UNDERGRADUATE COURSES OF STUDY

COMPUTER INFORMATION SYSTEMS

CIS 101.COMPUTER FUNDAMENTALS
Characteristics and applications of computers in today's society. Hands-on experience with microcomputers and a variety of applications software. This course is not designed as an introduction to programming and is not available for credit to students in Computer Information Systems or Mathematics majors. Prohibited to students currently enrolled in or having earned credit in CIS 102, CIS 111, CIS 112, CIS 113, and CIS 202. ***Three credit hours.***

CIS 102.APPLICATION SOFTWARE
Designed to enable students to improve their personal productivity as knowledge workers. Topics include advanced software functionality, organization and management of data, webpage design and publishing, effective presentation design and delivery. Course environment will include both lectures and laboratory experience. ***Three credit hours.***

CIS 120.FUNDAMENTALS OF INFORMATION SYSTEMS AND INFORMATION TECHNOLOGY
This course introduces students to information systems and information technology. Topics will include the overview of computer hardware and software, management information systems, computer networking, organization and management of data, decision making, careers, and professional ethics**. *Three credit hours.***

CIS 130.PROBLEM SOLVING AND PROGRAMMING METHODS
This course introduces problem-solving and computational thinking. Topics include syntax, data types, stepwise refinement, and structured and modular design methods. Course environment will be both lecture and lab. Prerequisite or co-requisite: One of the following: MATH 114, MATH 121, MATH 123, MATH 141, or MATH 211. ***Four credit hours.***

CIS 202.COMPUTER APPLICATIONS FOR ENGINEERS
A course in solving engineering-oriented problems. Students learn how to use computer software including spreadsheets and a mathematical package. Prerequisite: MATH 141 with "C" or better, CIS 130 with "C" or better or previous programming experience. ***Three credit hours.***

CIS 230.COMPUTER PROGRAMMING PRINCIPLES I
Problem solving and algorithm development. Includes programming style, structured programming, selection, iteration, arrays, modular programming, basic object-oriented programming concepts, strings, and files. Course environment will be both lecture and practicum. Prerequisite: "C" or better in CIS 130. ***Four credit hours***.

CIS 231.COMPUTER PROGRAMMING PRINCIPLES II
A continuation of CIS 230 including recursion, object-oriented programming concepts, basic graphical user interface programming, and basic data structures. Prerequisites: "C" or better in CIS 230. ***Four credit hours***.

CIS 234.INTRODUCTION TO C/C++ PROGRAMMING
Problem solving and algorithmic development in C/C++ programming language in a Unix-like environment. Includes programming style, structured programming, selections, iteration, arrays, structures, unions, pointers, modular programming, and basic object-oriented programming. Course environment will be both lecture and practicum. Prerequisite: "C" or better in CIS 230. ***One credit hour***.

CIS 240.INTRODUCTION TO DATA COMMUNICATIONS
This course covers networking and telecommunications concepts and standards. Topics include wired and wireless transmissions, signal encoding techniques, digital data communication techniques, data link control, multiplexing, distributed and centralized computer systems, and the OSI model. Prerequisites: "C" or better in both CIS 120 and CIS 230. ***Three credit hours.***

CIS 250.INTRODUCTION TO E-COMMERCE
An introduction to organizational strategies and network informational technologies necessary to implement a variety of business models for connecting clients, businesses, government agencies, etc. for transfer of information using various kinds of computer networks. The course will also cover an introduction to business strategies, design of e-business solutions, and the technological architecture required to implement various e-business relationships (B2B, B2C, B2G, etc.). Prerequisite: CIS 120 with "C" or better. ***Three credit hours.***

CIS 291.SPECIAL TOPICS IN COMPUTER INFORMATION SYSTEMS

Designed to allow the study of various topics in computer information systems that are not included or covered in depth in the standard curriculum. If the topic remains the same, this course may be repeated to improve the grade. It can also be taken for additional credit when the topic changes. (Limited to a maximum of four credit hours toward degree requirements.) Prerequisites: "C" or better in both CIS 130 and MATH 141 or instructor permission. ***One to four credit hours.***

CIS 300.NUMERICAL ANALYSIS

An introduction to scientific computing. The use of numerical methods in solving equations, systems of linear equations, and differential equations. Numerical integration. (Cross-listed as MATH 300). Students are encouraged to take CIS 102 or CIS 202. Prerequisites: MATH 142 ("C" or better) and CIS 130. ***Three credit hours.***

CIS 320.INFORMATION SYSTEMS AND PRACTICE

This course will give students continuing experience with the theory of the Information Systems discipline. Application of these theories to the success of organizations and to the roles of management, users, and IS professionals is the focus of the course. Topics will include: systems theory and concepts; enterprise-wide information systems; functions and roles of information systems in organizations; decision support technologies including data warehouse, data mining, and artificial intelligence; information system strategies; information technology infrastructure; societal and ethical issues of IS; emerging technologies. Prerequisites: "C" or better in the following: CIS 120, CIS 230, and either CIS 102 or CIS 202. ***Three credit hours***.

CIS 321.ANALYSIS AND DESIGN

Analysis and design of information systems with a focus on structured and object-oriented techniques, the software life cycle, modeling tools, development of team skills, and project management. Prerequisite or co-requisite: CIS 231. Prerequisites: CIS 120, and either CIS 102 or 202, all with "C or better. ***Three credit hours.***

CIS 330.SOFTWARE DEVELOPMENT: FUNDAMENTALS AND TECHNIQUES

Designed to cover fundamentals and recent techniques in software development. Topics may include but not limited to user interface design and implementation, software development using patterns, data structures and algorithms, or multi-thread/multi-core programming. Prerequisites: "C" or better in CIS 231 and "C" or better in either CIS 102 or CIS 202. Repeatable for additional credit as topics change with instructor permission. ***Three credit hours***.

CIS 335.COMPUTER ORGANIZATION AND ARCHITECTURE

This course covers the functions and design of digital computer hardware at various levels of abstraction, below operating systems. Topics include data representations, digital logic, instruction set architecture, assembly language programming, addressing modes, memory hierarchy (cache memory and virtual memory), relationship with operating systems, and performance measurements. Prerequisites: "C" or better in CIS 230. ***Three credit hours***.

CIS 340.COMMUNICATION PROTOCOLS

Principles of communication protocols including a comparison of the OSI and the TCP/ IP reference models. This course includes an in-depth analysis of TCP/IP and application protocols built on top of TCP/IP or similar protocols. Prerequisite: "C" or better in CIS 240. ***Three credit hours.***

CIS 341.THEORY OF DATA COMMUNICATIONS

In-depth study of data communications including design principles, standards, protocols, algorithms, architectures, models, and performance. Prerequisite: "C" or better in CIS 240. ***Three credit hours.***

CIS 360.DATABASE DESIGN

This course will cover the design and implementation of a database management system for use in the information system environment. Topics will include database organization models (relational and object oriented), the use of design tools, data dictionaries, data warehousing, data mining, as well as user interfaces and reporting. Prerequisites: CIS 120, CIS 230, and either CIS 102 or CIS 202, all with a "C" or better. Prerequisite or co-requisite: MATH 125 or MATH 325. ***Three credit hours.***

CIS 390.SPECIAL TOPICS

Designed to provide in-depth analysis of topics in computer information systems. Prerequisites: CIS 120, CIS 230, and either CIS 102 or CIS 202, all with "C" or better, Instructor permission. ***One to three credit hours***.

CIS 406, 407, 408, 409, 410. CIS RESEARCH

These courses involve research on special topics for juniors and seniors majoring in Computer Information Systems. The courses are limited to a maximum of four credit hours toward major requirements and are offered on demand to qualified students. Students are required to communicate the results of their coursework at an appropriate off-campus venue. These courses are not sequential. Prerequisites: A minimum GPA of 3.0 is required along with instructor permission. ***Zero to four credit hours.***

CIS 410. RESEARCH IN COMPUTER INFORMATION SYSTEMS

Research on special topics for juniors and seniors in computer information systems. Repeatable for additional credit but limited to a maximum of four credit hours toward degree requirements. Offered on demand. ***Four credit hours.***

CIS 440. SPECIAL TOPICS IN NETWORKING AND COMMUNICATIONS

Designed to provide an in-depth analysis of topics related to computer networks and communications. Prerequisites: "C" or better in CIS 240 and instructor permission. ***Three credit hours.***

CIS 490. INTERNSHIP IN COMPUTER INFORMATION SYSTEMS

This course is designed to give students practical work experience in a field related to their major. The students will work through an approved agency or business under the supervision of professional employees and a faculty advisor. Credit hours awarded will be determined on a case-by-case basis by the Department Chair and the Computer Information Systems faculty. The course is repeatable for additional credit but is limited to a maximum of twelve credit hours toward degree credit. Prerequisites: "C" or better in both CIS 231 and CIS 321. ***One to twelve credit hours.***

CIS 498. DESIGN AND IMPLEMENTATION IN EMERGING ENVIRONMENTS

This course will broaden students' knowledge of analysis and logical design by implementing information systems of varying complexity in emerging systems environments. Students will work in teams or individually on several projects. Topics may include but are not limited to: selection of development environments and standards; structured, event driven, object-oriented, and distributed computing design paradigms; testing; software quality assurance; implementation; user training; system delivery; post-implementation review; maintenance. Prerequisites: CIS 231 with "C" or better, CIS 250, and CIS 321. Prerequisite or co-requisite: CIS 360. ***Three credit hours.***

CIS 499. PROJECT IMPLEMENTATION AND MANAGEMENT

Students operating as a high-performance team will engage in and complete the design and implementation of a significant information system. Project management, requirement analysis, design and implementation, systems integration, deployment and user training will be components of the project experience. Prerequisites: "C" or better in both CIS 231 and CIS 321 and completion of all but two other CIS courses and emphasis requirements, all but one with "C" or better. ***Three credit hours.***