SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Bachelor of Technology

Year: B. Tech III (Semester VI)

Subject Name: Advanced Web Technology **Subject Code:** BTIT14603
Type of course: Professional Elective Course
Prerequisite: Web Technologies

Rationale: Today's world is driven by Internet based applications. The rationale behind this course is to impart the knowledge of java script-based framework for web programming among students of Information Technology. Students will learn advanced web programming concepts related to Java script, React JS, Node JS, and MongoDB.

Teaching and Examination Scheme:

Teaching Scheme				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	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.	Contents	Total Hours
1.	**Refresing Javascript and CSS** CSS syntax, benefits, Responsive design, Bootstrap introduction, Java script syntax, Java script inbuilt objects, Error handling and event handling, DOM, Asynchronous Programming	08
2.	**React JS** Pure React, Props, State and the Component Tree, React Router, React Hooks, React Context, React Error Boundaries	12
3.	**Node JS** Introduction, File Access, Rest API, Events and Event Loop, timers, Error Handling, Networking	10
4.	**Express JS** Basics, Routing, Middleware, Template Engine	05
5.	**Mongo DB** Introduction to MongoDB,Mapping Relational database to MongoDB, MongoDB installation and configuration in Windows, MongoDB Create database, MongoDB Drop Database, MongoDB Create collection, MongoDB Drop collection ,MongoDB Insert	05

	Document, MongoDB Query Document, MongoDB Update Document,Delete document in MongoDB	
6.	**Single Page Applications** Introduction to single page applications, designing and developing single page applications using MERN stack.	**05**

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**
15	15	15	10	5	5

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

Reference Books:

Sr. No	**Title of Book /Article**	**Author(s)**	**Publisher and details like ISBN**
1	Node.js in Action	Alex Young, Bradley Meck, Mike Cantelon, Tim Oxley, Marc Harter, T.J. Holowaychuk, Nathan Rajlich	Manning Publications
2	Node.Js in Practice	Alex Young, Marc Harter, Ben Noordhuis	Manning Publications
3	Professional Node.js	Pedro Teixeira	Wiley
4	The Road to Learn React: Your Journey to Master Plain Yet Pragmatic React.Js	Robin Wieruch	Wiley
5	MongoDB Cookbook	Cyrus Dasadia , Amol Nayak	Packt Publication

Note: Students should refer to the latest editions of books

Course Outcomes (CO):

Sr. No.	**CO statements**	**Marks % weightage**
CO-1	Explain the concepts of client-side programming using CSS and Java Script	10 %
CO-2	Apply the concepts of React JS to extend basic HTML features	30 %
CO-3	Utilize Node JS framework to build dynamic server-side applications	30 %

CO-4	Build the Applications utilizing functionalities of Databases like Mongo DB.	20 %
CO-5	Design and implement full featured single page application using MERN Stack.	10 %

List of Open learning website:

- https://www.freecodecamp.org/news/learn-the-mern-stack-tutorial/
- https://www.udemy.com/course/fullstack-mern-web-development-free-content/

List of Open-Source Software:

- Visual Studio Code
- Node JS
- React JS
- Mongo DB

List of Experiments:

Sr. No	Practical Statements
1.	Create a simple guess for the number type game. It should choose a random number between 1 and 100, then challenge the player to guess the number in 10 turns. After each turn the player should be told if they are right or wrong, and if they are wrong, whether the guess was too low or too high. It should also tell the player what numbers they previously guessed. The game will end once the player guesses correctly, or once they run out of turns. When the game ends, the player should be given an option to start playing again.
2.	Create a Hello World Web Page using React JS.
3.	Create a Sign-Up Form in React JS. The Sign-up form should ask for Name, Mobile, Email, Address, Date of Birth, Gender, Username, Password and Confirm Password. The Form should have two buttons, one for reset and one for submitting. The Submit Button should be enabled only when all the input values are validated.
4.	Develop a simple application using React.js where a user can Add/Delete notes. Each note timestamped as well.
5.	Create a to-do list application using react-context.

6. Create a Hello World Nodejs Application.

7. Create an Http Server which will respond with message "Welcome to the World of Nodejs" to the client.

8. Create an Http Server which will respond with current date and time to the client.

9. Demonstrate the working of cookies and sessions in nodejs.

10. Create a Signup Web Applications using React JS,nodejs and express framework.
The Sign-up form should ask for Name, Mobile, Email, Address, Date of Birth, Gender, Username, Password and Confirm Password. The Form should have two buttons, one for reset and one for submitting. The Submit Button should be enabled only when all the input values are validated. Upon Clicking the Submit Button Your webpage should traversed to a route "/process_request" which is defined using NodeJS and express framework and which will display the contents back to the client and insert all the data to the database made in mongo dB.

11. Create a Single Page Application using MERN Stack.