

Common Course Outline
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CMSC 143
Introduction to Fortran Programming
3 Semester Hours

The Community College of Baltimore County

Description

Introduction to Fortran Programming

Examines elements of the FORTRAN language including data representation and storage, program control, and the use of subscripted variables, input/output format statements, and subroutines; discusses specialized programming techniques such as the use of logical variables and flags, multidimensional arrays and introduction to methods for table look-up and sorting.

Prerequisite: (RDNG 052 or LVR 2); (ENGL 052 or LVE 2); (ESOL 052 or LVE 2); Math 163, or consent of instructor.

Overall Course Objectives

Upon successfully completing the course, students will be able to:

1. analyze problems to determine appropriate programming solutions.
2. find computer solutions for mathematical and engineering problems.
3. use the tools of top-down analysis and planning as well as coding, debugging, and testing for efficient problem solving.
4. debug logic-based programming errors.
5. convert input from the user or files.
6. create arrays and loops to handle large files of input and output.
7. write algorithms to organize code into sub procedures.
8. create well-written programs in a structured programming style.
9. work in teams to develop a large program.
10. continue the study of computer science in engineering or computer engineering programs

Major Topics

- I. Introduction to Computers
 - A. History of Computing
 - B. Programming Languages
- II. FORTRAN syntax
 - A. List directed input and output
 - B. Default variable types
 - C. Assignment statements
 - D. Arithmetic operators and hierarchy
 - E. Program execution
- III. Subprograms
 - A. Library functions
 - B. User-defined functions
 - C. Subroutines

- IV. Decision Making
 - A. Logical expressions
 - B. Logical and Block If statements
 - C. Nested If statements
- V. Looping
 - A. Do loops
 - B. While loops
 - C. Nested loops
- VI. Arrays
 - A. One-dimensional arrays
 - B. Input and output with arrays
 - C. Multidimensional arrays
- VII. Formatting and File Handling
 - A. Interactive Input and Output Formats
 - B. File Formatting
 - C. Sequential File Handling
- VIII. Other Data Types
 - A. Character strings
 - B. Logical variables
 - C. Double precision

Course Requirements

Grading: Grading procedures will be determined by the individual faculty member, will be provided the first week of class, and will include the following:

1. Computer Projects: Students will develop at least five computer projects. Programming time outside of class is required to complete projects.
2. At least two tests, exams, and/or quizzes: Individual faculty will notify students of the testing procedures to be used.
3. Comprehensive Final Exam: The course will include a comprehensive final exam, which may include a final project.
4. Final Grades: Grades will be determined by individual faculty members.

Individual faculty members may include additional course objectives, major topics, and other course requirements to the minimum expectations stated in the Common Course Outline.

The Community College of Baltimore County is committed to providing a high-quality learning experience that results in growth in knowledge, attitudes, and skills necessary to function successfully as a transfer student, in a career and as a citizen. To accomplish this goal, we maintain high academic standards and expect students to accept responsibility for their individual growth by attending classes, completing all homework and other assignments, participating in class activities and preparing for tests.

We take seriously our responsibility to maintain high-quality programs and will periodically ask you to participate in assessment activities to determine whether our students are attaining the knowledge, attitudes and skills appropriate to various courses and programs. The assessment activities may take many different forms such as surveys, standardized or faculty-developed tests, discussion groups or portfolio evaluations. We ask that you take these activities seriously so that we can obtain valid data to use for the continuous improvements of CCBC's course and programs.