

Information Technology

Undergraduate Program

Bachelor of Science in Information Technology

Minimum credit hours required—130

In addition to the General Education Core Curriculum (page 89), the following courses are required:

- CSE 222 (3), 241 (3);
- IT 101 (2), IT 113 (4), 122 (3), 213 (3), 221 (3), 263 (3), 311 (3), 321 (3), 326 (3), 353 (3), 373 (3), 382 (3), 481 (3), 482 (3);
- MATH 283 (3);
- PSY 121 (3) (can be applied as a social science course in the general education core curriculum);
- Technical Electives: a sequence of 12 hours of computer science, information technology, or management courses numbered 300 or higher; must be pre-approved by the student's advisor and an IT Program Coordinator; with no more than one course numbered IT 485. Students are encouraged to select a coherent set of courses as technical electives that will prepare them for a specific focus in their career;—
- Each of the above courses must be completed with a grade of C or better;—
- General Electives to complete 130 credit hours.

Information Technology Courses:

In the following, each prerequisite requires a grade of C or better.

IT 101, Introduction to Computer Science & Information Technology, 2 cr, 2 cl hrs

Brief overview of the discipline of computer science and information technology topics including computer architecture, operating systems and networks, automata and models of computation, programming languages and compilers, data structures, algorithms, databases, security and information assurance, artificial intelligence, graphics, and social/ethical issues of computing. (Same as CSE 101.)

IT 113, Introduction to Programming, 4 cr, 3 cl hrs, 3 lab hrs

Co-Prerequisite: MATH 1031 or equivalent

The course is designed to introduce problem solving and programming in C to Computer Science and Information Technology majors. Topics include algorithm development; top-down design; modular programming; debugging; testing; control structures including selection, iteration and recursion; data types including arrays, strings, pointers, and dynamic structures involving memory management. Concepts implemented through extensive

programming using good programming style. (Same as CSE 113.)

IT 122, Algorithms and Data Structures, 3 cr, 3 cl hrs

Prerequisite: IT 113

Corequisite: MATH 132

Fundamental data structures including linked lists, trees, hash tables, and graphs. Algorithms for sorting, searching, and other fundamental operations. Introduction to mathematical foundations for analysis of iterative and recursive algorithms and for basic correctness proofs. Analysis of algorithms. Implementation of selected algorithms using sound programming methodologies. (Same as CSE 122.)

IT 213, Introduction to Object Oriented Programming, 3 cr, 3 cl hrs

Prerequisite: IT 101, 113, 122

Introduction to programming in an object oriented language (e.g., Java): review of problem solving, algorithm development, top-down design, modular programming, debugging, testing, control structures including selection, iteration and recursion, data types including arrays, strings, pointers, and dynamic structures. Object oriented concepts will include: objects, classes, inheritance, instances, methods, interfaces, packages, encapsulation, and polymorphism. Concepts implemented through extensive programming using good programming style. (Same as CSE 213.)

IT 221, Computer and Network Organization, 3 cr, 3 cl hrs

Prerequisite: IT 101, 122

The hardware/software interface. Basic organization of computers, operating systems, and computer networks. Memories, buses, interrupts, input and output, and instruction set architecture. Programming in assembly language. (Same as CSE 221.)

IT 263, Information Protection and Security, 3 cr, 3 cl hrs

Prerequisite: IT 101, 113;

Corequisite: IT 221

Concepts of information, message and data. Storage and transmission, retrieval and communications. Authorized users and penetrators. Threats to information confidentiality, integrity, availability, and accountability. Attacks. Degrees of security and costs. Protection mechanisms and security precautions. Authentication and authorization. Encryption. Secure operating systems, communications and networks. Defenses against viruses, worms, and hostile code.

IT 485 Undergraduate Seminar on Special Topics. 3cr, 3cl hrs.

Prerequisite: Senior standing, one semester of upper division courses in computer science / information technology, and consent of the instructor.

A research seminar for undergraduate students with a focus either on special topics in computer science / information technology or on the methodology and skills required for research in computer science / information technology.

Use as technical elective is limited (see requirements above), but may be taken multiple times as general elective.