No:- Date:

CS030602:   Object Oriented Programming

L-T-P-Cr: 2-0-2-3

Pre-requisites: Introduction to computing

Course Objectives:

1. To understand the fundamental concepts of Object Oriented Programming (OOP), namely abstraction, encapsulation, inheritance and polymorphism.
2. To make students proficient in Java syntax and semantics.
3. To design and implement problem solutions based on OOP methodology.
4. To manage files using Java programs.
5. To develop graphical user interfaces using Java and create threads.

Course Outcomes:

CO1: Apply concepts of OOP.

CO2: Understanding Java fundamentals, such as arrays, overloading, overriding, etc. and make use of these to solve real life problems.

CO3: Distinguish different kind of exceptions and their solutions.

CO4: Choose appropriate techniques for file handling and select collection framework to handle multiple objects.

CO5: Design Graphical User Interface (GUI) and create multiple threads of a process.

CO-PO Mapping:

COs	PO1 (Engineering knowledge)	PO2 (Problem analysis)	PO3 (Design / development of solutions)	PO4 (Conduct investigations of complex problems)	PO5 (Modern tool usage)	PO6 (The engineer and society)	PO7(Environment and sustainability)	PO8 (Ethics)	PO9 (Individual and team work)	PO10 (Communication)	PO11 (Project management and finance)	PO12 (Life-long learning)
CO1	H	M	H	M	H						M	

CO2	H	M	H	M	H							
CO3	H	H	H	H	L							
CO4	H	M	L		H							
CO5	H	M	H	M	H							

(H-High Relation, M-Medium Relation, L-Low Relation)

Syllabus

UNIT I: **Lectures: 4**
Introduction to OOP, Objects and classes, Characteristics of OOP, Difference between OOP and Procedure oriented programming. Introduction to Java, Features of Java, Applications and Applets, JDK, Source file structure

UNIT II: **Lectures: 6**
Java language fundamentals, Building blocks of Java, Data types, Variable declaration, Wrapper classes, Operators and assignment, Control structures, Method, Method overloading, Static methods

UNIT III: **Lectures: 8**
Arrays, Array of objects, Constructor, Constructor overloading, Parameterized constructor, String and string buffer classes with their functions

UNIT IV: **Lectures: 8**
Inheritance, Method overriding, Dynamic polymorphism, Abstract class, Interface

UNIT V: **Lectures: 7**
Exception handling, Exception hierarchy, Constructors and methods of Throwable class, Unchecked and checked exceptions, handling exceptions in Java, Exception and inheritance, throwing user defined exceptions, Redirecting and rethrowing exceptions.

UNIT VI: **Lectures: 3**
Files and I/O Streams, Java I/O, File streams, File Input Stream and File Output Streams, Filter streams, Random access files, Serialization

UNIT VII: **Lectures: 2**
Frame class and its functions, Collection framework, AWT, Swing

UNIT VIII: **Lectures: 2**
Applets, Applet Life cycle, Working with Applets, The HTML APPLET Tag, Applet package

UNIT IX: **Lectures: 2**
Threading, Overview of threading, Creating threads, Thread life-cycle

Text Book:

1. Patrick Naghton & H. Schildt - The Complete Reference Java 2, Tata McGraw Hill Publication, New Delhi.

Reference Books:

1. Balagurusamy - Programming in Java, 2nd Edition; Tata McGraw Hill Publication; New Delhi.
2. Dietel, Dietel - Java How to program, 7th edition; Pearson Education, New Delhi.
3. C. Horstmann, G. Cornell - Core Java 2 Vol I & Vol II; Pearson Education, New Delhi.