

University of Arkansas - Fort Smith
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General Syllabus
CS 1014 Foundations of Programming I

Credit Hours: 4

Lecture Hours: 3

Laboratory Hours: 2

Prerequisite: MATH 1403 College Algebra or required math placement score

Effective Catalog: 2020-2021

I. Course Information

A. Catalog Description

Fundamental techniques of programming as a foundation for more advanced study in information technology and computer science. Considerable attention is devoted to developing effective software engineering practice, algorithm design, decomposition, procedural abstraction, testing, and software reuse.

B. Additional Course Information

Fluency in a programming language is prerequisite to the study of most areas in the fields of information technology and computer science. While not all information technology and computer science practitioners are required to program, an understanding of the language of computers is essential to designing, troubleshooting, and implementing systems.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Create algorithms for solving problems.
2. Design, implement, test, and debug a program that uses each of the following fundamental programming constructs: basic computation, simple I/O, standard conditional and iterative structures, arrays, and the definition of functions.
3. Apply the techniques of structured (functional) decomposition to break a program into modular pieces.
4. Apply basic API object of a higher-level programming language.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Goal

Students will identify a problem, break it down into its component parts, and develop an algorithm for solving the problem.

III. Major Course Topics

- A.** Debugging strategies
- B.** Basic syntax and semantics of a higher-level language
- C.** Variables, types, expressions, and assignment
- D.** Assignment Operator (=)
- E.** Numerical Data Types (int, double, and float)
- F.** Text Data Types (String, char)
- G.** Parsing Data Types
- H.** Conditional and Iterative control structures
- I.** While Loops
- J.** Count Controlled
- K.** Sentinel Controlled
- L.** For Loops
- M.** Working with Strings
- N.** Iterating through characters in a string
- O.** Simple I/O (keyboard and text files)
- P.** Arrays
- Q.** One-Dimensional Arrays
- R.** Two-Dimensional Arrays
- S.** Iterating with Loops
- T.** Copying Arrays
- U.** Searching Arrays
- V.** Sorting Arrays
- W.** Methods
- X.** Void Methods
- Y.** Value-Returning Methods
- Z.** Parameters and Arguments