Course	Bachelor of Technology (B.Tech.)	**Semester - 4**
Type of Course	Core Courses	
Prerequisite	03080401-T - OBJECT ORIENTED PROGRAMING WITH JAVA	
Course Objective	1. Develop a web-based application using Servlets & JSPs. 2. Develop web applications using the Struts framework. 3. Skill to use a pre-built framework for rapid application development.	
Effective From A.Y.	2023-24	

Teaching Scheme (Contact Hours)				**Examination Scheme**				
				Theory Marks		**Practical Marks**		
Lecture	**Tutorial**	**Lab**	**Credit**	**External Mark (T)**	**Internal Marks (T)**	**External Mark (P)**	**Internal Marks (P)**	**Total Marks**
3	0	2	4	70	30	-	50	150

***SEE** - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)*

Course Content

T - Teaching Hours | **W** - Weightage

Sr.	**Topics**	**T**	**W**
1	**Introduction to Advanced Java** Introduction to advances java technologies, Multithreading(classes, Interface),Exception handling(Try, catch ,Finally),File handling(Read, Write, delete file	**15**	**25**
2	**API(Swing ,AWT) &Java Database Programming** MVC Architecture, Java GUI components, Swing, AWT, Look and Feel. **Basic swing components** Text Fields, Buttons, Toggle Buttons, Checkboxes. Java database Programming .java .sql Package, JDBC driver types,	**10**	**15**
3	**Framework(Collection) & RMI** java beans, ,Collection Framework(List, Queue, Set)in Data Structure, RMI Architecture, Designing RMI application, Executing RMI application	**15**	**25**
4	**Java Server Pages** Server-side programming with Java Servlet, HTTP and Servlet, Servlet API, Life cycle, configuration and context, Request and Response objects, Session handling, and event handling, Introduction to filters with writing simple filter application.	**10**	**20**
5	**Java Servlet** JSP architecture, JSP page life cycle, JSP elements, Expression Language, Tag Extensions, Tag Extension API, Tag handlers, and JSP Fragments. Tag Files, JSTL, Core Tag library, Overview of XML Tag library, SQL Tag library, and Functions Tag library.	**10**	**15**
	Total	**60**	**100**

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy

Level	Remembrance	Understanding	Application	Analyze	Evaluate	Create
Weightage	25	25	10	10	10	20

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes

At the end of this course, students will be able to:	
CO1	Explain MVC architecture, GUI components, Java database programming, RMI, Servlet and Java Server pages.
CO2	Analyze how to work with swing component, Database connectivity, server side programming with java and JSP.
CO3	Design web based application using java server pages and database programming.
CO4	Conduct experiments of database programming using Java Database Connectivity (JDBC) API
CO5	Prepare small application through java swing components.

Reference Books

1.	**Black Book " Java server programming" J2EE** By Kathy walrath | 1st ed., Dream Tech Publishers
2.	**Complete Reference J2EE** By James Keogh | mcgraw publication
3.	**Java EE 5 for beginners (TextBook)** By Bayross and Shah | SPD

List of Practical

1.	Implement a Java program to create multiple threads using the Thread class and the Runnable interface. Demonstrate thread synchronization using the synchronized keyword.
2.	Write a program that demonstrates the use of try, catch, and finally blocks. Include a custom exception for invalid user input (e.g., invalid age).
3.	Write a program with swing components JTextField and JButton to copy one JTextField data to another JTextField.
4.	Write a program with two JRadio Buttons Male and Female. According the selection of JRadiobutton the label should displaythe text either male or female.
5.	Develop a Java application to connect to a database using JDBC. Insert, update, delete, and retrieve records
6.	Write a program to demonstrate the use of:(List, Queue and Set)
7.	Create a servlet application to: Handle HTTP GET and POST requests.
8.	Write a java program of beans. Create a program for department beans. In department beans there should be department name and id
9.	Develop a JSP-based web application that: (Uses Expression Language to access and display data.)