# C. U. SHAH UNIVERSITY
## Wadhwan City

**FACULTY OF**:-Computer Science
**DEPARTMENT OF**:-Master of Computer Applications
**SEMESTER**:- IV
**CODE** :- 5CS04MJV1
**NAME** – ADVANCED JAVA PROGRAMMING (AJV) (MAJOR ELECTIVE – I)

## Teaching and Evaluation Scheme

| Subject Code | Name of the Subject | Teaching Scheme (Hours) | | | | Credits | Evaluation Scheme | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Theory | | | | Practical (Marks) | | | |
| | | Th | Tu | Pr | Total | | Sessional Exam | | University Exam | | Internal | | University | |
| | | | | | | | Marks | Hrs | Marks | Hrs | Pr/Viva | TW | Pr | |
| 5CS04MJV1 | ADVANCED JAVA PROGRAMMING (AJV) | 4 | 0 | 2 | 6 | 5 | 30 | 1.5 | 70 | 3 | 10 | --- | 40 | **150** |

**Objectives:**
- To be able to understand the concepts of Database Programming, using JDBC.
- To develop proficiency in creating web based applications using the Servlets and JSP, following MVC architecture

**Technical Prerequisites:**

- Knowledge of the Core Java Programming

**Course outline:-**

| Sr. No. | Course content | No. of Hours |
|---|---|---|
| 1 | Introduction to JFC and Swing, Features of the Java Foundation Classes, Swing API Components, JComponent Class, Windows, Dialog Boxes, and Panels, Labels, Buttons, Check Boxes, Menus, Toolbars, Implementing Action interface, Pane, JScrollPane, Desktop pane, Scrollbars, Lists and Combo Boxes, Text-Entry Components, Colors and File Choosers, Tables and Trees. | 12 |
| 2 | Java Database Connectivity, JDBC Product, Types of Drivers, Two-Tier Client/Server Model, Three-Tier Client/Sever Model ,Basic Steps of JDBC, Creating and Executing SQL Statement, The Result Set Object, Working with Database MetaData | 8 |
| 3 | Servlet Basics, Basic Servlet structure, Servlets Generating text/html content, Packaging Servlets, The servlet life-cycle, Handling Client Request Form Data, Reading Form Data from Servlets, Handling Client Request, Reading Request Headers, Understanding HTTP/1.1 Request Headers, Changing the page according to how the user got there, Accessing the Standard CGI Variables,Generating the Server Response, HTTP Status Codes, Specifying Status Codes, HTTP / 1.1 Status Codes, Using Redirections, HTTP Response Headers, Setting Response Headers from Servlets, Understanding HTTP / 1.1 Response Headers, Using Servlets to Generate JPEG Image, Handling Cookies, Remembering Usernames and Passwords, Deleting | 14 |

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|---|---|---|
| | Cookies, Sending and Receiving Cookies, Using Cookie Attributes, Differentiating Session Cookies from Persistent Cookies, Using Cookies to Remember User Preferences, Session Tracking, Need for Session Tracking, Session Tracking API, Encoding URLs Sent to the Client, Accumulating a List of User Data | |
| 4 | JSP Basic Syntax, HTML Text, HTML comments, Template Text, JSP Comment, JSPExpression, JSP Scriptlet, JSP Declaration, JSP 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,Integrating Servlets and JSP in a Web Application (MVC Architecture for Web Applications), Implementing MVC with Request Dispatcher | 9 |
| 5 | RMI Architecture, Designing RMI application, Executing RMI application | 5 |
| | **Total** | **48** |

**PRACTICAL LIST:**

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| 1 | Using JavaScript take a date from user and display the day of the week on that date. |
| 2 | Write a JavaScript to generate two random numbers and find out maximum and minimum out them. |
| 3 | Create a Form in HTML with two fields, minimum and maximum, write JavaScript to validate that only numeric value is entered in both, and the value entered in minimum is less than the value entered in maximum. |
| 4 | Develop an application that takes students roll number. If the marks of the student is between 40 and 50, change the backColor of "result.jsp" to" yellow", if the marks is between 50 and 60, change the backColor of the same page to "green" . if marks less than 40 the backColor should be "red" and if marks is above 60, the backColor should be "blue". |
| 5 | Using JavaScript count and display the total number of components on a form. Also display the name and the value of each of the component. |
| 6 | Write a JavaScript that finds out multiples of 10 in 0 to 10000. On the click of button start the timer and stop the counter after 10 seconds. Display on the screen how many multiples of 10 are found out within stipulated time. |
| 7 | Write a JavaScript to generate two random numbers and find out maximum and minimum out of it. |
| 8 | Write a JavaScript to remove the highest element from the array and arrange the array in ascending order. |
| 9 | Write a JavaScript to find a string from the given text. If the match is found then replace it with another string. |
| 10 | Write a JavaScript to show a pop up window with a message Hello and background color lime and with solid black border. |
| 11 | Write a Servlet to display "Hello World" on browser. |
| 12 | Write a Servlet to display all the headers available from request. |
| 13 | Write a Servlet to display parameters available on request. |
| 14 | 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). |
| 15 | Assume that we have got three pdf files for the MCA-1 Syllabus, MCA-2 Syllabus and MCA-3 Syllabus |

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|---|---|
| | 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). |
| 16 | Develop a Servlet which looks for cookies for username and password, and forwards to a home.jsp in case the cookies are valid and forwards to login.jsp, in case the cookies are not found or the cookies are nto valid. 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, which displays the user's information like full name, address, etc. |
| 17 | Write a simple JSP page to display a simple message (It may be a simple html page). |
| 18 | Write a JSP page, which uses the include directive to show its header and footer. |
| 19 | Develop interest calculation application in which user will provide all information in HTML form and that will be processed by servlet and response will be generated back to the user. |
| 20 | Develop an application to demonstrate how the client (browser) can remember the last time it visited a page and displays the duration of time since its last visit. (Hint: use Cookie) |
| 21 | Develop an application to write a "page-composite" JSP that includes other pages or passes control to another page. (Hint: Use <jsp:include> or <jsp:forward>). |
| 22 | You want to reduce the amount of Java coding in your JSP using a JavaBean component. (Hint: Use <jsp:useBean> with the name of your bean). |
| 23 | Develop a program to perform the database driven operation like insert, Delete, Update and select. To perform the above operations create one table named Employee.: Field Name Field Type , EmpId Integer , Empname Varchar , Emp_desig Varchar Emp_J_Date Varchar , Emp_Salary Numeric |
| 24 | Develop a Java application to perform the database driven operation like insert, Delete, Update and selection using PreparedStatement. To perform the above operations use the table from above exercise. |

**Learning Outcomes:**
- Ability to create Web applications using Servlets and JSP, following MVC architecture for developing web applications
- Ability to fetch data from a database server and use in a web application.

**Teaching & Learning Methodology:**
- Using multimedia in a problem-based learning environment.
- The institute provides an excellent academic environment with accent on self-learning. The teaching and learning methodologies follow a rigorous regime that involves intensive and extensive working on challenging academic assignments.

**Books Recommended:**
- Core Servlets and JavaServer Pages Volume – 1, **Marty Hall, Larry Brown,**Pearson Education, 2nd ed.(2004)
- Java The Complete Reference 7th Edition,**Herbert Schildt**,TMH Publication
- Marty Core Servlets and JavaServer Pages Volume – 2, **Hall, Larry Brown, Yaakov Chaikin,** Pearson Education, 2nd ed.(2004)