GUJARAT TECHNOLOGICAL UNIVERSITY
MASTER OF COMPUTER APPLICATIONS (MCA)
Semester: IV

Subject Name: **Web Technology & Application Development (WTAD)**

Subject Code: **640002**

Learning Objectives:

1. To be able to create web pages using HTML and JavaScript
2. To be able to understand the concepts of Database Programming, using JDBC
3. To develop proficiency in creating web-based applications using Servlets and JSP, following MVC architecture
4. To be able to use Struts framework for web application development

Prerequisites:

Knowledge of Core Java Programming

Contents:

1. Introduction to HTML – only basic structure and tags (upto table tag) of HTML, Overview of Java Script, Primitives, Date and Time, Operations and Expressions, Screen Output and Keyboard Input, Control Statement, Object Creation and Modification, Arrays, Functions, Constructors **(10 Lect.)**

2. Servlet Basics, Basic Servlet Structure, Servlets Generating text/plain and text/html content, Packaging Servlets, The Servlet Life-Cycle **(2 Lect.)**

3. 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 **(2 Lect.)**

4. 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 Images **(2 Lect.)**

5. Handling Cookies, Remembering Usernames and Passwords, Deleting 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 **(2 Lect.)**

6. JSP Basic Syntax, HTML Text, HTML comments, Template Text, JSP Comment, JSP

Expression, 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 **(5 Lect.)**

7. Integrating Servlets and JSP in a Web Application (MVC Architecture for Web Applications), Implementing MVC with RequestDispatcher, Understanding Data Sharing Between Servlets and JSP, JSP Expression Language, Accessing Scoped Variables, Bean Properties, Collections and Implicit Objects Using EL, Using EL Operators **(5 Lect.)**

8. Accessing Databases with JDBC, Loading JDBC Driver, Establishing Connection, Creating Statements, Executing SQL and Processing Results of a Query, Using PreparedStatement, Using CallableStatement, Using Database Transactions **(3 Lect.)**

9. Structure of Web Applications and the Role of Deployment, Descriptor (web.xml) file, Declarative and Programmatic Security for Preventing Unauthorized Access to Resources in a Web Application, Servlet and JSP Filters, The Application Events Framework, Tag Library – Basics; Using JSTL – c:out, c:forEach, c:forTokens, c:if, c:choose, c:set, c:remove, c:import, c:url, c:param, c:redirect and c:catch Tags **(10 Lect**.)

10. New Features of Servlets 3.0, Asynchronous Request Processing, FileUpload, Internationalization Features **(2 Lect.)**

11. Understanding Struts Framework, Comparision with MVC using RequestDispatcher and the EL, Struts Flow of Control, Processing Requests with Action Objects, Handling Request Parameters with FormBeans, Prepopulating and Redisplaying Input Forms, Using Properties Files **(5 Lect.)**

Text Books:
1. Ivan Bayross, "Web Enabled Commercial Application Development Using HTML, DHTML, PERL, Java Script", BPB Publications, Revised Edition
2. Marty Hall, Larry Brown, "Core Servlets and JavaServer Pages Volume – 1", Pearson Education, 2nd ed.(2004)
3. Marty Hall, Larry Brown, Yaakov Chaikin, "Core Servlets and JavaServer Pages Volume – 2", Pearson Education, 2nd ed.(2004)

Other Reference Books:
1. RFC 2616 HTTP/1.1 Protocol
2. Servlet Specifications 3.0
3. "Web Technologies Black Book", Dreamtech Press, Edition 2010
4. Chuck Cavaness , "Programming Jakarta Struts", O'Reilly Publication 2nd Edition

Chapter wise Coverage from Text Book(s):

Book #	Chapters
1	8,9,10
2	3 (except 3.5, 3.7, 3.8), 4 (only 4.2), 5(only 5.1, 5.3, 5.6 and 5.7), 6(except 6.4), 7(only 7.1, 7.2 and 7.5), 8(only 8.1, 8.3, 8.4, 8.6, 8.7, 8.11), 9((only 9.1, 9.3, 9.5, 9.7), 10(only10.6), 11, 12, 13, 14, 15, 16, 17
3	3, 4, 5, 6, 7, 9, 10(except 10.2), 11(only 11.1)

Note: Unit 10 is about new features of Servlets 3.0 and this topic is not covered in the main reference books hence would require material from the Web. Also, the required things are available in Suggested Additional Reading Item no. 2 – "Servlet specification 3.0".