Computer Science and Information Systems (CSIS)

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Minor requirements in Information Technology

Required semester hours
20 sh

Prerequisites and supporting courses
MATH 1410

Required core courses
CSIS 1210, 1220, 2230, 3310, 3410

1010 **Introduction to Personal Computing and the Internet (4 sh)**
An introduction to computer concepts and the use of application packages such as word processors, spreadsheets, presentation graphics, web browsers, and web page editing, including a laboratory component. Ethical and moral issues relating to individual, commercial, and social effects of computers and networks. Introduction to the Internet, email, and World Wide Web.

1210 **Computing Science I (4 sh)**
Top-down structured design and programming in a high level language such as Python. Topics including arithmetic, control structures, strings, functions, arrays, input/output, and introduction to objects. Prerequisite: CSIS 1010 or Consent of Instructor.

1220 **Computing Science II (4 sh)**
Introduction to the elements of computing processors: bits, bytes, memory, arithmetic, digital logic, and the components that comprise a central processing unit. Programming in the machine language and assembly language using the fundamental control structures. Prerequisite: CSIS 1210.

2230 **Object Oriented Programming (4 sh)**
Continuation of CSIS 1220. Object-oriented design and programming in Java, covering objects, classes, methods, inheritance, polymorphism, and dynamic binding, with emphasis on practical applications of these concepts. Graphic user interface class libraries. Ethical issues in information technology. Prerequisite: CSIS 1220. Co-requisite: MATH 1410.

3120 **Computer Architecture (4 sh)**
Digital logic and digital systems. Machine level representation of data and assembly level machine organization. Memory system organization and architecture. Interfacing and communication. Functional organization and performance enhancements. Multiprocessing and alternative architectures. Prerequisite: CSIS 1220.

3140 **Operating Systems (4 sh)**
Overview of operating systems and operating system principles. Concurrency, scheduling and dispatch, and distributed algorithms. Memory and device management. Security and protection. File systems. System performance evaluation. Prerequisite: CSIS 3120, MATH 1410.

3250 **Data Structures and Algorithms (4 sh)**
Fundamental programming constructs and data structures. Algorithms and problem solving. Recursion. Event-driven programming. Basic algorithm analysis. Software design. Using APIs. Software tools and environments. Software requirements and specifications. Prerequisite: CSIS 2230.

3310 **Data Communications, Networks and the Internet (4 sh)**
Introduction to network technologies and software, as well as to the Internet and the World Wide Web. Fundamentals of data, signals, and media. LAN basics, internetworking, software and support systems. Intranets and the Internet. Network design, management and security. Prerequisite: CSIS 1220.

3410 **Databases and Information (4 sh)**
Introduction to database design and management. Information collection and retrieval. SQL and the relational model. Normalization issues. Logical design and physical design. Distributed databases and the Internet. Such application packages as Access and Oracle. Prerequisite: CSIS 1220.

3510 **Operating Systems Programming (4 sh)**
Introduction to systems-level programming in a variety of environments such as Unix/Linux and Windows. Scripting languages. Prerequisite: CSIS 1220.

3650 **Algorithm Design and Analysis (4 sh)**
Basic algorithm analysis. Algorithmic strategies. Fundamental computing algorithms. Distributed algorithms. Basic computability. Declarations and types. Abstraction mechanisms. Prerequisite: CSIS 3250, MATH 1420, MATH 1520.

3710 **Management Information Systems (4 sh)**
Introduction to all the applications of information technology to create and serve systems for carrying on commercial operations. Business operations, business integration, decisions and analysis, organizing businesses and systems. Networks, databases, and e-commerce. Prerequisite: CSIS 1220, BSE 2110, BSE-2211;

3730 **E-Commerce (4 sh)**
Basics of doing business on the Internet. Framing market opportunity. Strategic formulation for new economy firms. Technology, capital, and media infrastructures. Public policy and structure. Prerequisite: CSIS 3310 CSIS 3710.

3820 **Systems Analysis and Design (4 sh)**
System development and modification process. Life cycle phases. Effective communication and integration with users and user systems. Object-oriented analysis and design. UML and use of modeling tools. Prototyping. Professional codes of ethics. Prerequisite: CSIS 2230 CSIS 3410;

3850 **Project Management and Practice (4 sh)**
Factors necessary for successful management of information systems development of enhancement projects. System and database integration issues Network management. Determining skill requirements and staffing. Software tools for project tracking and monitoring. Normally taken by IS majors in the spring of their last year. Prerequisite: CSIS 3730 CSIS 3820.

4910 **Independent Study in Computer Science and Information Systems (1-4 sh)**

4970 **Internship in Computer Science and Information Systems (1-4 sh)**
Please refer to the appropriate section in the catalog for internship requirements and guidelines.