PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

DEPARTMENT OF CSE (AI &ML)

II B.Tech – I Semester CSE(AI & ML)

Object Oriented Programming Through Java

Course Code	23AM3302	Year	II	Semester	I
Course Category	Professional Core	Branch	CSE (AI&ML)	Course Type	Theory
Credits	3	L-T-P	3-0-0	Pre requisites	C Programming language
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

	Course Outcomes	
Upon successful completion of the course, Student will be able to		
CO1	Describe the fundamental concepts of object-oriented programming and core Java programming constructs	L2
CO2	Apply object-oriented principles to implement Java programs	L3
CO3	Use packages, exception handling, file I/O, multithreading, and the Collections Framework to build Java applications.	L3
CO4	Analyze complex Java programs by leveraging advanced features and critically assessing their performance and limitations.	L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)													
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2													
CO2	3													
CO3	3													
CO4		3										3		

Unit No.	Syllabus Contents	Mapped CO
I	**Object Oriented Programming:** Basic concepts, Principles, **Program Structure in JAVA:** Introduction, Writing Simple JAVA Programs, Elements or Tokens in JAVA Programs, JAVA Statements, Command Line Arguments, User Input to Programs, Escape Sequences Comments, Programming Style. **Data Types, Variables, and Operators :**Introduction, Data Types in JAVA, Declaration of Variables, Data Types, Type Casting, Scope of Variable Identifier, Literal Constants, Symbolic Constants, Formatted Output with printf() Method, Static Variables and Methods, Attribute Final. **Introduction to Operators:** Precedence and Associativity of Operators, Assignment Operator (=), Basic Arithmetic Operators, Increment (++) and Decrement (- -) Operators, Ternary Operator, Relational Operators, Boolean Logical Operators, Bitwise Logical Operators. **Control Statements :**Introduction, if Expression, Nested if Expressions, if–else Expressions, Ternary Operator?:, Switch Statement, Iteration Statements, while Expression, do–while Loop, for Loop, Nested for Loop, For–Each for Loop, Break Statement, Continue Statement.	CO1
II	**Classes and Objects:** Introduction, Class Declaration and Modifiers, Class Members, Declaration of Class Objects, Assigning One Object to Another. **Constructor and Methods:** Introduction, Defining Methods, Overloaded Methods, Constructors, Overloaded Constructor Methods , Class Objects as Parameters in Methods, Access Control, Accessing Private Members of Class, Recursive Methods, final method, Passing Arguments by Value and by Reference, Keyword this, final and static, Nested classes. **String Handling in JAVA:** Introduction, Interface Char Sequence, Class String, Methods for Extracting Characters from Strings, Comparison, Modifying, Searching; Class String Buffer.	CO1, CO2
III	**Arrays:** Introduction, Declaration and Initialization of Arrays, Storage of Array in Computer Memory, Accessing Elements of Arrays, Operations on Array Elements, Assigning Array to Another Array, Dynamic Change of Array Size, Sorting of Arrays, Search for Values in Arrays, Class Arrays, Two-dimensional Arrays, Arrays of Varying Lengths, Three-dimensional Arrays, Arrays as Vectors. **Inheritance:** Introduction, Process of Inheritance, Types of Inheritances, Universal Super Class-Object Class, Inhibiting Inheritance of Class Using Final, Access Control and Inheritance, Multilevel Inheritance, Application of Keyword Super, Constructor Method and Inheritance, Method Overriding, Dynamic Method Dispatch, Abstract Classes. **Interfaces:** Introduction, Declaration of Interface, Implementation of Interface, Multiple Interfaces, Nested Interfaces, Inheritance of Interfaces, Default Methods in Interfaces, Static Methods in Interface.	CO1, CO2

IV	**Packages and JAVA Library:** Introduction, Defining Package, Importing Packages and Classes into Programs, Path and Class Path, Access Control, Packages in JAVA SE, java.lang Package and its Classes, Class Object, class Math, Wrapper Classes, Auto-boxing and Auto-unboxing. **Exception Handling:** Introduction, Hierarchy of Standard Exception Classes, Keywords throws and throw, try, catch, and finally Blocks, Multiple Catch Clauses, Class Throwable, Unchecked Exceptions, Checked Exceptions, custom exceptions. **Java I/O and File:** Java I/O API, standard I/O streams, types, Byte streams, Character streams, Scanner class, Files in Java: File, FileInputStream and FileOutputStream Classes(Text Book 2)	**CO1, CO3, CO4**
V	**Multithreaded Programming:** Introduction, Need for Multiple Threads Multithreaded Programming for Multi-core Processor, Thread Class, Main Thread-Creation of New Threads, Thread States, Thread Priority. **Collections Framework** : Introduction, Purpose of Collection Framework, Application of Collection Framework, Hierarchy of collection Interfaces / classes, Methods defined in Collection Interface, Interface Iterator, Collection classes/Interfaces –List, Queue, Set, Array List class, Hash Set, Priority Queue.	**CO1, CO3, CO4**

Learning Resources
Text Books
1) JAVA one step ahead, Anitha Seth, B.L.Juneja, Oxford.
2) Joy with JAVA, Fundamentals of Object Oriented Programming, Debasis Samanta, Monalisa Sarma , 2023, Cambridge.
References Text Book
1) The complete Reference Java, Herbert Schildt , 11thedition, TMH.
2) Introduction to Java programming, Y Daniel Liang , 7th Edition, Pearson.
e-Resources and other Digital Material
1) https://nptel.ac.in/courses/106/105/106105191/
2) https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012880464547618816347_shared/overview