretical foundations of information systems development methodologies and their evolution. Provides an intellectual foundation for students wishing to write a doctoral dissertation in this subject matter. Students will be required to read and analyze articles considered fundamental to the current understanding of the subject.

INFO 730. Information Systems Strategy. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Provides the basis for further Ph.D.-level work in information systems strategy. Covers the theoretical foundations of the subject area. In particular the economic, psychological, sociological and cultural aspects are considered. This focus helps students to identify different research orientations and helps develop an informed opinion on critical research areas.

INFO 740. Decision Support and Intelligent Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Provides the basis for further Ph.D.-level work in decision support and intelligent systems. Explores the theoretical and technical aspects of the subject area. It helps students identify different research orientations with respect to the notion of intelligent systems and build an informed opinion on critical research areas. Explores issues around classes of decision predicates and decision situations. The course also helps students understand technical innovations in decision technologies as they relate to the study of decision support and intelligent systems.

INFO 750. Information Systems Security. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Provides the basis for further Ph.D.-level work in information systems security. Covers the theoretical aspects of the subject area. It helps students identify different research orientations with respect to IS security and build an informed opinion on critical research areas. Explores issues around what IS security is (ontology) and how to acquire the relevant knowledge (epistemology). The course also helps students understand methods of social science research as they relate to IS security.

INFO 760. Knowledge Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Explores advanced concepts related to knowledge management and knowledge discovery in modern organizations. Material for the course is drawn from research papers and doctoral dissertations. Requires a high level of student participation, particularly in their critical reviews and presentation of relevant research materials.

INFO 790. Doctoral Seminar. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Analyzes and critiques general theories, practices and functions in a specialized area of information systems research.

INFO 798. Thesis in Information Systems. 3 Hours.

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

INFO 799. Thesis in Information Systems. 3 Hours.

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

INFO 898. Dissertation Research in Information Systems. 1-12 Hours.
1-12 credits. Limited to Ph.D. in business candidates.

Information technology management

ISTM 671. Organizational Culture and Team Building. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Provides students an understanding of the impact information technology has made in defining an organization's culture and the processes that are used to support operational and strategic decision making. Groupware tools are used to simulate how organizations use computer-based collaboration software for sharing information, ideas and knowledge designed for improved productivity and decision making in order to enhance the organization's competitiveness strategically. Topics include: organizational culture and team building in the age of new business models, virtual work environments, privacy, telecommuting, monitoring Internet access and content, and communication etiquette, electronic conferencing, video, data and web conferencing.

ISTM 672. Information Systems Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Examines the information requirements of an organization. The difference in the kinds of information needed at operational, administrative, strategic and organizational levels are emphasized. Planning and implementing a comprehensive information system and methods to measure its effectiveness are discussed. Topics include Capability Maturity Models, managerial support systems and information resources planning.

ISTM 673. Analysis and Decisions. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Focuses on the analysis and decisions required for selecting new systems or technology. Specifically, the course covers business requirements analysis, system life-cycle models, Unified Process and other system development methodologies, structural and behavioral system models, CASE tools, decision analysis for vendor and technology selection, feasibility and risk analysis, and implementation and transition management.

ISTM 674. Emerging Technologies. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Designed to identify emerging computer hardware, software and communication/network technologies that impact the design and implementation of new information systems. Topics will address emerging technologies that are changing data storage, modes of information processing and media for dissemination. Managerial challenges and issues, including new and existing technology compatibility, the return on new technology investments, and strategies for assessing and mitigating an organization's risk exposure are examined.

ISTM 675. IS Planning and Project Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Provides a basic framework for understanding IT project management, building on the skills needed to manage projects of all sizes. Topics include the project life cycle, project team, project selection, project organization, project planning, negotiation and conflict resolution, and resource management. The responsibility and authority of a program manager and the integration of program functions in a complex organizational structure will be addressed. Through a combination of simulation activities with formal presentations and experiential learning, the following concepts will be addressed: definition of budgets, allocation of resources, consideration of ROI, earned value, management consideration of metrics accumulation and assessment, and control of scope creep.

ISTM 676. Information Systems Assurance and Security Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Provides a fresh look at managing and protecting the information resources of a firm. While identifying issues, concerns and problems, the course takes students through various tools and techniques that are useful in interpreting information systems security concerns in organizations. In a final synthesis, principles and models are presented that help in proactively managing IS security.

ISTM 677. Structuring Information for Decision Making. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Presents an overview of information systems methods that are used to structure information for decision making. Following a review of the basics of data management, the course examines various database management systems. The course then continues with an investigation of data warehousing, data mining, XML, knowledge management and business intelligence. Students successfully completing the course will understand the range of potential data management options used to present information for decision making and their various strengths and weaknesses.

ISTM 678. IS in the Digital Economy. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Expounds on the innovative nature of the confluence of the Web and business. The notion of disruptive technologies is introduced and discussed. Further, the means by which the relative success and failure of IS in the digital economy can be assessed/measured are deliberated. A number of emergent issues related to the digital economy (viz. eTrust, eCRM, social responsibility, etc.) are discussed.

ISTM 679. Enterprise Information Systems. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Over the past decade, organizations have been relying more and more on enterprise-wide deployment of software applications (ERP) to solve their integration problems. This course begins by describing the true size and magnitude of the enterprise integration challenge, then it examines the general form of problem solution offered by these ERP packages. Since implementation of ERPs continues to be a major challenge, the course fully examines both the track record and successful approaches to enterprise information systems implementation. Finally, new developments in this area are explored.

ISTM 691. Topics in IT Management. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Study of current topics. Topics may vary from semester to semester.