

CSC 201 - INTRODUCTION TO COMPUTER PROGRAMMING

CREDIT HOURS: 3
PREREQUISITES: Two years of high school algebra or equivalent
GRADE REMINDER: Must have a C or better in each prerequisite course.

CATALOG DESCRIPTION

Basic techniques for solving problems by use of a digital computer. Emphasis on application of the computer as a quantitative tool, and on the use of the FORTRAN language.

PURPOSE OF COURSE

To introduce students to the basic concepts of computer systems, to fundamental systems software, to a discipline approach to problem solving, to procedural program development in a current version of FORTRAN, to software engineering principles, to ethics in computing, and to computer science careers.

EDUCATIONAL OBJECTIVES

Upon successful completion of the course, students should be able to:

1. Demonstrate a fundamental knowledge of computer organization, computer operation, and the information hierarchy (binary numbers and character representations).
2. Apply the software life cycle to specific problems in such disciplines as mathematics, science, and engineering.
3. Perform problem analysis and program design using tools such as pseudocode, structure charts, and flowcharts.
4. Apply the features of a current version of FORTRAN in implementing solutions to well described problems. These features include declaration of data types and fundamental data structures, application of control structures (sequence, selection, repetition), utilization of I/O and file handling, development of structured program organization (subprograms with parameters), and inclusion of documentation.
5. Use operating systems tools (command system, editor, compiler, linker and loader) in single-user and/or multi-user environments.
6. Create appropriate test data and apply debugging and testing strategies.
7. Use E-mail, networks, and the Internet.
8. Demonstrate a knowledge of fundamental computing terminology.
9. Demonstrate an understanding of the role of computing in society.

CONTENT

Hours

Introduction to computer science 1

Basic Concepts of Computer Systems 3

- Architectural overview
- Data storage and representation
- Computing environments
- Computer languages

Systems Software 6

- Operating systems, editors, compilers
- Program linking, loading, and execution
- The Internet and electronic mail

Problem Solving Concepts 9

- Strategies for problem solving
- Algorithm representation

Program Development 18

- Use of a current version of FORTRAN to solve simple problems on a computer
- Programming language concepts and features: primitive data types, expressions and operations, functions and parameters, fundamental control structures, one-dimensional arrays, text files

Software Engineering Principles 3

- Life Cycle and Development Process
- Modular design and communication
- Documentation

Ethics and Careers 2

Exams 3

TOTAL 45

REFERENCES