

NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
EGR 126 - COMPUTER PROGRAMMING FOR ENGINEERS (3 CR.)

Course Description

Solves engineering problems involving programming in languages such as FORTRAN, PASCAL, or C++. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

General Course Purpose

The purpose is to build upon the engineering student's knowledge of engineering problem solving and computer programming. Upon successful completion of this course, students will have a clear understanding of computers, their architecture, software, and applications. They will be able to develop solutions to engineering problems from algorithm development and flowcharting to computer program development, which includes generating, editing, compiling, and debugging using advance software programming tools. Additionally, fundamental computer algorithms used in science and engineering will be introduced from the field of numerical analysis.

Course Prerequisites/Corequisites

Prerequisites: EGR 120, EGR 121, or EGR 122 and MTH 263. The student should have knowledge of analytical geometry and differential calculus.

Course Objectives

Upon completion of the course the student will be able to:

- a) Write and execute computer programs to solve engineering problems.
- b) Use principles of structured programming approach and fundamental engineering algorithms from the field of numerical analysis.
- c) Construct program flow diagrams (flowcharts) and pseudo code structures of program.
- d) Develop computer programs from flowcharts and implement these programs in advance software programming language.
- e) Generate, edit, compile, and debug computer programs.

Major Topics to Be Included

- a) Computer Architecture, Hardware and Software
- b) Number Systems
- c) Flowcharting and pseudo code
- d) Programming fundamentals, variables and operators
- e) Control structures
- f) Functions
- g) One- and two-dimensional arrays
- h) Pointers
- i) Input/output data files
- j) Structures and class introductions