COMPUTER INFO SCIENCES (CIS) (CIS)

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 100 Information Tech in Society 1 cr
A discussion of the impact of information technology on personal, local, national, and global issues. Not to be taken with CIS 110.

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.
Prerequisite: 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 121 Prob Solv-Prog Concepts II 4 cr
Continuation of CIS 120. Topics include: design concepts, abstract data types, use of object libraries, dynamic storage allocation, stacks, queues, link lists, random access files, testing and software engineering practices.
Prerequisite: (CIS 120 Minimum Grade of C or CIS 141 Minimum Grade of C)

CIS 140 Intro to Tech for Healthcare 3 cr
This course is designed to provide a broad-based introduction to the use of computers and productivity software technologies for healthcare providers. 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; basic image management related to documents and reports; as well as electronic health records systems. Other topics covered include information assurance, protecting patient privacy, social networks, computing safety, and professional coping skills.

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 150L Intro to Comp Applications Lab 0 cr
Laboratory course for CIS 150, Introduction to Computer Applications.

CIS 190 Special Topics- 1-3 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.
Prerequisite: MA 125 (may be taken concurrently) Minimum Grade of C

CIS 211 Advanced C++ Programming 1 cr
Advanced concepts in C++ programming, constructors, destructors, classes and operation overloading.
Prerequisite: (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.
Prerequisite: MA 126 Minimum Grade of C or MA 233 Minimum Grade of C

CIS 230 Adv Data-File Structures 3 cr
Extension of elementary data structures as covered in CIS 121, techniques to organize and access collections of data. Definition, implementation, and use of Classes and Abstract Data Types (ADT). The use of ADTs and objects for solving CIS problems. Network, hierarchical, and relational data models leading to Database Management Systems. Topics include: recursion, search trees, algorithmic complexity, advanced searching and sorting algorithms, and graphs.
Prerequisite: (CIS 121 Minimum Grade of C or CIS 142 Minimum Grade of C or CIS 211 Minimum Grade of C) and MA 267 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.
Prerequisite: CIS 150 Minimum Grade of C or CIS Proficiency Exam P or CIS 010 Minimum Grade of S

CIS 250L Adv Comp Applications Lab 0 cr
Laboratory course for CIS 250, Advanced Computer Applications.
Prerequisite: CIS Proficiency Exam P or CIS 150 Minimum Grade of C

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.
Prerequisite: 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 322 Operating Systems 3 cr
This course covers the development of operating systems that control computing systems. Topics include: file systems, process management, scheduling, memory management (real and virtual), security, and concurrency. Case studies of operating systems are examined.
Prerequisite: (CIS 230 Minimum Grade of C or CIS 263 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.
Prerequisite: ((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.
Cross-Listed: CIS 121, CIS 123, CIS 501

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.
Cross-Listed: CIS 322, CIS 502

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.
Prerequisite: 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
Cross-Listed: CIS 230

CIS 404 Accelerated Networks-Comm 3 cr
This course presents network and communications concepts in an accelerated manner. Coverage includes signaling concepts, communication devices, switching, network architectures and protocols, OSI reference model, network management and planning. This course does not count toward a graduate degree in CIS.
Prerequisite: CIS 222 Minimum Grade of B or CIS 322 Minimum Grade of B or CIS 402 Minimum Grade of B or CIS 502 Minimum Grade of B
Cross-Listed: CIS 321, CIS 504

CIS 405 Programming Languages 3 cr
This course examines formal language concepts of programming languages including syntax and basic grammars. Language features such as data types and structures, control structures, and data flow will be studied. Laboratory assignments include the use of high level languages as well as the use of windows API.
Prerequisite: CIS 230 Minimum Grade of B or CIS 263 Minimum Grade of B or CIS 403 Minimum Grade of B
Cross-Listed: CIS 333

CIS 406 IS in Organizations 3 cr
An examination of the relationship of information systems in organizations and the impact on people in the organization with respect to planning and decision making. Other topics covered include general systems theory, data security and integrity, application access control, project management, and large group behaviors.
Prerequisite: (CIS 230 Minimum Grade of B or CIS 263 Minimum Grade of B or CIS 403 Minimum Grade of B or CIS 503 Minimum Grade of B or (ITE 285 Minimum Grade of B or ISC 508 Minimum Grade of B) or ITE 451 Minimum Grade of B)

CIS 407 Database Programming 3 cr
This course examines implementation and access of databases via event-driven applications developed with visual programming tools. Other topics covered are elementary E-R modeling, data integrity, referential integrity, report development, interface design. This course does not count towards a graduate degree in CIS.
Prerequisite: (CIS 230 Minimum Grade of B or CIS 263 Minimum Grade of B or CIS 403 Minimum Grade of B)
Cross-Listed: CIS 324

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.
Prerequisite: 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.
Prerequisite: Computer Sci Prof Component 30

CIS 494 Directed Studies 1-3 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 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.
Prerequisite: (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
Corequisite: CIS 498

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.
Prerequisite: CIS 497 (may be taken concurrently) 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)
Corequisite: CIS 497

CIS 499 CIS Senior Honors Project - H 3-6 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.
Prerequisite: Computer Sci Prof Component 30

CIS 500 Basic Computing Prin and Appl 3 cr
Introduction to computers and computer applications. Components of a computer system will be presented. Word processing, systems design and implementation, and programming concepts will be introduced. Not to be taken for CIS graduate credit.

CIS 501 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. Prerequisite: Prior programming experience desired and permission of Coordinator.
Cross-Listed: CIS 121, CIS 401

CIS 502 Accelerated OS-Comp Arch 3 cr
This course presents computer architecture and operating systems 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 towards a graduate degree in CIS. Prerequisites: Prior programming experience and permission of Coordinator.
Cross-Listed: CIS 322, CIS 402

CIS 503 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 towards a graduate degree in CIS.
Prerequisite: (CIS 121 Minimum Grade of B or CIS 123 Minimum Grade of B or CIS 142 Minimum Grade of B or CIS 501 Minimum Grade of B) or CIS 401 Minimum Grade of B
Cross-Listed: CIS 230, CIS 403

CIS 504 Accelerated Networks - Comm 3 cr
This course presents networks and communications concepts in an accelerated manner. Coverage includes signaling concepts, communications devices, switching, network architectures and protocols, OSI reference model, network management and planning. This course does not count towards a graduate degree in CIS.
Prerequisite: (CIS 222 Minimum Grade of B or CIS 322 Minimum Grade of B or CIS 402 Minimum Grade of B or CIS 502 Minimum Grade of B or ISC 506 Minimum Grade of B)
Cross-Listed: CIS 321, CIS 404

CIS 505 Programming Languages 3 cr
This course examines formal language concepts of programming languages including syntax and basic grammars. Language features such as data types and structures, control structures, and data flow will be studied. Laboratory assignments include the use of high level languages as well as the use of windows API.
Prerequisite: (CIS 230 Minimum Grade of B or CIS 263 Minimum Grade of B or CIS 403 Minimum Grade of B or CIS 503 Minimum Grade of B or ISC 508 Minimum Grade of B)
Cross-Listed: CIS 333, CIS 405

CIS 506 IS in Organizations 3 cr
An examination of the relationship of information systems in organizations and the impact on people in the organization with respect to planning and decision making. Other topics covered include general systems theory, data security and integrity, application access control, project management, and large group behaviors. This course does not count toward a graduate degree in CIS.
Prerequisite: (CIS 230 Minimum Grade of B or CIS 263 Minimum Grade of B or CIS 403 Minimum Grade of B or CIS 503 Minimum Grade of B or ISC 508 Minimum Grade of B) or (ITE 285 Minimum Grade of B or ITE 451 Minimum Grade of B)
Cross-Listed: CIS 406

CIS 507 Database Programming 3 cr
This course examines implementation and access of databases via event-driven applications developed with visual programming tools. Other topics covered are elementary E-R modeling, data integrity, referential integrity, report development, interface design. This course does not count towards a graduate degree in CIS.
Prerequisite: (CIS 230 Minimum Grade of B or CIS 263 Minimum Grade of B or CIS 403 Minimum Grade of B or CIS 503 Minimum Grade of B or ISC 508 Minimum Grade of B)
Cross-Listed: CIS 324, CIS 407

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.
Prerequisite: CSGR Prof Component Eligible P

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.
Prerequisite: CSGR Prof Component Eligible P

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.
Prerequisite: CSGR Prof Component Eligible P

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.
Prerequisite: CSGR Prof Component Eligible P

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.
Prerequisite: CSGR Prof Component Eligible P

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
Prerequisite: CSGR Prof Component Eligible P

CIS 594 Directed Studies - 1-3 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 1-3 cr
Development of the research proposal for master's thesis. Graduate Professional Component. Requires permission of the Director of Graduate Studies.
Prerequisite: CIS 518 Minimum Grade of S

CIS 596 CIS Graduate Internship 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 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 1-3 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 1-9 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.
Prerequisite: 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 1-9 cr
This course focuses on the development of the dissertation.