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 (starting week 3)

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Course Requirements

- Course Prerequisite

  - None

- Programming Tools

  - J2SE SDK Version 5.0

  - 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

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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

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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

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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

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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

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Course Outline

- Working with the Java Class Library

    - Introduction to Object-Oriented Programming

    - Classes and Objects

    - Methods

    - Casting, Converting and Comparing Objects

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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

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Course Outline

- Inheritance

  - Defining superclasses and subclasses

  - The super keyword

  - Overriding methods

  - final methods and final classes

- Polymorphism

  - Abstract classes

  - Interfaces

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Course Outline

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

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