

**Year: B. Tech IV (Semester VII)**

**Subject Name:** Advanced Web Technology

**Subject Code:** BTCO19725

**Type of course:** Honors (Group: Full Stack Developer)

**Prerequisite (if any):** Basic knowledge of Internet and Client Server system is required, HTML, Java Script, Dynamic Web Programming

**Rationale: (should also include Description of the relevance of this course in the Program)**

**Teaching and Examination Scheme:**

Teaching Scheme				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
4	0	2	5	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	Refreshing HTML,CSS and Java Script : HTML Tags, CSS syntax, Responsive design, Bootstrap introduction, Java script syntax, Java script inbuilt objects, Error handling and event handling, DOM, Asynchronous Programming, JSON, jquery	5
2	Introduction to React : What is React? Why React? React version history,React 16 vs React 15, Using create-react-app,Anatomy of react project,Running the app,Debugging first react app, What is SPA(Single Page Application) , JSX ,state and props,Stateful and Stateless components,CSS Modules,render() method,Lifecycle methods	7
3	ReactJS Component : Creating a React component , Creating a class component, Creating a function component,Create a React component with JSX	9

	template.Nested Components,Lists of Form components.Setup Controlled and Uncontrolled form components,React JS Form validations.	
4	Routing in React JS and React Router with Navigation. : Single Page Application Overview. How to configure React Router? History of Router How to Handle Conditional Statements in JSX? IIFE in JSX for complex logic overview.  EVENT HANDLING IN JSX	10
5	Introduction to Node JS Setup Node JS Environment, Package Manager, Features, Console Object, Concept of Callbacks	9
6	Node JS in details Events and Event Loop, timers, Error Handling, Buffers, Streams, Work with File System, Networking with Node (TCP, UDP and HTTP clients and servers), Web Module, Debugging, Node JS REST API, Sessions and Cookies, Design patterns, caching, scalability	10
7	Database Programming with Node JS and MongoDB Basics of MongoDB, Data types, Connect Node JS with MongoDB, Operations on data (Insert, Find, Query, Sort, Delete, Update) using Node JS	10

**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	20	15	5	5	5

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	The Complete Node.js Developer Course	By Andrew Mead and Rob Percival	Packt Publishing	March 2019	(3rd Edition)
2	Web Development with Node and Express: Leveraging the JavaScript Stack	Ethan Brown	O'Reilly	November 2019	Second Edition
3	Learning Angular JS	Matt Frisbie	Infinite Skills	March 2014	
4	Web Technology	Moseley and Savaliya	Wiley India		
5	Web Programming with HTML5, CSS, and JavaScript	John Dean	Jones & Bartlett Learning	January 2018	

**Course Outcomes:**

Sr. No.	CO statement	Marks % weightage
CO-1	Learn the concepts of client side programming using CSS and JavaScript	10
CO-2	Understand the concepts of Angular JS to extend basic HTML features	20
CO-3	Learn Node JS framework to build dynamic server side applications	30
CO-4	Study the concept of database using Mongo DB and connect database with application.	20
CO-5	Design and implement full featured web application using the concepts of Angular JS and Node JS	20

**List of Open learning website:**

**List of Open Source Software:**

1. Express.js
2. Geddy
3. Locomotive



4. Koa
5. Total.js

**FOR LAB SESSIONS:**

**List of Experiments:**

Sr. No.	Practical
1	Develop a simple web page using the latest HTML5 and CSS3
2	Demonstrate DOM, how to manipulate DOM with Javascript
3	Design login and Registration page using ReactJS.
4	Create single page website using React JS
5	Demonstrate open-source document database, and NoSQL database aka MongoDB
6	Demonstrate establishing connections with a MongoDB database
7	Perform the normal operations of reading data from a database as well as inserting, deleting, and updating records in a MongoDB database
8	Develop program to execute CRUD - write queries to create, read, update and delete operations using NodeJS and MongoDB
9	Use "Node JS" and "MongoDB" together to make use of the Employee collection in the MongoDB EmployeeDB database and display on to web page
10	Develop an application to call web service of Node JS.

**Major Equipment Needed: Nil**

