SEMESTER 3

KU3DSCCSC201: OBJECT ORIENTED P ROGRAMMING WITH JAVA

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
3	DSC	200-299	KU3DSCCSC201	4	75

Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
3	2	-	35	65	100	1.5 Hrs

Course Description:

Java is a multi-platform, object-oriented, and network-centric language that can be used as a platform in itself. It is a fast, secure, reliable programming language for coding everything from mobile apps and enterprise software to big data applications and server side technologies.

Course Prerequisite: NIL

Course Outcomes:

CONo.	Expected Outcome	Learning Domains
1	Demonstrate proficiency in fundamental Object-Oriented Programming (OOP) concepts.	U
2	Understand the concept of class and objects	U,A

3	Apply the concept of inheritance, interface and threads in programming	U, A, C
4	Understand the basic components of AWT	U
5	Develop AWT applications, applying event handling mechanisms and utilizing appropriate layout managers for effective GUI design	U, A, C

****Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)***

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3			2			
CO 2		2					
CO 3	3	3					
CO 4	2	3					3
CO 5	3	3		2			3

COURSECONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1	**MODULE1: Introduction to OOP and Java Basics**		
	1	Understanding Object-Oriented Programming (OOP) Concepts - Introduction to Classes and Objects - Encapsulation, Inheritance, Polymorphism, and Abstraction in detail.	15
	2	Introduction to Java - Overview of Java Programming Language – Setting up the Java Development Environment(IDE)-Basic Syntax and Data Types in Java. I/O operations- Reading data from the console.	
	3	Control Flow and Looping Constructs: if statements, switch statement-syntax and programmes	

	4	looping statements, jumping statements- syntax and programmes	

2	**MODULE2: Java classes and Inheritance**		
	1	Introducing Classes: Class fundamentals; Introducing methods; Declaring Objects; Constructors.	15
	2	This keyword; Garbage collection; the finalize method.	
	3	Inheritance basics – Definition-extends keyword-Types of inheritance-single inheritance-Multilevel inheritance- Hierarchical inheritance.	
	4	Using super keyword-Method Overriding. Access modifiers in inheritance Dynamic method dispatch and runtime polymorphism-Abstract classes.	

3	**MODULE3: INTERFACES and PACKAGES**		**15**
	1	Interfaces - interface Keyword- implementing an Interface- Multiple Interfaces- Default and Static Methods- inheritance in Interfaces- Inheritance vs Interfaces – Comparison.	
	2	Packages- Definition- Types of Packages- Built-in packages- User-defined packages- Creating a Package- Importing Packages- Access Modifiers and Packages-	
	3	Package Naming Conventions- Compiling and Running with Packages- CLASSPATH- Why is Classpath Important? How to Set the Classpath- Using the CLASSPATH Environment Variable- Using the -classpath or -cp option.	
	4	Multithreading in Java -Understanding Threads and Concurrency-Synchronization and Thread Safety-Thread life cycle-Exception Handling: try and catch, multiple catch- Default and Static Method.	

4	**MODULE4: GUI Programming with AWT**		
	1	Introduction to AWT-What is AWT?-AWT package (java.awt and java.awt.event)-Platform-dependence of AWT-	*15*

2	AWT Components – Label- Button- TextField - TextArea -Checkbox CheckboxGroup (Radio buttons)- List AWT Containers - Panel – Frame – Dialog – Applet.	
3	Event Handling in AWT- ActionEvent- WindowEvent- MouseEvent- KeyEvent- ItemEvent	
4	Event listeners: • ActionListener • WindowListener • MouseListener / MouseMotionListener • KeyListener	

	Teacher Specific Module	
	Lab1: Introduction to Object-Oriented Programming and Java Basics **1.** Create a simple Java program to print "Hello,World!" to the console **2.** To implement method overloading **3.** To implement inheritance Lab2: 1. Create java programme to implement interfaces 2. Create java programme to implement packages Lab3: Advanced Java Programming Concepts **1.** Write a Java program that demonstrates the use of exception handling. **2.** Write a Java program to implement multithreading **3.** Write a Java program to implement package Lab4: GUI Programming with Java AWT **1.** Create a simple AWT application with a Frame **2.** Create a simple calculator using AWT controls and Frame	

Essential Readings:

1. "Head First Java" by Kathy Sierra and Bert Bates.O'Reilly 3rd edition
2. Java The Complete Reference-Eleventh Edition- Oracle Press- Herbert Schildt
3. Object Oriented Programming through Java, P Radha Krsihna
4. https://www.tutorialspoint.com/java/

Suggested Readings:

1. "Clean Code: A Handbook of Agile Software Craftsmanship" by Robert C. Martin
2. "Java Threads" by S

Assessment Rubrics:

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<tr><td colspan="4">Evaluation Type</td><td>Marks</td><td colspan="4">Evaluation Type</td><td>Marks</td><td>Total</td></tr>
<tr><td colspan="4"></td><td></td><td colspan="4"></td><td></td><td></td></tr>
<tr><td colspan="4">Lecture</td><td>75</td><td colspan="4">Practical</td><td>25</td><td rowspan="10">100</td></tr>
<tr><td>a)</td><td colspan="3">ESE</td><td>50</td><td>a)</td><td colspan="3">ESE</td><td>15</td></tr>
<tr><td colspan="5" rowspan="4"></td><td></td><td colspan="3">Program code and execution</td><td>8</td></tr>
<tr><td></td><td colspan="3">Output</td><td>3</td></tr>
<tr><td></td><td colspan="3">Viva</td><td>2</td></tr>
<tr><td></td><td colspan="3">Modification</td><td>2</td></tr>
<tr><td>b)</td><td colspan="3">CCA</td><td>25</td><td>b)</td><td colspan="3">CCA</td><td>10</td></tr>
<tr><td></td><td>i</td><td>Test Paper</td><td>5</td><td></td><td></td><td>i</td><td>Punctuality</td><td>3</td></tr>
<tr><td></td><td></td><td>Model exam</td><td>10</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>ii</td><td>Assignment/ Book-Article review /field report</td><td>5</td><td></td><td></td><td>ii</td><td>Model exam</td><td>4</td></tr>
<tr><td></td><td>iii</td><td>Seminar/ Viva-Voce</td><td>5</td><td></td><td></td><td>iii</td><td>Record</td><td>3</td></tr>
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