Name of School/ Department: School of Computer Science & IT	
Name of Program: MCA	**Branch/ Specialization: -**

COURSE PLAN

Name of Course	Course Code	Semester	Credits	Contact Hours	L	+	T	+	P	=	Total
Advanced Java	MCA -126	IV	4	4	3	+	1	+	0	=	4
		Name of the Faculty Member			Designation				Employee ID		
		Dr. Manisha			Associate Professor						
Academic Year		Email ID			Mobile Number						
2023-2024		**manishavashisht@lingayasvidyapeet.ed**			**9899762669**						

Prerequisite Course: Basic Knowledge of programming language and object oriented programming.

Teacher Centric Approach

TC1: Chalk and Talk, TC2: PPT, TC3: Video Lectures TC4: Blended learning

Learner Centric Approach:

LC1: Assignment. LC2: Mini project. LC3: Quiz/Class test. LC 4: Seminar on recent trends.

LC5: Group Task. LC6: Others

Name of School/ Department: School of Computer Science & IT	
Name of Program: MCA	**Branch/ Specialization: -**

VISION:

To bring forth cultured graduates meeting the expectation of national and multi-national industries exceling in the field of computing as well as in higher studies and research.

MISSION:

1. To provide strong theoretical knowledge of computer science with practical training which meets the industries expectations.
2. To train necessary skills to further higher studies and professional growth.
3. To inculcate ethical valued in graduates through various social-cultural activities.

PROGRAM OUTCOMES:

PO 1: Engineering Knowledge: An ability to apply knowledge of computing and mathematics which is appropriate to computer science. PO 2: Problem analysis: An ability to identify, formulate, and develop solutions to computational challenges.
PO 3: Design/development of solutions: An ability to design, implement, and evaluate a computational system to meet the desired solutions of problem with feasibility.
PO 4: Conduct investigations of complex problems: Use research-based knowledge and methods including design of experiments, analysis and interpretation of data, and synthesis them to get the valid conclusions.
PO 5: Modern tool usage: An ability to use appropriate techniques, skills, and tools necessary for computing practice and makes human effort less.
PO 6: The engineer and society: An ability to analyze impacts of computing on individuals, organizations, and society.
PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions on society in environmental contexts and provide a solution for sustainable development.
PO 8: Ethics: An understanding of professional, ethical, legal, security, and social issues and responsibilities for the computing profession.

PO 9: Individual and teamwork: An ability to function effectively on teams to accomplish shared idea, computing design, evaluation, or implementation goals.
PO 10: Communication: An ability to communicate and engage effectively with diverse stakeholders.
PO 11: Project management and finance: An ability to apply design and development principles in the construction of software systems of varying complexity.
PO 12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAM SPECIFIC OUTCOMES:

PSO - 1: To equip the students with theoretical and implementation knowledge in all the latest area of Computer Science and Engineering for successful career in software industry, pursuing higher studies, or entrepreneurial establishment.
PSO - 2: To nurture the students with the critical thinking abilities for better decision making by offering them a socially acceptable solutions to real life problem through computing paradigm.
PSO - 3: To nurture the students with the comprehensive analytical and design by offering them techno-commercial feasible solutions of real business problem through computing.

COURSE DESCRIPTION: To relay the theoretical and practical knowledge of Core Java programming language.

COURSE OUTCOMES:

SNO	DESCRIPTION	PO(1..12) MAPPING	PSO(1..3) MAPPING
Cxxx.1	To understand the various features of object-oriented programming and features of OOP specific to Java programming.		
Cxxx.2	To understand the components involved in designing web pages through Java programming.		
Cxxx.3	To understand the various components of event mechanism.		
Cxxx.4	To understand the major components of network programming through java swings.		
Cxxx.5	To understand the major key contributing components to enable web-based applications		

through Java programming.
COURSE OVERALL PO/PSO MAPPING:

COURSE OUTCOMES VS POs MAPPING (DETAILED; HIGH: 3; MEDIUM: 2; LOW: 1**):**

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Cxxx.1															
Cxxx.2															
Cxxx.3															
Cxxx.4															
Cxxx.5															
Cxxx*															

SYLLABUS:

UNIT	DETAILS	Contact Hours
1	INTRODUCTION TO JAVA, DATA TYPE, VARIABLES, ARRAY : Basic Concepts of OOP and its Benefits; Application of OOP; Features of Java; Different types of data types, Literals, Variables, Type conversion and casting :Java's automatic type conversion, Casting incompatible types; Automatic type promotion in expression; Arrays: One-Dimensional Arrays, Multidimensional Arrays, Alternative Array Declaration Syntax.	05
2	**STRINGS, OPERATORS, EXPRESSION, CONTROL STATEMENTS:** String handling: String class, Different string operations, String comparison ,Searching and modifying a string, Using string buffer class, Vector & Wrapper classes Different types of operators: arithmetic, bitwise, logical, relational, Boolean, assignment, conditional, special; Operator precedence and associatively; Using parentheses; Expression; Solving an expression; Control statements: if-else, nested if-else switch; Iteration statements: while, do-while, for, nested loops Jump Statements: using break, using continue, return.	05
3	INHERITANCE, INTERFACES, PACKAGE : Inheritance: Different types of Inheritance, super keyword, Method overriding, Different types of access specifiers Defining Interface, Extending & Implementing interfaces, implementing multiple inheritance, Package: Java API Packages, Using System Package, Naming Conventions, Creating package, Accessing a package, using your own package.	06
4	**MULTITHREADING, EXCEPTION HANDLING & APPLET PROGRAMMING**: Multithreading: The Java Thread Model, Creating a Thread: extending Thread class and implementing Runnable interface, life cycle of a thread, using Thread methods, Thread exception Thread priority, Synchronization Exception: Exception Handling mechanism , Multiple catch statements , Using finally statements , throwing our own exception; Applet: Local & Remote Applets ,Steps to write & running Applets, Applet life cycle, Passing parameters, Displaying numerical values, getting input from the user.	08
5	GRAPHICS PROGRAMMING & FILE HANDLING: Graphics class: Lines & Rectangle, Circles & Ellipses, Arcs, Polygons, Line Graphs, Bar Charts; File Handling: Stream Classes: Character & Byte Stream Class, I/O Exceptions, Reading /Writing character, Reading /Writing bytes, Concatenating & buffering files, Random Access Files.	08
	Total Contact Hours	**32**

COURSE COMPLETION PLAN

Total Class room sessions	**32**
Total Quizzes	**-**
Total Test	**03**
Total Assignment	**03**

One Session = 50 Minutes

EVALUATION & GRADING

- Students will be evaluated based on the following stages.
- Internal Assessment = 40%
- End Semester Examination = 60%

DETAILED SESSION PLAN

Lecture session/ Number	Topics to be covered	Panned Date	Execution Date	Teacher Centric Approach	Learner Centric Approach	References	Relevance with POs and PSOs
1	**UNIT-1** Introduction to java, data type, variables.			TC1	LC1, LC3	T1	
2	Basic Concepts of OOP and its Benefits; Application of OOP.			TC1	LC1, LC3	T1	
3	Features of Java; Different types of data types, Literals, Variables.			TC1	LC1, LC3	T1	
4	Type conversion and casting: Java's automatic type conversion, Casting incompatible types; Automatic type promotion in expression.			TC1	LC1, LC3	T1	
5	Arrays: One-Dimensional Arrays, Multidimensional Arrays, Alternative Array Declaration Syntax.			TC1	LC1, LC3	T1	
6	**UNIT-2 STRINGS, OPERATORS, EXPRESSION, CONTROL STATEMENTS:** String handling: String class, Different string operations, String comparison ,Searching and			TC1	LC1, LC3	T1	
7	Using string buffer class, Vector & Wrapper classes.			TC1	LC1, LC3	T1	

8	Different types of operators: arithmetic, bitwise, logical, relational, Boolean, assignment, conditional statements.			TC1	LC1, LC3	T1	
9	Operator precedence and associatively; Using parentheses; Expression; Solving an expression.			TC1	LC1, LC3	T1	
10	Control statements: if-else, nested if-else switch; Iteration statements: while, do-while, for, nested loops Jump Statements: using break, using continue, return.			TC1	LC1, LC3	T1	
11	**UNIT-3 INHERITANCE, INTERFACES, PACKAGE:** Inheritance: Different types of Inheritance.			TC1	LC1, LC3	T1	
12	Super keyword, Method overriding			TC1	LC1, LC3	T1	
13	Different types of access specifiers			TC1	LC1, LC3	T1	
14	Defining Interface, Extending & Implementing interfaces			TC1	LC1, LC3	T1	
15	Package: Java API Packages, Using System Package, Naming Conventions, Creating package,			TC1	LC1, LC3	T1	
16	Accessing a package, using your own package.			TC1	LC1, LC3	T1	
17	**UNIT-4 MULTITHREADING, EXCEPTION HANDLING & APPLET PROGRAMMING**: Multithreading: The Java Thread			TC1	LC1, LC3	T1	
18	Creating a Thread: extending Thread class and implementing Runnable interface, life cycle of a thread.			TC1	LC1, LC3	T1	

19	Thread exception Thread priority,			TC1	LC1, LC3	T1	
20	Synchronization Exception: Exception Handling mechanism			TC1	LC1, LC3	T1	
21	Multiple catch statements , Using finally statements , throwing our own			TC1	LC1, LC3	T1	
22	Applet: Local & Remote Applets Steps to write & running Applets			TC1	LC1, LC3	T1	
23	Applet life cycle, Passing parameters			TC1	LC1, LC3	T1	
24	Displaying numerical values, getting input from the user.			TC1	LC1, LC3	T1	
25	**UNIT-5** **GRAPHICS PROGRAMMING & FILE HANDLING:** Graphics class: Lines & Rectangle, Circles & Ellipses			TC1	LC1, LC3	T1	
26	Arcs, Polygons, Line Graphs, Bar Charts			TC1	LC1, LC3	T1	
27	File Handling: Stream Classes: Character & Byte Stream Class			TC1	LC1, LC3	T1	
28	I/O Exceptions, Reading /Writing character			TC1	LC1, LC3	T1	
29	I/O Exceptions, Reading /Writing character			TC1	LC1, LC3	T1	
30	Reading /Writing bytes			TC1	LC1, LC3	T1	
31	Concatenating & buffering files			TC1	LC1, LC3	T1	
32	Random Access Files.			TC1	LC1, LC3	T1	

REFERENCES:

Text Book	T1	Herbert Schildt , "The Complete Reference Java 2 fifth edition, McGraw Hill.
	T2	Balaguruswamy , E., ""Programming with Java", Tata Mcgraw Hill.

Reference Book	**R1**	Horetmann Cay and Cornell Gary, “Core Java Volume – I”, Pearson Education.
	R2	Horetmann Cay and Cornell Gary, “Core JavaTM 2, Volume II – Advanced Features”, 7th Edition, Pearson Publisher.
	R3	Kathy Sierra and Bert Bates, “Head First Java” by O’REILLY publications.

Faculty: Komal Malsa **HOD: Dr. Ritu Sachdeva**