Introduction to Programming 1

Course Description

- Introduction to Programming 1 teaches students to program using the Java programming language with the help of the Netbeans Integrated Development Environment.

- As an introduction, this course gives students:
  - an overview of the different components of the computer
  - different number systems and its conversions
  - Problem-solving strategies

- For each topic, some coding guidelines will be discussed

Course Requirements

- Course Prerequisite
  - None
- Programming Tools
  - J2SE SDK Version 1.5
  - NetBeans IDE runs on the J2SE JDK 5.0 (JavaTM 2 JDK, Standard Edition)
    - consists of the Java Runtime Environment plus developers' tools for compiling, debugging, and running applications written in the JavaTM language

Course Outline

- Introduction to Computer Programming
  - Basic Components of a Computer: Software & Hardware
  - Overview of Computer Programming Languages
  - Program Development Life Cycle (algorithms)
  - Number Systems and Conversions

- Introduction to Java
  - Java Background
  - Java Features
  - Phases of a Java Program

Course Outline

- Getting to know your Programming Environment
  - My First Java Program: “Hello World!”
  - Writing programs using a text editor and console
  - Dealing with errors
  - Writing programs using NetBeans

Course Outline

- Programming Fundamentals
  - Dissecting my First Java Program
  - Java Comments, Statements, Identifiers, Keywords and Literals
  - Primitive data types
  - Variables
  - Operators(arithmetic, relational, logical, conditional)
  - Operator Precedence

- Getting Input from the keyboard
  - Using BufferedReader
  - Using JOptionPane

Course Outline

- Control Structures
  - Decision control structures (if, else, switch)
  - Repetition control structures (while, do-while, for)
  - Branching Statements (break, continue, return)
- Java Arrays
  - Declaring arrays
  - Accessing array element
  - Multidimensional arrays
- Command-Line arguments

Course Outline

- Working with the Java Class Library
  - Introduction to Object-Oriented Programming
  - Classes and Objects
  - Methods
  - Casting, Converting and Comparing Objects

Course Outline

- Object-Oriented Programming
  - Defining your own classes
  - Declaring attributes (instance variables, static variables)
  - Declaring methods
  - The this reference
  - Overloading methods
  - Declaring constructors
  - The this() constructor call
  - Packages
  - Access modifiers

Course Outline

- Inheritance
  - Defining superclasses and subclasses
  - The super keyword
  - Overriding methods
  - final methods and final classes
- Polymorphism
  - Abstract classes
  - Interfaces

Course Outline

- Basic Exception Handling
  - try, catch, and finally blocks