SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Masters of Computer Applications

MCA Semester II

Subject Name: Java Web Technologies **Subject Code:** MTCA13201

Type of course: Professional Core Course

Prerequisite (if any):
- Core Java
- RDBMS

List of Courses where this course will be prerequisite:
- Projects involving Web applications

Rationale: After studying this course, students will be able to understand the concept of web applications and also how to develop these web applications using Java Web Technologies.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
2	0	4	4	60	25	15	60	40	200

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Content	Teaching Hrs.	Module Weightage
1	**Introduction to Web applications and Servlets:** Introduction to Web applications, Web Application architecture vs. Client Server Architecture, Web Servers, Introduction to Java Servlets, Servlet Life Cycle, Generic Servlet, HttpServlet, Servlet Interface	**06**	**20%**
2	**Request and Response Headers and Session Management** Request Headers, Response Headers, Status Codes, Why is Session Management required, Different ways of managing session including Cookies, Hidden Form Fields and URL Rewriting, Advantages and disadvantages of all the 3 ways of session management	**06**	**20%**
3	**JSP and JSP Expression Language, Java Beans** JSP Basic Syntax, HTML Text, HTML comments, Template Text, JSP Comment, JSPExpression, JSP Scriptlet, JSP Declaration, JSP 08 Directives, JSP Action, JSP Expression Language Element, Custom Tag (Custom Action), Escaped Template Text, Using JSP Scripting Elements, Using Predefined Variables, XML syntax for Expressions, Scriptlets, Declarations and Directives, Using Scriptlets, Using Declarations, Using Page Directive, Using Standard Actions Tags<jsp:plugin>, <jsp:forward>, <jsp: include>,Using JavaBeans in JSP pages – <jsp:useBean>, <jsp:getProperty>, <jsp:setProperty>,Sharing Beans, Use of Scopes and their Attributes.	**08**	**27%**
4	**Filters** Filter Interface, How can filters be helpful with pre-processing and post-processing requests, Example of Filters with Servlets and JSPs	**02**	**6%**
5	**MVC and its implementation using Request Diapatcher** What is MVC architecture with respect to Web Applications, Java technologies used to implement MVC architecture including Beans, Implement MVC using RequestDispatcher with the help of	**05**	**17%**

	Servlets, Beans and JSP, Using Scoped variables, collections and implicit objects using EL, EL Operators		
6	**Connecting to Relational Database from Java** The Design of JDBC, JDBC Driver Types, SQL, JDBC Configuration: URL, driver jar files, starting the database, registering the driver class, connecting to the database, Working with JDBC Statements: executing SQL statement, managing connections, statements, resultsets, SQL exceptions, Query Execution: prepared statement.	**03**	**10%**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	20	15	15	15	15

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

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

Reference Books:

Sr. no.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	Core Servlets and Java Server Pages - Volume 1	Marty Hall, Larry Brown	Pearson Education ISBN:	2004	2nd Edition
2	Core Servlets and Java Server Pages - Volume 2	Marty Hall, Larry Brown, Yaakov Chaikin	Pearson Education ISBN:	2004	2nd Edition
3	HeadFirst Servlets and JSP	Kathy Sierra	O' Reilly ISBN:	2008	2nd Edition

Course Outcomes:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
CO-1	Able to create Java Servlets	20
CO-2	Understand the request and response headers, Session Management	20
CO-3	Able to create JSP pages using JSP, JSP Expression language and also able to use Java Beans in JSP pages	27
CO-4	Able to add filters to Servlets and JSP pages	6
CO-5	Able to create a web application by implementing the MVC architecture using Java Servlets and JSP pages	17
CO-6	Able to communicate with a relational database from Java application	10

Mapping with POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO-1	3	3	3	3	3	2	2	2	2	1	3	3			
CO-2	3	3	3	3	3	2	2	2	2	1	3	3			
CO-3	3	3	3	3	3	2	2	2	2	1	3	3			
CO-4	3	3	3	3	3	2	2	2	2	1	3	3			
CO-5	3	3	3	3	3	2	2	2	2	1	3	3			
CO-6	3	3	3	3	3	2	2	2	2	1	3	3			
Rationale*															

Rationale*: Explaining why it is matching this particular program outcome

List of Open learning website:

- https://tomcat.apache.org/tomcat-5.5-doc/servletapi/
- https://docs.oracle.com/cd/E17802_01/products/products/servlet/2.5/docs/servlet-2_5-mr2/index.html
- https://docs.oracle.com/javaee/5/tutorial/doc/bnajo.html

List of Open Source Software:

- Core Java 9 or later
- Tomcat 9.0.45
- Eclipse 2021-03 or later

FOR LAB SESSIONS:

List of Experiments:

Sr. No.	Problem Statements
1	Write a Servlet to display "Hello World" on browser.
2	Write a Servlet to display all the headers, parameters and attributes available from request.
3	Write a Servlet which displays a message and also displays how many times the message has been displayed (how many times the page has been visited). Hint: Use servlet instance variable as well as ServletContext attribute
4	Write a Servlet which displays the number of times a user has visited that servlet page. Hint: Use Cookies
5	Assume that we have got three pdf files for the MCA-1 Syllabus, MCA-2 Syllabus and MCA-3 Syllabus respectively, now write a Servlet which displays the appropriate PDF file to the client, by looking at a request parameter for the year (1, 2 or 3).
6	Write a JSP page, which uses the include directive to show its header and footer.
7	Develop a Servlet to authenticate a user, where the loginid and password are available as request parameters. In case the authentication is successful, it should setup a new session and store the user's information in the session before forwarding to home.jsp using response.sendRedirect, which displays the user's information like full name, address, etc.
8	Modify the above program to use the RequestDisapatcher to forward instead of response.sendRedirect.
9	Write a program to create a filter on a servlet to display the below information Time the request was received Time the response was sent How much time it took to process the request
10	Create a small project to demonstrate the MVC implementation using RequestDispatcher as explained below: 1. Create a Registration page to take Student details input. 2. On clicking Submit, insert the details in the Student table in the database and redirect the user to Home page which displays Welcome message. 3. Home page should display a link to fetch Student details. On clicking this link, the student details should be fetched from the database and be displayed on the page. Use Model, View and Controller pattern to implement the above. Also use DAO classes to insert and fetch data from the database.

Major Equipment Needed: NA