Computer Programming and Information Systems - BS

What is the Bachelor of Science in Computer Programming and Information Systems?

Demand continues to be strong for students skilled in Information Technology. Of the top 10 degrees in demand for bachelor’s degree levels, four are computer-related. They include the following degrees:

- Computer Science
- Information Science and Systems
- Computer Engineering
- Management Information Systems/Business Data Processing

As reported in the United States Department of Labor Occupational Outlook Handbook, employment of programmers, web developers, systems analysts and network architects is projected to grow in the range of 22 – 30 percent from 2010 to 2020, faster than the average projected growth for overall occupations.

The Computer Programming and Information Systems baccalaureate degree program requires a set of core courses that all graduates must take. The Core courses provide the diverse but fundamental foundation in technology necessary to create a technology savvy individual. In addition, the student selects one of five tracks with concentrations in Programming, Systems Development, Networking, Web Development or Database. Each track offers the student a skill set in one discipline of Information Technology and enables him/her to study a particular area in depth.

This program touches on all aspects of computer programming and information systems. It provides a practical hands-on approach to programming with an emphasis on solving business problems.

Typical Employment Opportunities:


Programmers convert project specifications, addressing problem statements and procedures, into detailed coding in a computer language. They will also develop and write computer programs to store and retrieve documents, data and information.

The Systems Analyst analyzes business, scientific and technical problems for application to computer-based systems.

For those interested in networking, our program offers courses in conjunction with the Cisco Networking Academy. Students taking and passing these courses receive training certifications for each course directly from Cisco. These courses prepare each student for taking the Cisco Certified Network Associate (CCNA) exam.

Web Development professionals are in demand due to the growth of the Internet and the expansion of the World Wide Web (the graphical portion of the Internet). This rapid growth has generated a variety of occupations related to the design, development, and maintenance of Web sites and their servers.

Database professionals will be prepared to design and administer the advanced databases that industry relies on.

Computer Systems (BS) Program Objectives:

- Graduates will be prepared to pursue advanced studies beyond the bachelor's degree.
- Graduates will have an opportunity to get hands-on experience via Internship opportunities and completion of a capstone project.
- Graduates will be able to analyze an ethical situation and apply ethical guidelines in evaluating the situation.
- Graduates will be prepared to pursue advanced studies beyond the bachelor’s degree.
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Students entering the CPIS program are required to bring a laptop computer to class.
Systems Track (12 Credits)

Students must complete BCS 301 as a prerequisite(s) for this track

BCS 250 JavaScript .....................................3
BCS 303 XML .............................................3
BCS 350 Web Database Development .......................3

Notes:
1: No student will be permitted to remain in the Computer Programming and Information Systems Program if he/she has received three “F’s” in any BCS course or courses. Candidates for graduation will be required to have a minimum average GPA of 2.0 in BCS courses.
2: For all BCS courses that require a BCS prerequisite, the BCS prerequisite must be completed with a grade of C or better.
3: Students must complete at least 18 credits with BCS designation at Farmingdale.
4: Students with life experience may challenge up to 3 courses (9 credits via credit-by-evaluation).

BCS 120 Foundations of Computer Programming I
This course introduces the C++ Programming Language as a means of developing structured programs. Students will be taught to develop algorithms using top-down stepwise refinement. Students will be introduced to the concept of Object Oriented programming through the use of pre-defined classes. In addition, students will get a thorough exposure to C++ syntax and debugging techniques.

(3,0) Credits: 3

BCS 160 Computers, Society and Technology
This is an introductory course that provides students with the knowledge to stay current and informed in a technology-oriented, global society. Students will receive instruction in basic computer concepts and applications, the fundamentals of the Windows operating system and have hands-on experience at the beginning to intermediate level using Microsoft Excel and Access. The Internet will be used to supplement textbook and lecture materials. Note: Students taking this course may not receive credit for both BUS 201 or 202.

(3,0) Credits: 3

BCS 230 Foundations of Computer Programming II
This course expands the knowledge and skills of Foundations of Computer Programming I. Among the topics covered are: arrays, pointers, strings, classes, data abstraction, inheritance, composition and overloading. Prerequisite(s): BCS 120 or DPR 120 with a C or higher

(3,0) Credits: 3

BCS 215 UNIX Operating Systems
This course develops the fundamental knowledge of computer operating systems using UNIX. Topics include basic understanding of the UNIX system, utilizing the file system, programming language and security system. BCS 120 may be taken as a Prerequisite or Corequisite.

Corequisite(s): BCS 120

(3,0) Credits: 3

BCS 260 Data Base
This course provides the fundamental knowledge of database concepts. Topics studied will include the history and advantages of database systems, and the process of database design including entity-relationship diagrams and database normalization. Students will have hands-on experience using SQL (Structured Query Language).

Prerequisites: BCS 120 or BCS 185 and (BCS 160 or BCS 200) all with a grade of C or better

(3,0) Credits: 3

BCS 262 Data Communications
This course is an introduction to the concepts and applications of computer networking and its role in the business world today. Topics include: history of networking and applications, voice and data communications, hardware, transmission, network topologies, network analysis, the OSI model, design, implementation and management issues.

(3,0) Credits: 3

BCS 300 Management Information Systems
Managers have increasing responsibility for determining their information system needs and for designing and implementing information systems that support these needs. Management information systems integrate, for purposes of information requirements, the accounting, financial, and operations management functions of an organization. This course will examine the various levels and types of software and information systems required by an organization to integrate these functions.

Prerequisite(s): BUS 109 or BUS 111

(3,0) Credits: 3

BCS 301 Systems Analysis and Design
This course explores the major issues in the analysis and design of a system, including methods of data collection, information requirements analysis, and the analysis process are discussed. Emphasis is placed on the importance of the user in the design process and focuses on approaches that improve the successful implementation of a computer system. Topics include general systems theory, Systems Development Life Cycle, data flow diagrams, data dictionary, hardware and software evaluation, feasibility analysis, CASE tools and prototyping. Students are required to demonstrate their skill in using project management and diagramming application software. Note: Credit cannot be given for both BCS 265 and BCS 301.

Prerequisite(s): BCS 120 or BCS 185 with a C or higher and Junior Level Status.

(3,0) Credits: 3

BCS 345 JAVA Programming
This course is designed for students with some experience with programming. The syntax of the Java programming language, object-oriented programming, creating graphical user interfaces (GUI), exceptions, file input/output (I/O), and how to create Java applications and applets will be covered. Prerequisite(s): BCS 230 or BCS 285 with a C or higher.

(3,0) Credits: 3

BCS 430W Senior Project (Writing Intensive)
The primary objective of this course is to give successful implementation of a computer system. Elements will be drawn primarily from BCS301 (Systems Analysis and Design) and BCS260 (Database), in addition to other courses in the student’s selected track of study. The course is experimental in nature i.e. the student will be required to produce results for use by real individuals and will be evaluated both on process and product. In addition to prerequisites, a second level programming course with a grade of C or better and Senior level standing is required. This is a writing-intensive course.

Prerequisite(s): EGL 101, BCS 260, BCS 301 and (BCS 230 or BCS 285) all with a C or higher.

(3,0) Credits: 3

BUS 101 Accounting I
Fundamental accounting concepts and principles are covered through an understanding of the following topics: accounting as an information system; analyzing a transaction; the accounting cycle; accounting for both service enterprises and merchandising businesses; deferrals and accruals; reversing entries; systems design; adjusting entries; cash, receivables, temporary investments and inventory; payroll accounting. Students apply concepts to the preparation of special financial statements. (3,0) Credits: 3

BUS 109 Management Theories and Practices
This introductory course covers management principles pertaining to human resources, individual behavior in organizations, employee motivation and performance, and business ethics. Topics also include managing and the manager’s job; planning and decision making; employee performance appraisal and feedback; leadership and influence processes; interpersonal relations and communication; managing work groups and teams. Note: Students completing this course may not receive credit for BUS 211.

(3,0) Credits: 3