Programming Techniques (3)

Course Name: Programming Techniques (3)
Course code: SFT203
Course Hours: 3
Knowledge Domain: Software Engineering.
Prerequisite(s): Programming Techniques (2)

Learning Objectives

Upon completion of this course, the student will be able to:

1. Acquire the object-oriented programming model that was presented in the previous two courses.
2. Add Java applets to represent a distinctive aspect of Java needed for Internet Programming.
3. Give complete Java programs indicating the available supporting software packages.

Learning Outcomes:

1. Grasping a complete picture of the foundations for object- oriented programming.
2. Ability to write complete programs in Java, including applets for Internet programming.
3. Hands-on experience in executing some applications.

Overview and Syllabus

Integrated view of object-oriented programming. Writing complete Java programs. Java applets. Use of core Java classes. User interfaces.

Delivery Mode

1. Four weeks using Face-to-face lectures supported by different media such as: PowerPoint presentations, animation and video, electronic white boards, etc.
2. Six weeks using Virtual lectures (PowerPoint together with audio and/or video) using asynchronous interaction with the students through web site access and electronic mail.
3. Four weeks using CDs, DVDs, and printed books or printed material in the form of books, notes, etc.
4. Four weeks exercise sessions (2, 5, 11, 15) should follow this table:

Week Number	Activity
1	Orientation
2	Exercise 1
3	Exercise 2, Report 1
4	Exercise 3, Report 2
5	, Report 3, Exercise session
6	Test No.1 (covering week 1→ 4)
7	Exercise 4
8	Exercise 5, Report 4
9	Exercise 6, Report 5
10	Exercise 7, Report 6
11	, Report 7, Exercise session
12	Test No.2 (covering week 5 → 10)
13	Exercise 8
14	Exercise 9, Report 8
15	, Report 9, Exercise session
16	Final Examination

5. Four weeks of supervised programming sessions.

Course Outline

	Topic
1	**Module 01: Object-Oriented Programming the Big Picture** Introduction Objectives **Lesson 01 :** Introduction to Object Oriented Paradigm **Lesson 02 :** Encapsulation,Inheritance and Polymorphism **Lesson 03 :** Identifying classes and Objects Using UML Summary Assessment
2	**Module 02: Java, Classes and Objects** Introduction Objectives **Lesson 01:** Creating Classes **Lesson 02:** Creating, Instantiating and Using Objects **Lesson 03:** Private and Public Access Members **Lesson 04:** Constructors and Destructors **Lesson 05:** Static Class Members Summary Assessment

3	**Module 03: Understanding Inheritance** Introduction Objectives **Lesson 01:** Superclass and Subclass Relationships **Lesson 02:** Protected Members **Lesson 03:** Constructors In Parent Class **Lesson 04:** Overloading and Overriding Method **Lesson 05:** Is-A vs. Has-a Relationships Summary Assessment
4	**Module 04: Polymorphism In Action** Introduction Objectives **Lesson 01:** Introduction To Polymorphism **Lesson 02:** Overriding and Dynamic Binding **Lesson 03:** Abstract Base Classes **Lesson 04:** Arrays Of Objects **Lesson 05:** Using Interfaces Summary Assessment
5	**Module 05: Using Applets in Web Pages** Introduction Objectives **Lesson 01:** Overview of Applets **Lesson 02:** The Applet Life Cycle **Lesson 03:** Instance Variables and Computations **Lesson 04:** Incorporating Images Summary Assessment
6	**Module 06: Using Java Core Classes** Introduction Objectives **Lesson 01:** Working with Strings **Lesson 02:** Files and Streams **Lesson 03:** Sequential Access Text Files **Lesson 04:** Object Serialization **Lesson 05:** Exception Handling Summary Assessment
7	**Module 07: Basics of Graphical User Interface** Introduction Objectives **Lesson 01:** Introduction to GUI **Lesson 02:** Overview of Swing Components **Lesson 03:** Creating Frames & Adding Components **Lesson 04:** Event Driven Programming

	Lesson 05: Using Buttons Summary Assessment
8	**<u>Module 08: Threads: Concurrent Programming</u>** Introduction Objectives **Lesson 01:** What Are Threads? **Lesson 02:** Threads Basics **Lesson 03:** A Thread`s Life **Lesson 04:** Thread Management **Lesson 05:** Thread Synchornization Summary Assessment