

Branch Name:	Computer Engineering / Information Technology/ Information and Communication Technology
Program Code:	ET103/ ET105/ ET107
Course Title:	Object Oriented Programming with Java
Course Code:	2ET1030304T
Pre-requisite Course:	Course on programming for problem solving.

Course Objectives:

1. This course provides the basic concepts and fundamentals knowledge of platform independent object-oriented language.
2. On successful completion of the course, the students will be able to Identify the merits of Java programming over procedure-oriented programming, understand the features of object-oriented programming such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity, apply features of OOP along with exception handling and multithreading programming, design responsive GUI with swings and event handling (event-driven programming).

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	60	-	-	-	-	100

Course Contents:

Unit No	Topics	Total Hours	Weightage (%)
1	Basics of Java: Features of Java, Byte Code and Java Virtual Machine, JDK, Data types, Operator, Variables, Control Statements – If, else, nested if, if-else ladders, Switch, while, do-while, for, for-each, break, continue.	03	10
2	Array and String: Single and Multidimensional Array, String class, String Buffer class, Operations on string, Command line argument, Use of Wrapper Class, Inbuilt classes like Character, File, this reference	03	05
3	Classes and Objects: Classes, Objects and Methods: Class, Object, Object reference, Access control, modifiers, Constructor, Constructor Overloading, Method Overloading, Finalizer, Recursion, new operator, this and static keyword, finalize() method, Nested class, Inner class, Abstract class.	04	10
4	Inheritance & Interfaces and Polymorphism: Use of Inheritance, Inheriting Data members and Methods, constructor in inheritance, Multilevel Inheritance – method overriding Handle multilevel constructors – super keyword, Stop Inheritance - Final keywords, Creation and Implementation of an interface, Interface reference, instance of operator, Interface inheritance, Dynamic method dispatch/ Dynamic Binding, Understanding of Java Object Class, Comparison between Abstract Class and interface.	05	15
5	Package: Use of Package, CLASSPATH, Import statement, Static import, Access control across Packages.	03	10
6	Collection Classes: List, ArrayList, Dictionary Class, HashMap, ArrayList, LinkedList, Enumeration, Vector, Properties, Introduction to Java.util package	03	10

7	I/O programming: Introduction to Stream, Byte Stream, Character stream, Readers and Writers, File Class, Network Basics and Socket overview, TCP/IP client sockets, URL, TCP/IP server sockets, Datagrams, java.net package Socket, ServerSocket, InetAddress, URL, URLConnection	04	10
8	Exception Handling: Exception and Error, Use of try, catch, throw, throws and finally, Built in Exception, User Defined exception class, Throwable Class.	02	10
9	Multithreaded Programming: Introduction, Creating Threads, Extending Thread Class, Runnable Interface, Stopping and Blocking a Thread, Life Cycle of Thread, Thread Methods, Thread Exception, Thread Priority, Synchronizations	03	10
10	Event and GUI programming: Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, Introduction to swing, Japplet, JFrame and JComponent, Icons and Labels, Text Fields, Buttons – The JButton Class, Check Boxes, Radio Buttons, Combo Boxes, Tabbed Panes, Scroll Panes, Trees, and Tables	04	10

Text Books:

1. The Complete Reference, Java 2, Herbert Schild, TMH.

Reference Books:

1. Introduction to Java Programming (Comprehensive Version), Daniel Liang, Seventh Edition, Pearson.
2. Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press.
3. Murach's Beginning Java 2, Doug Lowe, Joel Murach and Andrea Steelman, SPD.
4. Core Java Volume-I Fundamentals, Eight Edition, Horstmann & Cornell, Pearson Education.
5. Java Programming, D. S. Malik, Cengage Learning.
6. Big Java, 3rd Edition, Horstmann, Wiley-India.
7. Head First Java, Katy Sierra & Bert Bates, SPD (O'Reilly).
8. Java Fundamentals A comprehensive introduction By Herbert Schildt, Dale Skrien, McGrawHill Education.
9. Programming with Java A Primer – E.Balagurusamy, McGraw Hill
10. Core Java Volume-I Fundamentals Horstmann & Cornell, - Pearson Education. - Eight Edition

List of Open-Source Software/learning website:

1. Java Development Kit: <http://www.oracle.com/technetwork/java/javase/downloads/index.html>
2. <http://docs.oracle.com/javase/specs/jls/se7/html/index.html>
3. <http://docs.oracle.com/javase/tutorial/java/index.html>
4. <https://nptel.ac.in/courses/106105191>
5. <http://www.javatpoint.com/>
6. <http://www.tutorialspoint.com/java/>
7. <http://www.learnjavaonline.org/>
8. <http://www.c4learn.com/javaprogramming/>
9. <http://www.learn-java-tutorial.com/>

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	Use the syntax and semantics of java programming language and basic concepts of OOP.	Understanding (1)
COL2	Develop reusable programs using the concepts of inheritance, polymorphism, interfaces, packages, IO and collection classes.	Understanding (1) Applying (2)
COL3	Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.	Understanding (1) Applying (2)
COL4	Design event driven GUI and web related applications which mimic the real word scenarios	Understanding (1) Applying (2)

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M	H	L	M	L			L		L		L	L	L	L	
CLO2	H	H	H	M	M		M	L	L	M	H	L	M	M	L	
CLO3	M	M	M	M	M	L	L	L	M	L	M	L	M	M	M	
CLO4	M	M	M	M	M		L		L	L	L	L	M	M	M	

H: High, M: Medium, L: Low