COURSE NUMBER/TITLE: CS-144 [354-144] COMPUTER SCIENCE I

CREDITS: 4

COURSE DESCRIPTION: Problem solving using a high-level programming language. Graphical user interfaces, object-oriented programming, event handling, documentation, flow of control, testing, input/output, arrays.

TEXTBOOK: Big Java, 5th Ed., by Horstmann (adopted Fall 2013)

Previous:
Java for Everyone, 1st Ed., by Horstmann (adopted F10)
Starting out with Java, 2nd Ed., by Gaddis and using MyCodeMate software (adopted F06)
Starting Out with Java, 1st Ed., by Gaddis (adopted F04)
Introduction to Java & Software Development, 1st Ed. by Dale (adopted F01)
Problem Solving with C++ by Savitch (adopted F96)
The Object Concept, 1st Ed., by Decker (prior to F96)

COURSE OBJECTIVES:
Upon successful completion of the course, the student will be able to solve problems that require a computer solution by:
2. Demonstrating understanding of the general concepts of algorithm development and problem solving with a computer.
3. Designing an appropriate solution through the use of programming concepts.
4. Implementing the solution using the syntax and semantics of a high-level object-oriented programming language.
5. Testing the solution using appropriate test data.
6. Designing and implementing graphical user interfaces using event driven programming.

COURSE OUTLINE:
1. The problem solving process (Objectives 1, 2, 5)
   a. Identifying input and output
   b. Algorithms, pseudocode, and flowcharts
   c. Identifying test data
2. Working with an object-oriented high level programming language (Objectives 3, 4, 6)
   a. Working with an integrated development environment (IDE)
   b. Syntax, compiling, errors and debugging
3. Essential programming concepts (Objectives 2, 3, 4)
   a. Variables, constants, assignment statements
   b. Selection structures
   c. Repetition structures
   d. Functions
   e. Arrays
f. Objects and classes

g. Creating user interfaces

h. Event handling

4. Advanced object-oriented principles (Objective 4)
   a. Inheritance
   b. Encapsulation
   c. Polymorphism

5. Graphical user interfaces (GUIs) (Objective 6)
   a. Interface objects (e.g., buttons, text input, menus, …)
   b. Layout of interface
   c. Event handling