DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Department: Computer Science and Engineering	
Course Title: Object Oriented Programming using Java	***Course Code: CS350***
Credits(L:T:P): 3:0:1	***Core/Elective: Core***
Type of Course: Lecture and Practical	***Total Contact Hours: 39:0:26***
CIE Marks : 50	***SEE Marks: 100***

Pre-requisite: Knowledge of Programming Language.

COURSE OUTCOMES

After completing this course, students should be able to:

CO1: Understand and describe the Programming Paradigms, identify classes, objects, members of a class and the relationships among them needed to solve a specific problem.

CO2: Demonstrate the data encapsulation, inheritance, polymorphism concepts of Java.

CO3: Apply the perception of packages and interfaces with exception-handling mechanism in real world applications.

CO4: Analyze existing modules, design and develop new modules to extend the functionalities.

Unit No.	Course Content	No. of Hours
1.	**Object Oriented Concepts and Java** Object Oriented Concepts: Concepts of object oriented programming languages, Object, Class, relationships among objects, Message passing, Inheritance, Encapsulation, and Polymorphism. Difference between OOP and other conventional programming, advantages and disadvantages. Object Oriented Programming using Java: Basic concepts of java programming – advantages of java and applications, Java Development Kit (JDK), JVM, Simple Java programs; Data types and Variables, dynamic initialization, the scope and lifetime of variables, type conversion and casting, Operators and Expressions: Operator Precedence; Logical expression, access specifiers, control statements & loops and arrays.	10
2.	**Java Classes and String Handling** Classes: Class Fundamentals, Declaring objects, Introducing Methods, Constructors, *this* keyword, use of objects as parameter & methods returning objects, call by value & call by reference, static variables & methods, garbage collection, nested & inner classes.	08

	String Handling: The String Constructors, String Length, Special String Operations, Character Extraction, String Comparison, Searching Strings, Modifying Strings, String Buffer Basics of I/O operations – keyboard input using BufferedReader & Scanner classes.	
3.	**Inheritance: Reusable Properties** Super class & subclasses including multilevel hierarchy, process of constructor calling in inheritance, use of super and final keywords with super() method, dynamic method dispatch, use of abstract classes & methods, Method call binding, Overriding vs. overloading, Abstract classes and methods, Constructors and polymorphism, Order of constructor calls.	08
4.	**Packages and Interfaces, Exception Handling, Multithreaded Programming** Packages: Access Protection, Importing Packages; Interface: Definition and Implementation, Nesting and Extending Interfaces. Exception handling: Basics, different types of exception classes, use of try & catch with throw, throws & finally, Creating Your Own Exception Subclasses. Multithreading: Basics, main thread, thread life cycle, creation of multiple threads, thread priorities, thread synchronization, inter-thread communication, deadlocks for threads, suspending & resuming threads.	08
5.	**Applet Programming and Basic IO System** Applet Programming: Introduction, How Applets Differ from Applications, Preparing to Write Applets, Building Applet Code, Applet Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, More About Applet Tag, Passing Parameters to Applets, Aligning the Display. Managing Input/Output Files in Java: Introduction, Concept of Streams, Stream Classes, Byte Stream Classes and Character Stream Classes.	05

Text Books:

1. Herbert Schildt: Java - The Complete Reference Java, 12th Edition Paperback – 25th June 2014.
2. Harvey M. Deitel, Paul J. Deitel: "Java How to Program" – 6th Edition – Pearson.
3. E Balagurusamy: Programming with Java - A primer, 6th Edition, Tata McGraw Hill Education

Reference Books:

1. Kathy Sierra, Bert Bates: Head First Java: A Brain-Friendly Guide, 2nd Edition (Covers Java 5.0) Paperback – 2009
2. Harvey M. Deitel, Paul J. Deitel: Complete Java Training Course, Student Edition, Java 1.1 Paperback
3. Sachin Malhotra, Saurabh Choudhary: Programming in Java Paperback – Jan 2018

Web Resources:

https://nptel.ac.in/courses/106105191/
https://nptel.ac.in/courses/106106147/1

Note:

Students are also informed to visit NPTEL website (http://nptel.ac.in) for additional information on the course.