University of Arkansas - Fort Smith
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General Syllabus

ELEC 1243 Introduction to Programming

Credit Hours: 3 Lecture Hours: 2 Laboratory Hours: 2

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Introduces computer programming and problem solving in a structured program logic environment. Topics include language syntax, data types, program organization, problem-solving methods, algorithm design, and logic control structures. Upon completion, students should be able to manage files, use top-down algorithm design, and implement algorithmic solutions in a programming language.

B. Additional Information

In this course, the student will complete a study of programming techniques at the introductory level. Programming assignments will help develop an understanding of implementing logic. Computer interfacing under the control of a software will be explored.

II. Student Learning Outcomes

A. Subject Matter

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

1. Describe the major components in problem solving for a computer program.
2. Apply top-down concepts in algorithm design.
3. Create flowcharts to illustrate program algorithm or process.
4. Analyze and write pseudocode to illustrate compact and informal high-level descriptions of computer programming algorithms.
5. Explain the concept of data storage and named memory locations.
6. Apply decision and repetition structures in program design.
7. Write and incorporate methods and functions to demonstrate program competence.
8. Define variables and arrays used in program methodology.

9. Implement input and output to access and process files.
10. Describe and apply object-oriented programming methodology.
11. Apply recursion techniques to problem solving.
12. Write and successfully execute short application programs using software commands, statements, and functions.
13. Use logical sequence, decision, and loop structures within original programs which execute without error.
14. Write detailed algorithms which provide logically correct solutions to programming assignments.
15. Identify and correct syntax, run-time, and logic errors in programs by completing programming assignments on-time.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking – Students will identify and describe the programming problem, then organize and produce a logical solution to that problem using a programming language.

Quantitative Reasoning-Students will apply mathematics to solve various problems.

III. Major Course Topics

A. Introduction to programming
B. Using variables and constants in software
C. Program control with decision and loop structures
D. Creating procedures and functions
E. Creating and using arrays
F. Using graphics in software