

Year: B. Tech III (Semester V)

Subject Name: Enterprise Application Development
Type of course: Professional Elective I
Prerequisite: Java Programming

Subject Code: BTCO14506

Rationale: Web application based on Java uses Servlet, JSP, JSF. To store the data database connectivity and database JDBC component is needed. Networking components are needed to transfer data over network. Model-View-Controller (MVC) architecture gives flexibility and makes the web applications loosely coupled.

Teaching and Examination Scheme:

Teaching Scheme				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TPE	CA3	
3	0	2	4	60	25	15	30	20	150

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	Total Hrs
1	Java Networking, WebSocket : Network Basics and Socket overview, TCP/IP client sockets, URL, TCP/IP server sockets, Datagram, java.net package Socket, ServerSocket, InetAddress, URL, URLConnection, Developing a WebSocket server endpoint, Developing WebSocket clients	04
2	JDBC Programming & Hibernate 4.0 : The JDBC Connectivity Model, Database Programming: Connecting to the Database, Creating a SQL Query, Getting the Results, Updating Database Data, Error Checking and the SQLException Class, The SQLWarning Class, The Statement Interface, PreparedStatement, CallableStatement The ResultSet Interface, Updatable Result Sets, JDBC Types, Executing SQL Queries, ResultSetMetaData, Executing SQL Updates, Transaction Management.	08



	Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Hibernate O/R Mapping, Hibernate Annotation, Hibernate Query Language	
3	Servlet & Java Server Pages : Servlet Model: Overview of Servlet, Servlet Life Cycle, HTTP Methods Structure and Deployment descriptor ServletContext and ServletConfig interface. Attributes in Servlet, Request Dispatcher interface The Filter API: Filter, FilterChain, Filter Config Cookies and Session Management: Understanding state and session, Understanding Session Timeout and Session Tracking, URL Rewriting JSP Overview: The Problem with Servlets, Life Cycle of JSP Page, JSP Processing, JSP Application Design with MVC, JSP Elements JSP Standard Tag Libraries, JSP Custom Tag	10
4	Java Server Faces2.0 Introduction to JSF, JSF request processing Life cycle, JSF Expression Language, JSF Standard Component, JSF Facelets Tag, JSF Converter Tag, JSF Validation Tag, JSF Event Handling and Database Access, JSF Libraries: PrimeFaces	06
5	Java Web Frameworks: Spring MVC & Spring Boot MVC Overview of Spring, Spring Architecture, bean life cycle, XML Configuration on Spring, Aspect – oriented Spring, Managing Database, Managing Transaction	06
6	Restful Web Services with JAX-RS Introduction, Developing a simple RESTful web service, Developing a RESTful web service client, Query and path parameters, Server sent events Microservices development with Java EE Introduction to microservices, Microservices and Java EE, Developing Microservices with Java EE Web services with JAX-WS Developing web services with JAX-WS, Exposing EJBs as web services	07
7	JSONprocessing with JSON-P and JSON-B The JSON-P model API, The JSON – P streaming API, JSON pointer, JSON patch Populating Java Objects from JSON with JSON-B Generating JSON strings from Java objects with JSON-B	04

Suggested Specification table with Marks (Theory): (For B.Tech only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	40	20	--	--	--

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





Reference Books:

Sr No	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication / Publication Edition
1	Java EE 8 Application Development	David Heffelfinger	Packt	Latest Edition
2	Java EE and HTML 5 Enterprise application development	John brock, Arun Gupta, Geertjan wpelenga	McGrawhill Oracle	
3	Black Book “ Java server programming” J2EE	Kathy walrath	Dream Tech Publishers, 2008. 3.	
4	Complete Reference J2EE	James Keogh	mcgraw publication	
5	Professional Java Server Programming	Subrahmanyam Allamaraju	Cedric Buest Wiley Publication	
6	SCWCD	Matthew Scarpino, Hanumant Deshmukh, Jignesh Malavie	Manning publication	
7	Core Java, Volume II: Advanced Features	Cay Horstmann and Gary Cornell	Pearson Publication	
8	Java Persistence with Hibernate	Christian Bauer	Gavin King	
9	Spring in Action	Craig walls	Manning Publication	
10	Hibernate	Jeff Linwood and Dave Minter	Beginning Après publication	
11	Java Server Faces in Action	Kito D. Mann	Manning Publication	
12	JDBC™ API Tutorial and Reference	Maydene Fisher, Jon Ellis, Jonathan Bruce	Addison Wesley	
13	Beginning JSP, JSF and Tomcat	Giulio Zambon	Apress	
14	JSF2.0 CookBook,	Anghel Leonard,	PACKT publication	

Course Outcomes: Students will be able to

Sr. No.	CO statement	Marks % weightage





CO-1	Implement and analyze the concepts of network programming using Java.	10%
CO-2	Execute Java Database Program using JDBC and Hibernate.	20%
CO-3	Describe the basics of Web Application and Implement server side programming with Java Servlet and JSP.	30%
CO-4	Utilize JSF to design web pages.	10%
CO-5	Demonstrate the Spring MVC Architecture.	15%
CO-6	Develop Micro services and Restful Web Services	15%

List of Open learning website:

1. <https://www.tutorialspoint.com/>
2. <https://www.geeksforgeeks.org/introduction-java-servlets/>
3. <https://www.javatpoint.com/java-tutorial>
4. <https://docs.oracle.com/javase/tutorial/>

List of Open Source Soft

JDK (Java Development Kit)
Eclipse IDE
NetBeans
IntelliJ IDEA 13.1
Oracle JDeveloper
Tomcat Apache
JBoss
Glassfish
Weblogic
Visual Studio Code
MySql

FOR LAB SESSIONS:

List of Experiments:

Sr. No.	Practical
1	Write a program to implement the connection oriented echo client server application
2	Develop chat application using websocket.
3	Implement TCP Server for transferring files using Socket and ServerSocket .
4	Write an application using websocket, where client supplies the string arguments and server responds the number of character, number of words and number of digits in given string.





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5	Write a program which prints the student_name and id_no from the database in reverse order, and insert the two new rows
6	Implement the Hibernate Application to store the student registration details.
7	Write a Java Servlet for login process. The servlet should accept the user name and password from user and if match then it should display login successful then it should display one page Welcome username and if it is unsuccessful then it should display one page of login unsuccessful. Use response.redirected method.
8	Write a JSP application for Student registration form, which stores the Student name and student id as cookies. (Add, Modify, Delete Student detail)
9	Implement web application using JFS that takes the Username and password from user and if it is a valid username prints "Welcome Username".
10	Implement application using Spring MVC to store and retrieve the customer detail.
11	Develop a Restful web service for user management with username and profession.

