

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Web approach with J2EE
Course Code:	18-CAE404-4C
Pre-requisite Course:	Knowledge of Java Programming, Advanced Java, Database Management System, HTML/CSS/JavaScript, and basic Computer Networking concepts.

Course Objective (CO):

This course is intended to make the students:

- To understand the architecture of J2EE enterprise applications.
- To develop server-side web applications using Servlets.
- To design dynamic web pages using JSP technology.
- To implement database connectivity using JDBC.
- To develop and deploy complete enterprise web applications.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	--	4	4	25	25	25	25	100

Course Contents:

Sr. No	Topics	Total Hours	Weightage (%)
1.	Introduction to Web Technology and J2EE Web applications overview, Static and dynamic web pages, Client–Server architecture, Introduction to J2EE platform, J2EE architecture, J2EE components and containers, Web server vs Application server, Overview of Servlets and JSP	09	20
2.	Servlet Programming Introduction to Servlet, Servlet architecture, Servlet life cycle, Servlet API, Handling HTTP requests and responses, Servlet configuration, Session tracking techniques, Cookies and URL rewriting	09	20
3.	Java Server Pages (JSP) Introduction to JSP, JSP architecture and life cycle, JSP directives, Scriptlets, expressions and declarations, JSP implicit objects, JSP standard action tags, MVC architecture using JSP and Servlet	09	20
4.	JDBC Database Connectivity Introduction to JDBC, JDBC architecture, Types of JDBC drivers, Database connectivity using JDBC, Executing SQL queries, PreparedStatement and CallableStatement, Transaction management	09	20
5.	Enterprise Applications and Web Services Introduction to Enterprise JavaBeans (EJB), Types of EJB, Session beans, Message driven beans, Introduction to Web Services, Security in J2EE applications, Deployment of enterprise applications	09	20

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO1: Explain web technologies and J2EE architecture.
- CLO2: Develop web applications using Servlet programming.
- CLO3: Design dynamic web applications using JSP
- CLO4: Implement database connectivity using JDBC
- CLO5: Build and deploy enterprise web applications.

List of Text Book:

1. Java Server Programming Java EE 7 Black Book — by Kogent Learning Solutions Inc.
2. Java for the Web with Servlets, JSP, and EJB: A Developer's Guide — by Budi Kurniawan
3. CodeNotes for J2EE: EJB, JDBC, JSP, and Servlets — by Gregory Brill

List of Reference Book:

1. CodeNotes for J2EE: EJB, JDBC, JSP, and Servlets — by Gregory Brill
2. J2EE FrontEnd Technologies: A Programmer's Guide to Servlets, JavaServer Pages, and Enterprise JavaBeans — by Lennart Jörelid

E-Resource / Web Links:

- **J2EE (Java EE) Official Tutorial – Oracle**
<https://docs.oracle.com/javase/7/tutorial/>
- **J2EE Web Application Development – Oracle**
<https://www.oracle.com/tools/technologies/building-j2ee-web-applications.html>
- **Jakarta EE (Java EE) Learning Resources**
<https://jakarta.ee/learn/>
- **Servlet and JSP Tutorial (Java Web Development)**
<https://javacourses.azurewebsites.net/JEE001>
- **J2EE Tutorial PDF (Complete Reference)**
<https://docs.oracle.com/javase/1.3/tutorial/doc/J2EETutorial.pdf>

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2	PSO 3
CLO1	H	M											M		
CLO2	H	H	M										H	M	
CLO3	H	H	M										H	M	
CLO4	H	H	M	M									H	M	
CLO5	H	H	H	M	M				M				H	H	M

H: High, M: Medium

Practical List (Open-Source Platforms Only)

1. Install and configure JDK, Eclipse/NetBeans IDE, and Apache Tomcat Server for Java web development.
2. Create and deploy a simple Java Servlet program using Apache Tomcat.
3. Develop a Servlet program to handle HTML form data and display the result.
4. Implement session tracking using Cookies and URL Rewriting in Servlet.
5. Create a JSP page to generate dynamic web content.
6. Develop a JSP program using scriptlets, expressions, and directives.
7. Demonstrate the use of JSP implicit objects (request, response, session, application).
8. Develop a JDBC program to connect Java application with MySQL database.
9. Perform CRUD operations (Create, Read, Update, Delete) using JDBC.
10. Create a Login and Registration system using JSP, Servlet, and MySQL database.
11. Develop a Servlet–JSP based mini web application using MVC architecture.
12. Deploy and test the web application on Apache Tomcat server.

Open-Source Platforms Used

- Eclipse IDE / NetBeans IDE
- Apache Tomcat Server
- MySQL Database
- JDK (Java Development Kit)