CSC 115 CS1: Introduction To Programming And Computational Thinking

General Information

Date
June 28th, 2018

Author
Sandra Brown

Department
Computing Sciences

Course Prefix
CSC

Course Number
115

Course Title
CS1: Introduction To Programming And Computational Thinking

Course Information

Credit Hours
3

Lecture Contact Hours
3

Lab Contact Hours
1

Other Contact Hours
0

Catalog Description
CS1: Introduction to Programming and Computational Thinking serves as a first course for all computer-related majors. This course is for beginning programmers, and is the first course in a sequence of three programming courses. The course emphasizes the development of languages and software, problem-solving, and programming in a structured, object-oriented language. The Java programming language is used throughout the course.

Key Assessment
This course does not contain a Key Assessment for any programs
Prerequisites
MAT 095

Co-requisites
None

Grading Scheme
Letter

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed category
None

FLCC Values

Institutional Learning Outcomes Addressed by the Course
Inquiry
Perseverance

Course Learning Outcomes

Course Learning Outcomes
1. Construct fundamental computer algorithms to solve simple problems
2. Create basic computer programs using the formal syntax from a high-level, object-oriented programming language
3. Translate foundational algorithms into simple technical computer program solutions

Outline of Topics Covered

1. Fundamentals of Computer Problem Solving
   * Problem Analysis
   * Design Logic – Simple Algorithmic Development
     1.
Flowcharts

2. Pseudocode

2. Fundamentals of Computer Programming

* Programming Languages and Environments
  1. Object-Oriented verses Structured Programming and Functional Methodologies
  2. Phases of Language Translation (Compiling, Interpreting, Linking, and Executing)
  4. Error Conditions: Syntax, Runtime, and Logic

* Software Development Process (IPO)
  1. Requirements
  2. Specification
  3. Analysis
  4. Design
  5. Implementation
  6. Testing
  7. Deployment
  8. Maintenance

* Creating, Compiling, and Executing a Java Program
  1. Identifiers, Variables, and Constants
  2. Memory Representations and Data Types
    1. Numeric, String, Boolean, Character
  3. Assignment, Numeric, Relational and Logical Operators
  4. 
Expression Evaluation: Assignment, Numeric, Boolean

5. Fundamental Programming Constructs
   1. Sequence
   2. Selection
   3. Iteration

• Subprograms, Functions, and Methods
  1. Formal Parameters, Actual Parameters
  2. Passing Arguments and Return Values
  3. Method Overloading
  4. Developing Reusable Code

• Secure Coding Techniques
  1. Variable Scope
  2. Input Data Validation

• Arrays
  1. Common Array Operations
  2. Sorting and Searching