

Course Code : DSE101/03  
Course Title : Programming Foundations  
Prerequisite(s) : None

Level : Degree  
Credit hours : 3  
Duration of course : 1 semester

### **Course Coordinator**

Dr. Andrew Tan Kian Lam  
PhD, UGA ; PhD, USM

Learn the fundamentals of programming concepts like data types, variables, conditional statements, loops, and Object-Oriented Programming principles such as Encapsulation, Abstraction, Polymorphism, and Inheritance using Java. Also, Develop the Java command-line application by adopting Software design techniques, unit testing using the JUnit framework, and prepare the documentation through intensive training to prepare as the Web Developer Job.

### **Learning Outcomes**

1. Explain the problem solving, Programming Basics, OOP principles and Software Design Techniques (C2, PL01)
2. Analyze user requirements, and specifications of the application. (C4, PLO2)
3. Construct command-line applications using Java (P5, PLO3)

### **Topics**

1. Introduction to Web Technologies
2. Front-End Technologies
3. Back-End Technologies
4. Assembly Technologies
5. Introduction to Java and IntelliJ
6. Java Basics
7. Control Structures, Data Flow
8. Build your Own Objects
9. Object Inheritance
10. Software Design Techniques
11. Standards and Documentation

### **Main Reference**

Liang, Y. Daniel (2017), "Introduction to Java Programming and Data Structures", Boston: Pearson Education.