C-ID Descriptor
Introduction to Programming Concepts and Methodologies

Descriptor Details

- **Descriptor Title**: Introduction to Programming Concepts and Methodologies
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General Description

An introduction to the fundamental concepts and models of application development including the basic concepts of program design, data structures, programming, problem solving, programming logic, and fundamental design techniques for event-driven programs. Hands-on experience with a modern application programming language and development platform.

Prerequisites

No information provided

Corequisites

No information provided

Advisories

No information provided

Content

1. Program design
2. Program development lifecycle

3. Requirements determinants and analysis
4. Modular design
5. Techniques for modeling program structures
6. Programming concepts
7. Variables
8. Literals
9. Types
10. Expressions
11. Procedures
12. Functions
13. Parameters
14. Operators and operations
15. Decision logic
16. Looping
17. Sub-procedures
18. Passing parameters
19. Coding
20. Unit testing
21. Control structures

Some the above material is taken from http://www.acm.org/education/curricula/IS%202010%20ACM%20final.pdf.

Lab Activities

No information provided

Objectives

At the conclusion of this course, the student should be able to:

1. use primitive data types and data structures offered by the development environment.
2. choose an appropriate data structure for modeling a simple problem.
3. identify basic programming concepts.
4. write simple applications that relate to a specific domain.

5. 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, and the definition of functions.
6. test applications with sample data.
7. apply core program control structures.

Evaluation Methods

Evaluation will include hands-on projects and a combination of examinations, presentations, discussions, or problem-solving assignments.

Textbooks

- Liang, Y. - Introduction to Java Programming, Comprehensive Version
- Deitel, P. & Deitel, H. - How to Program
- Guttag, J. - Introduction to Computation and Programming Using Python: With Application to Understanding Data
- Gaddis, T. & Irvine, K. - Starting Out With Visual Basic
- Mansfield, R. - Mastering VBA for Microsoft Office
- Murach, M., Prince, A. & Menendez, R. - Murach's Mainframe COBOL