

Information Systems And Technology

Department Information

Department of Information Systems and Technology Staff

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Department of Information Systems and Technology website
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Information Systems

The Information Systems (IS) discipline centers on the development of systems that will improve the performance of people in organizations. Information Systems professionals design, implement, and maintain the information systems that form the backbone of today's global economy. Information Systems graduates pursue professional careers as application developers, database analysts, systems analysts, IS project managers and directors. The combination of business, technical, and interpersonal skills are what recruiters seek in IS graduates.

Health Informatics

Technology is revolutionizing the way that healthcare is delivered both in the United States and around the world. The Health Informatics discipline focuses on improving patient care and outcomes through the use of information systems. Health Informaticists accomplish this in three main ways: supporting the healthcare provider, improving the efficiency and effectiveness of the healthcare organization, and empowering the patient to be more involved in their own care. Health Informatics graduates pursue professional careers with hospitals, large clinics, healthcare software vendors, and various state and federal agencies. The combination of healthcare, technical, and interpersonal skills allow HI graduates to enter these organizations and be productive immediately without the additional training that other traditional technologists may require. Health Informatics is a rapidly growing field that provides graduates who save lives and impact society through the use of technology.

Information Technology

Information technology professionals utilize state-of-the-art, computer-based tools to deliver today's rapidly evolving computing technology to knowledge workers in widely diverse situations. The information technologist must be prepared to work in the complex network and World-Wide-Web environments to meet the needs of the end users in today's organizations. These tasks require bringing solutions together using the different technologies developed by the computer engineers, computer scientists, and information scientists.

Areas Of Study

Health Informatics (BS)
 Health Informatics Certificate
 Information Systems (BS)
 Information Systems (MS)
 Information Technology (BS)
 Minor in Information Systems

Minor in Information Technology

Courses

Computer Info Sciences (CIS) (CIS)

CIS 150L Intro to Comp Applications Lab 0 cr

Laboratory course for CIS 150, Introduction to Computer Applications.

CIS 250L Adv Comp Applications Lab 0 cr

Laboratory course for CIS 250, Advanced Computer Applications.

Pre-requisite: CIS Proficiency Exam P or CIS 150 Minimum Grade of C.

CIS 010 Computer Proficiency Exam 0 cr

The purpose of this course is to administer the Computer Proficiency Exam (CPE) for enrolled students. The CPE consists of multiple choice and performance-based questions for general computer, internet, WWW, e-mail, and office application concepts. Performance-based questions require a series of actions in a simulated environment to demonstrate specific skills being assessed. No outside materials or assistance from the applications' Help files are allowed.

CIS 101 Freshman Seminar CIS 2 cr

A course for first-time students that assists with maximizing the student's potential to achieve academic success and to adjust responsibly to the individual and interpersonal challenges presented by college life for a major in the School of CIS. Taught in small groups, the course provides an introduction to the nature of higher education and a general orientation to the functions and resources of the University and the School of CIS. Extensive reading and writing assignments relevant to the student's first year experience are required.

CIS 110 Intro to Comp-Info Sciences 3 cr

An introduction to information technology using a programming language to study applications in text searching, in real-time 3-D animation, and in sound production. A discussion of the social, ethical, economic, and philosophical implications of computing.

CIS 115 Beginning Programming 4 cr

A first course in programming using a visual, event-driven programming language. Coverage includes algorithmic problem solving, fundamentals of programming, procedures, decisions, repetition, and arrays.

Pre-requisite: MyMathTest 080 or ACT Math 23 or (MA 112 Minimum Grade of C or MA 171 Minimum Grade of C) or MA 267 Minimum Grade of C or (MA 125 Minimum Grade of C or MA 132 Minimum Grade of C).

CIS 150 Intro to Computer Applications 3 cr

This course is designed to provide a broad based introduction to the use of computers and productivity software technologies. Topics to be covered include: use of a current Operating System and basic file management; the fundamentals of word processing, spreadsheet and graphics-based presentation software; and basic image management related to documents and reports. Other topics covered include information assurance and computing safety as related to PC/Internet usage.

CIS 155 Educational & Social Computing 3 cr

This course provides a hands-on approach that focuses on the use of current and emerging computing technologies. Topics include: Use of the University adopted Learning Management System (LMS), Google Apps, Google Docs, safe computing practices, and current trends in social networking.

CIS 190 Special Topics- 1 TO 3 cr

Selected topics in computer and information sciences.

Requires permission of Specialization Coordinator.

CIS 210 Intro to C++ Programming 3 cr

Introduction and fundamentals of C++ programming, input-output operations, variables, data types, arithmetic expressions, control statements, looping, functions, arrays, pointers, strings, structures, and abstract data types.

Pre-requisite: MA 125 Minimum Grade of C. MA 125 can be taken concurrently with this course.

CIS 211 Advanced C++ Programming 1 cr

Advanced concepts in C++ programming, constructors, destructors, classes and operation overloading.

Pre-requisite: (CIS 121 Minimum Grade of C or CIS 210 Minimum Grade of C).

CIS 227 Numerical Computation I 3 cr

Floating point numbers, representation, and errors; software tools for scientific computing; elementary problems in scientific computing.

Pre-requisite: MA 126 Minimum Grade of C or MA 233 Minimum Grade of C.

- CIS 235 Programming Language Seminar 3 cr**
Fundamentals of syntax and style for a relevant, or current programming language. Includes application development in that language. Recommended: Knowledge of a programming language.
- CIS 250 Advanced Comp Applications 3 cr**
This course is designed to provide continuing, advanced coverage of productivity software technologies. Topics to be covered in depth include: fundamental and advanced features of spreadsheet and database management software. Other topics covered include information assurance and computing safety as related to PC/Internet usage.
Pre-requisite: CIS 150 Minimum Grade of C or CIS Proficiency Exam P or CIS 010 Minimum Grade of S.
- CIS 300 Information Tech in Society 1 cr**
A discussion of personal, local, national, and global impact of information technology on ethical, legal, and social issues. Requires Junior standing in the School of Computing.
- CIS 321 Data Comm and Networking 3 cr**
An introduction to data communications, computer networking and network operating systems. Topics include: basic concepts of data transmission, network architectures, communications devices, and communication protocols.
Pre-requisite: ISC 245 Minimum Grade of C or ITE 271 Minimum Grade of C or CIS 120 Minimum Grade of C or CSC 120 Minimum Grade of C.
- CIS 324 Database Design-Dev-Mgt 3 cr**
Analysis, design, and development of desktop database systems. Coverage of normalization concepts, DBMS models, E-R/Semantic modeling, and query processing.
Pre-requisite: (MA 112 Minimum Grade of C or MA 171 Minimum Grade of C) or (MA 120 Minimum Grade of C or MA 287 Minimum Grade of C) or MA 267 Minimum Grade of C or (MA 125 Minimum Grade of C or MA 132 Minimum Grade of C) or ACT Math 23) or MyMathTest 080 and (ISC 245 Minimum Grade of C or ITE 271 Minimum Grade of C) or (CSC 121 Minimum Grade of N or CIS 121 Minimum Grade of C).
- CIS 401 Accelerated Programming 3 cr**
This course presents programming concepts in an accelerated manner. Coverage includes ADT's, Classes and Class Libraries, and simple data structures such as linked lists, stacks, queues. Laboratory assignments will be done in a high level, object-oriented language. This course does not count towards a graduate degree in CIS. Requires prior programming experience and permission of Coordinator.
- CIS 402 Accelerated OS-Comp Arch 3 cr**
This course presents computer architecture and operating systems concepts in an accelerated manner. Coverage includes machine and assembly languages, functioning of a simple processor, machine level data flow, microprogramming, I/O, interrupts and processing drivers, memory management, dynamic process scheduling, and multi-tasking. This course does not count toward a graduate degree in CIS. Requires prior programming experience desired and permission of Coordinator.
- CIS 403 Accelerated Data-File Structs 3 cr**
This course applies advanced programming concepts and techniques to data structures such as linear and linked list trees, records, files, and database. Sequential and random access file processing methods; searching and sorting methods. Laboratory assignments will be done in a high-level, object-oriented language. This course does not count toward a graduate degree in CIS.
Pre-requisite: CIS 121 Minimum Grade of B or CIS 123 Minimum Grade of B or CIS 142 Minimum Grade of B or CIS 401 Minimum Grade of B or CIS 501 Minimum Grade of B.
- CIS 439 Windows Programming 3 cr**
This course continues and expands the study of programming begun in either ITE 285 or CIS 121. Concepts previously learned are extended to application programming in the windows (GUI) environments. Students will make use of the OLE, DDE, API features of windows in programming projects. Students will write and use their own DLL's in producing user interfaces and applications projects.
Pre-requisite: CIS 230 Minimum Grade of C or CIS 263 Minimum Grade of C or ITE 285 Minimum Grade of C or ITE 451 Minimum Grade of C or Computer Science Graduate 030 .
- CIS 490 CIS Sp Top - 3 cr**
Advanced selected topics in computer and information sciences. Requires permission of the specialization coordinator.
Pre-requisite: Computer Sci Prof Component 30
- CIS 494 Directed Studies 1 TO 3 cr**
May be taken for a maximum of six credits, only three of which may be applied to the CIS major or minor. Requires permission of the specialization coordinator.
- CIS 496 CIS Internship 0 TO 3 cr**
CIS internship program is designed to give advanced students practical experience in the computer industry. Students will work on sponsored projects with faculty advisors. Credit may apply to degree with approval of the dean. Requires GPA 2.75 or higher and permission of the Dean.

CIS 497 Senior Capstone Experience-W 3 cr

A comprehensive team project will be completed and documented. Writing assignments will reinforce the importance of life-long learning, leadership skills, and the ethical issues of computing as well as appropriate resume and job application cover letter creation. Oral and written reports will be required. This course is to be taken the final semester of the student's degree program. Requires application for graduation filed the semester before registering for the course. Completion of the following courses according to major: Computer Science-CSC 333 and CSC 340; Information Systems-ISC 360; Information Technology-ITE 370.

Co-requisite: CIS 498

Pre-requisite: (EH 372 Minimum Grade of C or EH 373 Minimum Grade of C) and (CSC 333 Minimum Grade of C and CSC 340 Minimum Grade of C) or ISC 360 Minimum Grade of C or ITE 370 Minimum Grade of C.

CIS 498 CIS Senior Seminar 0 cr

A series of mini-seminars designed to prepare graduating seniors for transition to professional careers in computing or graduate study and to assess student learning outcomes in the curriculum. Mini-seminars would include, but would not be limited to: resume development, interviewing tips and techniques, career planning, professionalism and ethics in the workplace, and advanced graduate study and professional development. Each student will be required to complete one or more senior exit exams and a senior exit survey. Prerequisite: Computer Science: CSC 331; Information Systems: ISC 360; Information Technology: ITE 370.

Co-requisite: CIS 497

Pre-requisite: CIS 497 Minimum Grade of C and (CSC 331 Minimum Grade of C or ISC 360 Minimum Grade of C or ITE 370 Minimum Grade of C). CIS 497 can be taken concurrently with this course.

CIS 499 CIS Senior Honors Project - H 3 TO 6 cr

Under the advice and guidance of a faculty mentor, honors students will identify and carry out a research project, relevant to the field of computing, that will lead to a formal presentation at the annual Honors Student Colloquium. The senior honors project will be judged and graded by three faculty chaired by the honors mentor. This course is required for Honors recognition and may be repeated for up to 6 credit hours. Requires completion of an approved project prospectus and permission of the appropriate Coordinator.

Pre-requisite: Computer Sci Prof Component 30

CIS 518 CIS Research Methodologies 3 cr

A review of computer and information science literature and research topics. Techniques for defining research goals will be described. Students will be expected to identify a research area and conduct a complete review of the literature.

CIS 530 Information Assurance/IT Audit 3 cr

This course covers the understanding and managing of risks and threats to information and information systems. This includes protecting and defending information and information systems by ensuring through authorization and other means concepts such as accessibility, secrecy, reliability, and authentication.

CIS 535 Digital Forensic Analysis 3 cr

This course provides students with advanced tools, techniques, and methodologies for accumulating, securing, analyzing, managing, and reporting evidence related to a forensics examination. The professional communication and presentation of the results of forensic investigations will be emphasized.

CIS 538 OS Concepts and Security 3 cr

This course examines the concepts of operating systems such as memory and virtual memory management, as well as processor, process, device, and file management. Topics include the management and organization of network operating systems and operating system security and ethics. Students will manage, configure, and secure operating systems such as Windows, Unix, and Linux in laboratory environments.

CIS 539 Windows Programming 3 cr

The practice and principles of developing interactive desktop computer applications. Aspects to be covered will include graphical user interface; use of sophisticated widget, container, and utility libraries; event-driven programming; two-dimensional graphics; in-memory database; and deployment.

CIS 540 Network Security Management 3 cr

This course examines network and web security issues including: risks and threats, system access points, hardware and software defense methods, and organizational security policies. The course will cover the analysis of systems for vulnerabilities, the implementation of security procedures, the monitoring of systems for security breaches, and the recovery or restoration of breached systems.

CIS 590 CIS Sp Top - 3 cr

Advanced selected topics in computer and information sciences. Requires permission of the CSC Coordinator

CIS 594 Directed Studies - 1 TO 3 cr

May be taken for a maximum of three credits to count toward the degree. Requires permission of the Director of Graduate Studies.

CIS 595 CIS Research Development 1 TO 3 cr

Development of the research proposal for master's thesis. Graduate Professional Component. Requires permission of the Director of Graduate Studies.
Pre-requisite: CIS 518 Minimum Grade of S.

CIS 596 CIS Graduate Internship 0 TO 3 cr

CIS graduate internship program is designed to give graduate students practical experience in the computer industry. Students will work on sponsored projects with faculty advisors. Up to three hours may be counted toward the degree. Requires permission of the Director of Graduate Studies.

CIS 597 CIS Graduate Seminar 0 TO 1 cr

This course prepares graduate assistants in the School of CIS to provide support and assistance to faculty for instruction in School of CIS classes. Topical coverage includes but is not limited to: graduate assistant expectations and responsibilities, protection of student educational information (FERPA), practical skills in assisting in computing instruction, graduate assistant best practices, and tips from faculty and experienced graduate assistants. This course does not count towards a graduate degree in CIS. Requires permission of the Director of CIS Graduate Studies.

CIS 598 CIS Project 1 TO 3 cr

Approved investigation of original problems under direction of a faculty member. This course may be repeated for a maximum of three hours of credit towards the degree. Requires permission of the Director of Graduate Studies.

CIS 599 CIS Thesis 1 TO 9 cr

This course may be repeated for a maximum of six credits. A thesis committee will provide direction during the thesis. Requires approval of the thesis project by graduate faculty and the Director of Graduate Studies. Pre-requisite: CIS 595 Minimum Grade of B.

CIS 694 Directed Study - 3 cr

This course focuses on the development of the doctoral prospectus leading to the the defense of a dissertation.

CIS 799 Dissertation 1 TO 9 cr

This course focuses on the development of the dissertation.

Health Informatics (HI) (HI)

HI 300 Health Info Clinical Environme 3 cr

This course provides an overview of concepts, terms, organization, and processes associated with patient care and clinical environments as they pertain to health informatics. The entire process of how a person accesses, moves within, and exits the system both as in inpatient and outpatient to obtain care. Students will observe and report on a variety of clinical settings and healthcare specializations throughout the semester. This course is designed for students with no prior clinical experience.

HI 410 Health Informatics 3 cr

This course provides an overview of the concepts, terms, tools, and architectures associated with health informatics as applied to healthcare delivery. Topics include: electronic record systems, computerized physician order entry, health system standards, terminologies, workflow modeling, security and privacy of clinical data, clinical reporting, and the impact of information technology use on the quality and efficiency of health care delivery and outcomes.

HI 450 Health Data Secur/Compliance 3 cr

This course involves a thorough examination of the security and privacy requirements of the Health Insurance Portability and Accountability Act (HIPAA) and the implementation of these requirements in the clinical environment. Students will learn how to address security issues from system development all the way through post-implementation, how to evaluate systems for vulnerabilities, and how to identify protected health information and covered entities. Pre-requisite: ISC 300 Minimum Grade of C or HI 300 Minimum Grade of C and (ISC 410 Minimum Grade of C or HI 410 Minimum Grade of C).

HI 455 Hlth Data Mgt & Decision Supp 3 cr

This course focuses on the design and management of electronic medical record systems and clinical decision support systems. Course content related to electronic medical record systems includes architectural components, technical design issues, and management; and, content related to clinical decision support systems includes decision support roles, extracting useful information from data, and legal and regulatory restrictions. Laboratory assignments will provide students with opportunities to interact with these systems. Prerequisites: HI 300 or ISC 300 and HI 410 or ISC 410. Pre-requisite: ISC 300 Minimum Grade of C or HI 300 Minimum Grade of C and ISC 410 Minimum Grade of C or HI 410 Minimum Grade of C.

HI 460 Consumer Health Informatics 3 cr

This course provides an overview of the concepts, terms, tools, and architectures associated with consumer health informatics. It explores the design, use and impact of technologies that aim to engage consumers to participate in their health and healthcare. Topics include: patient engagement, persuasive system design, gamification, behavior change theory, patient portals, wearables, IoT and mHealth (mobile health). Pre-requisite: (HI 300 Minimum Grade of C and HI 410 Minimum Grade of C).

HI 550 Health Data Secur/Compliance 3 cr

This course involves a thorough examination of the security and privacy requirements of the Health Insurance Portability and Accountability Act (HIPAA) and the implementation of these requirements in the clinical environment. Students will learn how to address security issues from system development all the way through post-implementation, how to evaluate systems for vulnerabilities, and how to identify protected health information and covered entities.

HI 555 Hlth Data Mgt & Decision Supp 3 cr

This course focuses on the design and management of electronic medical record systems and clinical decision support systems. Course content related to electronic medical record systems includes architectural components, technical design issues, and management; and, content related to clinical decision support systems includes decision support roles, extracting useful information from data, and legal and regulatory restrictions. Laboratory assignments will provide students with opportunities to interact with these systems.

Information Systems (ISC) (ISC)

ISC 190 IS Special Topics 1 cr

Selected topics in information systems. Prerequisite: Permission of the ISC coordinator.

ISC 245 Info Systems in Organizations 3 cr

An overview of information systems topics from an organizational and managerial perspective. Topics include current information technology and systems, such as the Internet and its organizational impacts; the emergence of global economy and digital firms; and the ethical and social impacts of information systems, such as privacy, intellectual property rights, and liability. Issues and strategies regarding information systems planning, systems development, decision making, and using IT for competitive advantage are discussed. Throughout the course, students will investigate the strategic uses of information technology in current industry-specific situations.

ISC 272 Systems Architecture 3 cr

This course introduces students to Information Technology hardware and systems software concepts. Topics include: computer hardware, operating systems, system software, hardware and software integration, operating procedures, system performance, security/safety, and compatibility. Student labs and hands-on activities will include: Windows, Unix, and Linux systems, system utilities and software tools. Credit cannot be received for both ITE 272 and ISC 272. Pre-requisite: CIS 115 Minimum Grade of C.

ISC 285 Intermediate Programming 3 cr

A second course in visual, event-driven programming that builds on CIS 115. Topics include functions and procedures, arrays, LINQ, structures, text files, structured exception handling, additional controls and objects, and object-oriented programming. Programming projects are required. Credit cannot be received for both ISC 285 and ITE 285. Pre-requisite: CIS 115 Minimum Grade of C.

ISC 300 Health Informatics Clin Env 3 cr

This course provides an overview of concepts, terms, organization, and processes associated with patient care and clinical environments as they pertain to health informatics. The entire process of how a person accesses, moves within, and exits the system both as an inpatient and outpatient to obtain care. Students will observe and report on a variety of clinical settings and healthcare specializations throughout the semester. This course is designed for students with no prior clinical experience.

ISC 305 Info Systems-Technology 3 cr

The analysis, design, and implementation of information systems. Analysis of the functional areas of business and integration of computer tools to satisfy information requirements. Current development in business computer systems, including surveys of current systems and the Internet. Computer classrooms are utilized to provide students with "hands on" experience. Pre-requisite: CIS 250 Minimum Grade of C.

ISC 353 Info Sys Appl Development 3 cr

This course provides an accelerated approach to programming in a high-level, object-oriented language, especially for information systems. Coverage includes algorithmic problem solving, fundamentals of programming, procedures, decisions, repetition, arrays, files, exception handling, and object-oriented programming. The format for this course is lecture/lab. The instructor will demonstrate in class, and students will learn by doing homework problems and programming assignments. This course does not count towards a graduate degree in CIS. Some prior programming experience is desired and permission of Coordinator. Prerequisites: Math placement score of 65 or higher. Pre-requisite: University test - Math 65 or DS 090 Minimum Grade of C or (MA 112 Minimum Grade of C or MA 171 Minimum Grade of C).

ISC 360 Info Sys Analysis and Design-W 3 cr

A thorough examination of the analysis and design of computer information systems from the systems analysts view. The course will use an established software development methodology. At each step in the software development life cycle, both the methodologies used and the documentation required will be examined. Pre-requisite: ISC 245 Minimum Grade of C and (EH 102 Minimum Grade of C or EH 105 Minimum Grade of C).

ISC 361 Database for Info Systems 3 cr

The course builds on relational database and programming concepts by exploring the analysis, design, and implementation of more complex database systems. Topics include advanced data modeling, advanced query design, and application development in a database programming environment. Credit cannot be received for both ITE 370 and ISC361. Pre-requisite: CIS 324 Minimum Grade of C and (ISC 285 Minimum Grade of C or ITE 285 Minimum Grade of C).

- ISC 362 IS Object-Oriented Analy-Des** 3 cr
This course provides an introduction to an object-oriented analysis and design (OOAD) methodology as well as the tools and techniques for supplementing this methodology. The course will also cover the use of notational metalanguages such as Unified Modeling Language (UML) and OOAD computer-assisted software engineering (CASE) tools.
Pre-requisite: ISC 245 Minimum Grade of C.
- ISC 410 Health Informatics** 3 cr
This course provides an overview of the concepts, terms, tools, and architectures associated with health informatics as applied to healthcare delivery. Topics include: electronic record systems, computerized physician order entry, health system standards, terminologies, workflow modeling, security and privacy of clinical data, clinical reporting, and the impact of information technology use on the quality and efficiency of health care delivery and outcomes.
- ISC 450 Health Sys Analysis and Design** 3 cr
This course provides an overview of the concepts, terms, tools, and architectures associated with health informatics as applied to healthcare delivery. Topics include: electronic record systems, computerized physician order entry, health system standards, terminologies, workflow modeling, security and privacy of clinical data, clinical reporting, and the impact of information technology use on the quality and efficiency of health care delivery and outcomes.
Pre-requisite: ISC 410 Minimum Grade of C.
- ISC 455 Health Data Mgt Decision** 3 cr
This course focuses on the design and management of electronic medical record systems and clinical decision support systems. Course content related to electronic medical record systems includes architectural components, technical design issues, and management; and, content related to clinical decision support systems includes decision support roles, extracting useful information from data, and legal and regulatory restrictions. Laboratory assignments will provide students with opportunities to interact with these systems.
Pre-requisite: ISC 410 Minimum Grade of C.
- ISC 459 IS Appl Design-Implementation** 3 cr
Analysis and design of information systems to support multiple locations via Intranet/Internet access. Additional and supporting topics, such as corporate privacy and security are also covered.
Pre-requisite: CIS 324 Minimum Grade of C.
- ISC 462 IS Strategy and Policy** 3 cr
This course provides the top management, strategic perspective for aligning competitive strategy with information systems. Issues include the development and implementation of policies and plans to achieve organizational goals, including security policy.
Pre-requisite: CIS 324 Minimum Grade of C.
- ISC 463 IS Database Admn and Security** 3 cr
An examination of the issues and activities associated with the administrator function for databases. This course will cover installation, implementation, user management, backup, and security.
Pre-requisite: CIS 324 Minimum Grade of C.
- ISC 464 IS Security and Risk Mgmt** 3 cr
This course provides an introduction to the fundamental principles and topics of information systems security and risk management at the organizational level. This course views information security as a management issue that incorporates technical and management solutions. Topics include risk management, security policy, disaster planning, security law and ethics, and security education, training and awareness.
Pre-requisite: (MGT 300 Minimum Grade of C or BMS 322 Minimum Grade of C or MGT 322 Minimum Grade of C) and (CIS 321 Minimum Grade of C or CIS 221 Minimum Grade of C).
- ISC 467 Enterprise Information Systems** 3 cr
This course provides an introduction to enterprise information systems and to business process modeling. Key concepts and techniques for identifying, designing, and documenting business processes will be presented. The way information technology can be used to manage, transform business processes is discussed. Successful organizational change strategies will be reviewed.
Pre-requisite: (MGT 300 Minimum Grade of C or BMS 322 Minimum Grade of C or MGT 322 Minimum Grade of C) and CIS 324 Minimum Grade of C.
- ISC 472 Advanced Data Management** 3 cr
This course provides an introduction to the concepts and technologies of big data. Key concepts and techniques allow organizations to analyze structured and unstructured data/information collected from transaction processing systems, data warehouses, and distributed systems. The ultimate purpose of descriptive, predictive, and prescriptive analytics is to support high quality decision support for executives and managers. Concepts of data mining, data storage, non-relational platforms, and considerations for new and emerging technologies are described in detail.
Pre-requisite: (CIS 324 Minimum Grade of C or CSC 324 Minimum Grade of C) and (ISC 285 Minimum Grade of C or ITE 285 Minimum Grade of C or CSC 231 Minimum Grade of C).
- ISC 475 Info Systems Proj Management** 3 cr
This course examines the principles and techniques of project management from an information systems perspective. Major topics covered include project context, project selection, and project planning. Students work in collaborative teams and are instructed in the use of a project software tool. Credit cannot be received for both ITE 475 and ISC 475.
Pre-requisite: CIS 324 Minimum Grade of C.

- ISC 490 Special Topics** 3 cr
Advanced selected topics in information systems.
Prerequisite: Permission of the ISC Coordinator.
- ISC 510 Health Informatics** 3 cr
This course provides an overview of the concepts, terms, tools, and architectures associated with health informatics as applied to healthcare delivery. Selected research topics are introduced and independently studied. Topics include: electronic record systems, computerized physician order entry, health system standards, terminologies, workflow modeling, security and privacy of clinical data, clinical reporting, and the impact of information technology use on the quality and efficiency of health care delivery and outcomes. Prerequisite: Permission of the Director of CI Graduate Studies.
- ISC 545 Management Information Systems** 3 cr
This course provides an overview of information systems from an organizational, managerial, and technical perspective. The topics covered will focus on the strategic role of information systems and information technology in business processes, change and knowledge management, group and individual decision-making, and electronic commerce. Specific topics include current hardware, infrastructure and connectivity technologies, software and systems development methodologies. Internet-based applications, management challenges and opportunities created by information systems and global connectivity such as privacy, data and systems security and control, intellectual property, ethical and social consequences of information technology, and the impact of digital integration on an organization's competitiveness, products, services, procedures, and management structures. Prerequisite: Permission of the Director of CIS Graduate Studies.
- ISC 550 Health Data Security & Comp** 3 cr
This course involves a thorough examination of the security and privacy requirements of the Health Insurance Portability and Accountability Act (HIPAA) and the implementation of these requirements in the clinical environment. Students will learn how to address security development all the way through post-implementation, how to evaluate systems for vulnerabilities, and how to identify protected health information and covered entities.
- ISC 551 Human-Comp Interface Design** 3 cr
The course covers principles, guidelines, and methods in human computer interface design. Students complete a project involving the development, evaluation, and demonstration of a user interface. The interface is designed around a user and task analysis performed on a given problem. Students plan and conduct a usability study of a working prototype and report on results and recommendations. Prerequisite: Graduate Professional Component.
- ISC 553 IS Web Site Management** 3 cr
This course addresses the design, development, and management of a web server. Topics include the selection, installation, and configuration of an operating system and web server software, web server security and monitoring, and website maintenance. Prerequisites: Graduate Professional Component.
- ISC 555 Health Data Mgt/Decision Supp** 3 cr
This course focuses on the design and management of electronic medical record systems and clinical decision support systems. Course content related to electronic medical record systems includes architectural components, technical design issues, and management; and, content related to clinical decision support systems includes decision support roles, extracting useful information from data, and legal and regulatory restrictions. Laboratory assignments will provide students with opportunities to interact with these systems.
- ISC 559 IS App Design-Implementation** 3 cr
Analysis and design of information systems infrastructures to support multiple locations, intranet/internet access, corporate privacy, and security. Capacity analysis and planning, installation, performance monitoring, and problem solving strategies. Prerequisites: Graduate Professional Component.
- ISC 560 Info Systems Analysis-Design** 3 cr
This course will include an introduction to the systems development life cycle as well as a survey of analysis and design techniques. Detail topics will include information systems planning and project identification and selection, requirements collection and structuring, process modeling, data modeling, design of interface and data management, system implementation and operation, system maintenance, and change management implications of systems. Globalization issues in systems will also be discussed. Students will use current methods and tools such as rapid application development, prototyping, and visual development. Prerequisite: Graduate Professional Component
- ISC 561 IS Database Management** 3 cr
An introduction to database management systems. The data environment, basic technical concepts and systems resources, database concepts, including use and management of databases. Classical and current DBMS models will be presented. Laboratory project activity will involve definition, creation, and development of a database. Prerequisites: Graduate Professional Component.
- ISC 562 IS Policy and Strategy** 3 cr
This course provides the top management, strategic perspective for aligning competitive strategy, core competencies, and information systems. Issues include the development and implementation of policies and plans to achieve organizational goals, including defining systems that support the operational, administrative, and strategic needs of the organization, its business units, and individual employees. Prerequisites: Professional Component

ISC 563 IS Database Administration 3 cr

This course will examine the issues and activities associated with the administrator function for organizational databases. Topics include storage and indexing, query evaluation, physical database design, crash recovery, and security. Prerequisite: CIS Graduate Professional Component.

ISC 565 IS Project-Change Management 3 cr

A study of the concepts and techniques of project management from an information systems perspective. The course provides an overview of project lifecycle activities, and a focus on managerial, behavioral, and process issues that surround the dynamic context of systems development. The issue of managing the change brought about by the introduction or modification of information systems in organizations will be discussed. Students will be instructed in the use of software tools for project management. Prerequisites: Graduate Professional Component.

ISC 567 IS Function Integration 3 cr

The tactical/operational responsibilities and roles of the CIO. Governance considerations that link the IS-business organizations. Current/emerging issues in creating and coordinating the key activities necessary to manage the day-to-day operations of the IS function. Coordinating skills and organizational IS infrastructure. Prerequisite: ISC 561 Minimum Grade of B.

ISC 568 IS Enterprise Integration 3 cr

Information systems role in transforming organizations and industries. An integrated view of the organization from an external and internal perspective. IS' internal role in integrating the enterprise through a cohesive set of business processes and functional applications to meet business needs. Enterprise resource planning and enterprise functionality. Collaborative systems. Consideration of external relations with suppliers, outsourcers, and customers. Prerequisite: Graduate Professional Component. Pre-requisite: ISC 567 Minimum Grade of B and Computer Science Graduate 030 .

ISC 572 Advanced Data Management 3 cr

The focus here is on the management of data and the technologies which specifically targets mass data storage with a view to online and after-the-fact examination of data to acquire new insights. The major topics include: data warehouse planning, data warehouse models, and supporting software, data mining concepts and tools, creation of data mining models for the tools and matching the tool to the task. Prerequisite: CIS Graduate Professional Component

ISC 590 IS Sp Top - 3 cr

Advanced selected topics in information systems. Prerequisite: Permission of ISC coordinator.

ISC 595 IS Project Proposal Develop 1 TO 3 cr

Development of the project proposal for the Information Systems specialization master's project. Prerequisites: CIS 518, Graduate Professional Component, Permission of Director of CIS Graduate Studies. Pre-requisite: CIS 518 Minimum Grade of S.

ISC 598 Information Systems Project 1 TO 3 cr

This course may be repeated for a maximum of six (6) credits. A CIS project committee will provide direction during the project. Prerequisite: Approval of project proposal by the student's project committee, and permission by Director of CIS Graduate Studies. Pre-requisite: ISC 595 Minimum Grade of B.

ISC 629 Comp Ecosystems 3 cr

This course focuses on developing expertise and preparation for independent research in computing ecosystems through an in-depth review of the computing literature. The course will explore concepts and issues associated with large scale parallel data processing, virtualized storage, application, and infrastructure architectures and the attendant security, privacy and legal issues.

ISC 673 Digital Investigations 3 cr

This course focuses on developing expertise and preparation for independent research in Digital Forensics Investigations through an in-depth review of the Digital Forensics literature. The student will be conversant in broad issues and trends in Digital Forensics as defined by skill sets and occupations.

ISC 675 Information Systems 3 cr

This course focuses on developing expertise and preparation for independent research in information systems through an in-depth review of the information systems literature. The course will explore the current major streams of theory, research, and methodologies in information systems.

ISC 686 Risk Analysis 3 cr

This course focuses on developing expertise and preparation for independent research in risk analysis through an in-depth review of the risk assessment and information assurance literature. The student will be conversant in broad issues and trends in risk analysis as defined by techniques, methodologies, policies, frameworks, and skill sets.

Information Technology (ITE) (ITE)

ITE 190 ITE Special Topics 1 cr

Selected topics in information technology. Prerequisite: Permission of the ITE coordinator.

ITE 271 Info Techn in Organizations 3 cr

This course introduces students to the Information Technology (IT) concepts and the software that facilitates IT solutions. Topics include: data, information, and knowledge concepts, productivity software tools, role of networking and communication, the "digital phenomena", and the benefits of IT. Also included are IT program concepts such as: ethics, the importance of effective written and oral communication, continuous learning, and technology monitoring-evaluation.

ITE 272 Systems Architecture 3 cr

This course introduces students to the Information Technology (IT) hardware and systems software concepts. Topics include: computer hardware, operating systems, system software, hardware and software integration, operating procedures, system performance, security/safety, and compatibility. Student labs and hands-on activities will include: Windows, Unix, and Linux systems, system utilities and software tools.

Pre-requisite: CIS 115 Minimum Grade of C.

ITE 285 Intermediate Programming 3 cr

A second course in visual, event-driven programming that builds on CIS 115. Topics include functions and procedures, arrays, LINQ, structures, text files, structured exception handling, additional controls and objects, and object-oriented programming. Programming projects are required. Credit cannot be received for both ISC 285 and ITE 285.

Pre-requisite: CIS 115 Minimum Grade of C.

ITE 370 Adv Application Development 3 cr

This course explores advanced topics in visual applications development. Emphasis is placed upon developing increased program functionality and connectivity with local and remote databases. Other topics: integrating programming components and libraries, object-oriented application development and testing methodologies, and using an object-oriented approach for multi-tiered applications. Programming projects are required. Credit cannot be received for both ITE 370 and ISC 361.

Pre-requisite: (ITE 285 Minimum Grade of C or ISC 285 Minimum Grade of C) and CIS 324 Minimum Grade of C.

ITE 372 Advanced Operating Systems 3 cr

This course introduces students to advanced Operating Systems techniques and related system architecture concepts. Students will examine how Operating Systems retain parameters set during installation and customization as well as the basic strategies used in Operating System security. Students will use advanced command-line tools to discover and modify settings within the Operating System and will use advanced scripting techniques to parse data within Operating System's files.

Pre-requisite: (ISC 272 Minimum Grade of C or ITE 272 Minimum Grade of C) and (ISC 285 Minimum Grade of C or ITE 285 Minimum Grade of C).

ITE 373 File Sys for Digital Forensics 3 cr

This course introduces students to advanced file system techniques used in Forensic Analysis. Students will examine the current principles in drive storage hardware and file systems, including Windows and Linux-based systems and evaluate possible data hiding techniques which can be employed within these systems. Students will be required to perform imaging of hard drives for analysis of possible hidden data using techniques covered in this course.

Pre-requisite: (ISC 272 Minimum Grade of C or ITE 272 Minimum Grade of C).

ITE 375 Publishing for the WWW 3 cr

This course is an introduction to the models and tools used to develop documents for the World Wide Web. Course topics include website planning and design, markup and styling languages, graphics, multimedia utilization, typography, and scripting. Website design issues such as ethics, copyright and intellectual property rights are also covered. Prerequisites: CIS 321 and either ISC 272 or ITE 272.

Pre-requisite: CIS 321 Minimum Grade of C and (ISC 272 Minimum Grade of C or ITE 272 Minimum Grade of C).

ITE 380 Multimedia Production 3 cr

This course covers the models and tools of multimedia development and production. Development models include: message analysis, audience analysis, and media formats. Technical issues include: data formats, data interoperability, and hardware concepts. From a practical perspective, students will develop a multimedia project.

Pre-requisite: (ISC 272 Minimum Grade of C or ITE 272 Minimum Grade of C).

ITE 382 Network Administration 3 cr

This course examines the network and database administrator functions in an organization. Students study the functions required of an administrator to facilitate the usage of the environment while securing the resources. Various methods and software products will demonstrate the areas of access and security.

Pre-requisite: CIS 321 Minimum Grade of C and (ISC 272 Minimum Grade of C or ITE 272 Minimum Grade of C).

ITE 384 Network Infrastructure Systems 3 cr

This course focuses upon the concepts of network hardware systems that provide interconnection of communication devices. Topics include: network architectures and technologies, concepts such as routing, addressing, and network protocols (TCP/IP and others). Students will be required to setup, configure, and manage wired and wireless network equipment such as switches, routers, access points, and gateways

Pre-requisite: CIS 321 Minimum Grade of C and (ISC 272 Minimum Grade of C or ITE 272 Minimum Grade of C).

- ITE 453 Web Site Management** 3 cr
This course addresses the design, establishment and implementation of a World Wide Web site. Issues addressed are: definition of the site, establishment of a physical site, choice of a Web server, determination of software requirements, implementation details, security, management, and monitoring of the site.
Pre-requisite: CIS 321 Minimum Grade of C and (ISC 272 Minimum Grade of C or ITE 272 Minimum Grade of C).
- ITE 473 Digital Forensic Analysis** 3 cr
This course introduces students to acceptable methodologies of securing, collecting, analyzing and reporting data of a computer forensics investigation. Topics include: Ethics, introduction to computer investigations, evidence control, forensics tools, data acquisition, data recovery, data analysis and presenting the results. Students will be required to perform several forensics analyses in a controlled lab environment.
Pre-requisite: ITE 372 Minimum Grade of C and ITE 373 Minimum Grade of C.
- ITE 474 Human Computer Interface** 3 cr
Students will study the concepts of human-computer interaction and interface design. Topics include: detailed human-computer interaction concepts, modern graphical user interface models, and interface usability testing. Students will use rapid-prototyping tools to develop and test a typical user interface. Credit cannot be received for both ITE 474 and ISC 474.
Pre-requisite: (ISC 285 Minimum Grade of C or ITE 285 Minimum Grade of C).
- ITE 475 IT Project Management** 3 cr
This course examines the principles and techniques of project management from an information technology perspective. Major topics include project context, project selection, and project planning. Students work in collaborative teams and are instructed in the use of a project software tool. Credit cannot be received for both ITE 475 and ISC 475.
Pre-requisite: CIS 324 Minimum Grade of C.
- ITE 476 Network Security Management** 3 cr
This course examines network and web security issues including: risks and threats, system access points, hardware and software defense methods, and organizational security policies. Labs will require students to analyze systems for potential threats, implement security procedures, monitor systems for security breaches, and institute recovery or repairs.
Pre-requisite: ITE 382 Minimum Grade of C and ITE 384 Minimum Grade of C.
- ITE 480 Needs Assess-Tech Eval - W** 3 cr
This course presents methodologies for assessing technological needs in support of organizational information requirements. Students learn the next logical step is a formal means of evaluating a given technology. Major topics of the course are specifying organizational needs, identifying potential technologies, evaluating potential benefits, assessing the organization's ability to utilize the technology. Students will examine planning for technological change and strategic implementation of the change.
Pre-requisite: EH 102 Minimum Grade of C and ITE 271 Minimum Grade of C and ITE 285 Minimum Grade of C.
- ITE 482 Adv Web Development** 3 cr
This is an advanced course in web programming and development. This course provides a hands-on approach using high-level development tools to learning advanced web programming concepts including server-side and database processing. Students will implement usability and security features into the development of modern web applications.
Pre-requisite: CIS 324 Minimum Grade of C and ITE 375 Minimum Grade of C.
- ITE 484 Advanced Network Management** 3 cr
This course explores advanced network management issues including: developing/designing network implementation strategies, managing users and data, providing operational support and help-desk, developing network use policies, developing network recovery procedures. Labs will require that students manage an operational network that provides typical network services and experience the day-to-day problems that network administrators encounter.
Pre-requisite: ITE 382 Minimum Grade of C and ITE 384 Minimum Grade of C.
- ITE 485 ITE Senior Demo Project** 3 cr
A senior capstone individual project course working from problem requirements and specifications to produce a solution. This requires exploration of suitable information technologies to produce a solution that improves the problem situation. Students will analyze, plan, and report on the project and implement a prototype. Prerequisites: ITE 370 Minimum Grade of C, ITE 480 Minimum Grade of C, and permission of the ITE coordinator.
Pre-requisite: ITE 370 Minimum Grade of C and ITE 480 Minimum Grade of C.
- ITE 490 Special Topics** 3 cr
Advanced selected topics in information technology.
Prerequisite: Permission of the ITE coordinator.
Pre-requisite: Computer Sci Prof Component 30 or Computer Science Graduate 030

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