3IT03: OBJECT ORIENTED PROGRAMMING WITH JAVA
CREDITS – 4(LTP: 3,0,2)

Course Objective:
To be familiar with different object oriented concepts which are commonly applied in implementation of various java applications using business logic.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per Week)			Credits	Assessment Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	CE	ESE	CE	
3	0	2	4	60	40	20	30	150

Course Contents:

Unit No.	Topics	Teaching Hours
1	**Introduction to JAVA:** Object-oriented programming paradigms & principles, Key features of JAVA, Byte code and java development kit, Lexical issues, Data types, Variables, Control statements, Loop.	2
2	**Arrays and Operators:** One-dimensional arrays, Multi-dimensional arrays, Arithmetic operators, The bit-wise operators, Shift operators, Relational operators, Short-circuit logical operators, The? operator, Operator precedence.	2
3	**Introduction to Classes and Methods:** Class fundamentals, Declaring objects, Assigning object reference variables, Introducing methods, Constructors, Overloading methods, Overloading constructors, Using objects as parameters, Recursion, Passing and returning object form method, Introducing nested and inner classes, Command-line arguments, Understanding keywords: this, final & static.	4
4	**Inheritance and String Handling:** Inheritance basics, Super keyword, Multilevel hierarchy, Method overriding, Dynamic method dispatch, Using abstract classes, The Object class, Special string operations, Character extraction, String comparison, Searching strings, Modifying a string, Data conversion using valueof( ), Stringbuffer class & its methods.	4
5	**Packages and Interfaces:** Defining a package, Finding packages and CLASSPATH, Access protection, Importing packages, Defining an interface, Implementing interfaces, Applying interfaces, Variables in interfaces.	4
6	**Exception Handling:** Exception-handling fundamentals, Exception types, Use of try and catch, Multiple catch clauses, Nested try statements, throw, throws, finally keywords, Java's built-in exceptions, Custom exception, Chained exceptions.	4
7	**Multithreaded Programming:** The java thread model, Creating a thread using implementing runnable &extending thread, Creating multiple threads, isAlive( ) and join( ), Thread priorities, Synchronization, Deadlock.	4
8	**Input/output and File Operation:** Streams, Byte streams and character streams, The predefined streams,	4

Unit No.	Topics	Teaching Hours
	Reading console input, Writing console output, The PrintWriter class, Reading and writing files.	
9	**The Applet Class:** Applet basics, Applet architecture, An applet skeleton, Simple applet display methods, Repainting, Using the status window, The HTML APPLET tag, Passing parameters to applets.	4
10	**Event Handling:** Two event handling mechanisms, The delegation event model: Events, Event sources, Event listeners, Event classes, Sources of events, Event listener interfaces, Handling mouse events, Handling keyboard events, Adapter classes.	4
11	**Introducing the AWT and Graphics:** AWT classes, Window fundamentals, Working with frame windows, Creating a frame window in an applet, Working with graphics: Drawing lines, Rectangles, Ellipses, Circles, Arcs and polygons, Sizing graphics, Working with color, Working with fonts, Managing text output using FontMetrics.	4
12	**AWT Controls, Layout Managers and Menus:** Control fundamentals: Adding and removing controls, Responding to controls, Labels, Buttons, Check boxes, Checkboxgroup, Choice, Lists, Scroll bars, Textfield, Textarea, Layout managers: Flowlayout, Borderlayout, Insets, Gridlayout, Menu bars and menus, Dialog boxes, Filedialog.	5
	Total	**45**

List of References:

1. Herbert Schildt, "*The Complete Reference, Java 2*", Ninth Edition, Tata McGraw Hill .
2. Herbert Schildt & Dale Skrien, "*Java Fundamentals A comprehensive introduction*", Tata McGraw Hill.
3. E.Balaguruswamy, "*Programming with Java A Primer*", Tata McGraw Hill.
4. Horstmann & Cornell, *"Core Java Volume-I Fundamentals",* Eight Edition, Pearson Education.

Course Outcomes (COs):

At the end of this course students will be able to …

1. Create java program for simple business logic.
2. Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading.
3. Identify classes, objects, members of a class and the relationships among them needed for a specific problem.
4. Demonstrate programs on exceptions, multithreading, various collection classes and applets.
5. Understand the concept of file handling.
6. Identify various event classes and methods which are needed for event based applications.