Syllabus for B.Tech (CSE) III YEAR II SEM
Computer Science and Engineering
WEB TECHNOLOGIES

Code: 9FC06
Prerequisite: Object-Oriented Programming concepts, Computer Networks

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Course Objective:
Impart the concepts of HTML5, Tailwind CSS, MERN stack and design web applications.

Course Outcomes:
After completion of this course student will be able to:

1. Demonstrate HTML5 concepts,CSS3 syntax and Tailwind CSS framework [L2]-U1
2. Illustrate and apply JavaScript: data types, functions, objects and advanced javascript concepts. [L2,L3]-U2
3. Discuss MERN components and Node modules.[L2]-U3
4. Build HTTP web server and explain REST API.[L3,L2]-U4
5. Develop Express framework application, connecting and accessing MongoDB database with Node. [L4]-U5
6. Illustrate ReactJS features, build and deploy react application.[L2,L3]-U6

UNIT I
HTML 5: Semantic Elements, Web storage API, HTTP status codes.
CSS 3: Syntax structure, types, box model, Grid, Flexbox. Responsive Web Design using Media Queries, use of viewport, Transition, Animation.
CSS Framework: Tailwind css

UNIT II
JavaScript: Introduction to JavaScript, data types, functions, Arrays, Objects, Regular expressions
Advanced JavaScript concepts: let, const, arrow functions, destructuring, spread, rest, Prototypal Inheritance, Closure, understanding callbacks, Promise, Async/await.

UNIT III
Introduction to MERN: What is MERN?, MERN components, Server-Less Hello World, Server setup.
Node JS: Introduction to Node.js, REPL, Node Modules: events, OS, HTTP, file i/o, environment variables, dot env

UNIT IV
Web Servers: client-server architecture**,** request-response objects, creating a basic HTTP server
Rest API: Introduction to RESTAPIs, HTTP verbs

UNIT V
Express Framework: Introduction to Express, Installation of Express, Create first Express application, application, request, and response objects, configuring an Express application, Rendering views, sessions, forms, file upload. Connecting to an SQL database

MongoDB: Introduction to MongoDB, connecting to a MongoDB instance with Node, Reading from MongoDB, Writing to MongoDB.

UNIT VI

Introduction to ReactJS: History of Front – end libraries, Motivation for using React, Key differentiators (Virtual DOM, one – way binding), React Components, JSX, props hooks, state, events, effects, fetching data from API using fetch, form validations, React Router, building and deploying react application.

TEXTBOOKS:

1. Beginning HTML, XHTML, CSS, and JavaScript, Jon Duckett, Wrox Publications, 2010
2. Pro MERN Stack, Full Stack Web App Development with Mongo, Express, React, and Node, Vasan Subramanian, 2nd Edition, A Press.

REFERENCES:

1. E – resource: https://nodejs.org/en/docs/
2. E – resource : https://reactjs.org/
3. E – resource :https://tailwindcss.com/
4. E – resource :https://expressjs.com/
5. E – resource :https://web.dev/learn/css
6. E – resource :https://web.dev/learn/html