GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Bachelor of Technology					Branch /Spec.	Computer Science & Engineering (CSE/BDA/CS/AI&ML)		
Semester	III					Version	1.0.1.2		
Effective from Academic Year			2026-27			Effective for the batch Admitted in			June 2025
Subject code	2CSE303		Subject Name			Object Oriented Programming			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	2	0	5	Theory	40	60	100
Hours	3	0	4	0	7	Practical	60	40	100

Pre-requisites:

Programming basics, C++

Learning Outcomes:

After Successful completion of the course, students will be able to:

- Understand the principles of object-oriented programming using JAVA.
- Learn the concept of Interface, Collection, Exception handling, Threading, Database Connectivity in JAVA
- Apply the advanced concept of object oriented programming.
- Develop the project using IDE.

Theory syllabus

Unit	Content	Hrs
1	**Core JAVA programming:** Syntax difference between C++ & JAVA,Data types, variable, operators,type casting, operators, scanner class, Conditional statements, Loops,Break , Continue and Array in java	4
2	**Creating Classes and Objects** Class and object,Method in java, Method overloading, Constructor, garbage collection Inheritance ,Method Overriding, Class visibility, Static members and Initialization Blocks: Static Class members, Implement static variable, Static Methods, Super keyword,this keyword, Final keyword in javaAccess Levels, package and import	8
3	**String, StringBuilder and StringBuffer** Working with strings: String Class, StringBuilder Class, StringBuffer, Implement StringBuffer Working with Date and Time: Using Date class, Implement Date, SimpleDateFormat, Calendar Class Objects of primitives: Wrapper Classes, Implement Autoboxing, Unboxing	4
4	**Exception Handling** Checked and unchecked exception,handling exception using try-catch, Exception Hierarchy, Implement Exception, The Throw and Throws Keyword, finally keyword, Implement Custom Exception	4
5	**File Handling** File Class in JAVA ,File Class to Create Files and Directories,streams API in JAVA: I/O Streams in JAVA, Character Streams, Implement Buffered OutputStream, Reading from Console, Implement Scanner Serialization: Serialization, Storing objects via serialization Metadata ,File Visitor Interface, Random Access File	5

6	**MultiThreading** Thread life cycle,Creating Threads Extending the thread class and Implement runnable interface, Synchronization, Synchronization Issues, Race Condition, Inter Thread communication	**6**
7	**Collection Framework** Generics: Collections, Bounded types, collection framework in java, Vector and stack, Stack Iterators: Iterable and Iterator, Collections utility class, Arrays utility class, The Set interface Implement Array As List, Queue Implementations, Hashtable and Properties.	**6**
8	**Lambda Expressions** Basic of lambda expression Need for Lambda Expression, Type Inference	**2**
9	**Java Database Connectivity** Types of driver JDBC interface and classes for connecting and retrieving data JDBC interface ,Type oStatement, Creating and closing a PreparedStatement, Creating and closing a CallableStatement, Methods of ResultSet Batch Processing:Transaction Management, Transaction Rollback, RowSet and RowSet Types ,Implement CallableStatement	**6**

Practical content
Practicals are based on topics like Class , Object ,Interface, Inheritance , Exception handling,File Handling, Multithreading, Collection, Lambda Expression and JDBC.
Mooc Course
Course Name: Programming In Java Link: https://swayam.gov.in/nd1_noc19_cs84/preview Spoken Tutorial STP Link: https://spoken-tutorial.org/tutorial-search/?search_foss=Java&search_language=English

Text Books	
1	Thinking in Java by Bruce Eckel, Pearson Publication
2	Java Complete Reference Java By Herbet Shield, McGraw Hill.
Reference Books	
1	Programming in Java2 By Dr. K. Somasundaram, Jaico Books
2	Programming with Java – A primer By Balaguruswamy, McGraw Hill

Course Outcomes:	
COs	Description
CO1	Understand the principles of object-oriented programming using JAVA
CO2	Learn the concept of Interface, Collection, Exception handling, Threading, Database Connectivity in JAVA
CO3	Apply the advanced concept of object oriented programming
CO4	Develop the project using IDE.

Mapping of CO and PO:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	1	0	0	0	1	1	0	0
CO2	3	2	2	3	3	2	2	1	1	2	2	1
CO3	3	3	3	2	2	3	3	2	1	2	2	1
CO4	3	3	3	3	3	2	2	2	2	1	1	1