Ganpat University
॥ विद्यया समाजोत्कर्षः ॥

Faculty of Computer Applications

Programme	BCA Honors (Cyber Security)	**Branch**	Computer Applications
Semester	II	**Version**	1.0.0.0
Effective from Academic Year	2026-2027	**Effective for the batch Admitted in**	June 2026
Subject Code	U102A1OOP	**Subject Name**	OBJECT ORIENTED PROGRAMMING LANGUAGE

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2		2	-	4	Theory	50	50	100
Hours	2		4	-	6	Practical	-	-	-

Objective:

By the completion of this course, students will be able to build applications and platforms for a number of devices, including computers, laptops, gaming consoles and many more. Student will be aware with basic understanding of programming structure of Java. Student will be in position to implement Encapsulation, Abstraction, Data hiding, Inheritance, Polymorphism, Dynamic Binding, and Message Communication and exception handling.

Pre-requisites:

Student should know the concepts of programming language to understand OOP using JAVA. It will be comfortable and easy to implement java with OOP fundamental.

Course Outcomes :

Name of CO	Description
CO1	Able to understand concepts of object oriented programming and basic JAVA programing
CO2	Able to implement object oriented programming using Java
CO3	Able to implement the concepts of Array, Strings and Vector classes and wrapper
CO4	Develop object-oriented applications that can use different types of inheritance, and interface
CO5	Develop object-oriented applications that can handle exceptions and create packages

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	1	1	1	0	1	1	1
CO2	3	3	3	2	0	1	1	1
CO3	3	2	2	2	0	1	1	1
CO4	3	3	3	2	1	1	1	2
CO5	3	3	3	2	1	1	1	2

Content:

Unit		Hrs

1	**Fundamentals of Object-Oriented Programming** Introduction, Object-Oriented Paradigm, Basic Concept of OOP (Encapsulation, Abstraction, Data hiding, Inheritance, Polymorphism, Dynamic Binding, Message Communication), Benefits of OOP, Application of OOP. **About JAVA Language** Introduction, Java History, Java Feature, Java Environment, Java Byte-Code, Java Program Structure, Simple Java Program, Java Tokens , Constants, Variables and Data Types, Scope of Variable, Type Casting ,Operators and Expression , Decision Making, Branching and Looping	06
2	**Defining Classes, Objects and Methods** Introduction to a Class, Defining Classes, Defining Methods ,Creating Objects of a Class, and Assigning Class Members, Constructors, Constructor Overloading, Method Overloading, Static Members, Nesting of Methods, Use of 'this' keyword	06
3	**Arrays, String and Vectors** Arrays, Arrays of Characters, String Handling Using String Class and String Buffer Class, Operations on Immutable Strings and Mutable Strings, Vectors, Wrapper Classes, Enumerated Types **I/O Basics** Command Line Arguments, Reading Console Input, Writing Console Output	06
4	**Extending Classes and Inheritance** Extending Class, Simple Inheritance, Multi-levels of Inheritance, Hierarchical Inheritance, Subclass Constructor (use of 'Super' Keyword), Method Overriding, Final Variables, Methods and Classes, Finalizer Methods and Automatic Garbage Collection, Abstraction through Abstract Classes and Methods, Final Modifier, Visibility Access Control **Interfaces: Multiple Inheritance** Defining an Interface, Extending Interface, Implementing Interface ,Multiple Inheritance using Interface	06
5	**Exception Handling** The Idea Behind Exceptions, Types of Error, Types of Exceptions, Dealing with Exceptions, Defining Your Own Exceptions **Package** Understanding Packages, Defining a Package, Understanding CLASSPATH, Use Classes from a Package to Your Program, Standard Packages, Access Protection in Packages, Java.util Package: Random Class, Date Class, Calendar Classes, Stack Class, HashTable Class	06

Practical Content:

List of programs specified by the subject teacher based on above mentioned topics

Text Books:

1	Programming with Java Primer - Second Edition by Balagurusamy – TMH

Reference Books:

1	Teach Yourself JAVA by Joseph O'Neil & Herb Schildt - McGraw-Hill Edition
2	JAVA: The Complete Reference by Naughton & Schildt - Tata McGraw Hill,1999

3	An Introduction to Java Programming by Daniel Liang Y - , Prentice-Hall India, 1999
Web References / MOOC / Certification Course	
1	https://www.tpointtech.com/java-tutorial
2	Introduction to Java Programming: Starting to code in Java: https://www.edx.org/course/introduction-to- java-programming-starting-to- code
3	Java Programming Fundamentals: https://www.edx.org/course/java-programming-fundamentals
4	Introduction to Java Programming – Part 1: https://www.edx.org/course/introduction-to-java-programming-part-1
Question Paper Scheme:	
	End Semester Examination Duration: (2 Hours Theory Examination) **Note for Examiner: -** Q-1 Any Five out of Seven (25 Marks) Q-2 Any Two out of Three (06 Marks) Q-3 Mandatory question (05 Marks) Q-4 Any Two out of Three (08 Marks) Q-5 Any Two out of Three (06 Marks) *The question paper must comprehensively address all Course Outcomes (COs), align Taxonomy levels, and ensure complete syllabus coverage.*