

## MERN STACK COURSE SYLLABUS

### **SECTION 1: HTML 5**

- Introduction - Web
- What are the different Types of Web Apps overview?
- Introduction to HTML
- Define HTML Structure
- Difference between Tag vs Element
- Difference between Semantic vs Non-semantic elements
- Difference between Block level elements vs Inline elements
- HTML Elements
- HTML Forms & its Attributes
- HTML Input Elements
- HTML Global Attributes
- HTML Element Specific Attributes

### **SECTION 2: CSS & Bootstrap**

- What is CSS?
- Understanding the CSS Syntax.
- CSS Selectors
- How To Add CSS in HTML
- CSS Colors & Backgrounds
- CSS Borders, Margins, Padding, Height and Width
- Responsive Web Design – Media queries
- What is Bootstrap?
- Get Start with Bootstrap
- Containers
- Grid System
- Structure of a Bootstrap Grid
- Bootstrap Colors
- Bootstrap Tables

- Bootstrap Jumbotron
- Bootstrap Alerts, Bootstrap Buttons

### **SECTION 3: JavaScript**

- Introduction – Javascript
- JavaScript Events
- JavaScript Functions
- Inbuilt methods in JS
- Arrays in JavaScript
- Objects in JavaScript
- Conditional and loops in JavaScript
- HTML DOM Manipulation

### **SECTION 4: ES6 JavaScript**

- History of JavaScript
- Features
- let & const and its example
- Arrow Functions
- Alternative
- Tips and Arrow Functions
- Exports and Imports
- Tips for exports and imports
- Classes
- Classes example
- Inheritance
- Spread and rest Parameter
- Destructing

### **SECTION 5: Getting Started with React**

- What is ReactJS?
- Installation or Setup
- Create React App

- Advantages Of React JS
- Workflow Of React JS
- Node Setup
- How to use NPM and its purpose
- ES6 Introduction
- JS vs JSX vs TS vs TSX

## **SECTION 6: Components**

- Creating Components
- Basic Component
- Nesting Components
- Higher order components

## **SECTION 7: Overview OF JSX**

- Introduction of Virtual DOM.
- Difference between JS and JSX.
- Why use JSX?
- JSX Attributes
- JSX Styling

## **SECTION 8: Props in React**

- Introduction
- Default props
- PropTypes
- Passing down props using spread operator
- Props.children and component composition
- Detecting the type of Children components
- Props Drilling

## **SECTION 9: State in React**

- Basic State
- Common Antipattern

- setState()
- State, Events And Managed Controls

## **SECTION 10: React Component Lifecycle**

- Component willmount
- Component UnMount
- Component Update
- Lifecycle method call in different states
- React Component Container

## **SECTION 11: Handling Events**

- Event handling in React
- Binding event handlers
- Arrow functions vs. regular functions
- Primary Events
- Sharing the events between components

## **SECTION 12: Communicate Between Components**

- Child to Parent Components
- Parent to Child Components
- Not-related Components

## **SECTION 13: Conditional Rendering**

- Conditional rendering with if statements
- Conditional Rendering using logical && in JSX
- Conditional Rendering using ternary operator
- Preventing Component from Rendering

## **SECTION 14: Lists and Keys**

- Steps to Create and Traverse React JS Lists
- Rendering lists inside Components
- Key in React List

## SECTION 15: React JS Keys

- What is a key in React ?
- Assigning keys to the list
- Difference between keys and props in React

## SECTION 16: React Hooks

- useState()
- useEffect()
- useContext()
- useRef()
- useReducer()
- Custom React Hooks
- useDispatch(), useSelector, useMemo, useEffect()

## SECTION 17: Styling in React

- CSS in React
- Different approaches for styling (CSS, CSS-in-JS, CSS Modules)
- Inline styles
- Styling Libraries
- Popular CSS frameworks (e.g., Bootstrap, Material-UI)

## SECTION 18: Router

- Introduction to React Router
- Setting up React Router
- Creating routes
- Navigating with React Router
- Using Link and NavLink
- Nested Routes and Dynamic Routing
- Nested routes
- Passing parameters to routes
- Query String, accessing current URL

## **SECTION 19: React JS forms**

- React Forms
- Lists of Form components
- Control Input elements.
- Controlled and Uncontrolled form components
- Adding Forms in React
- Handling React Forms
- Submitting React Forms
- Multiple Input Fields
- React JS Form validations
- Custom Validations

## **SECTION 20: State Management with Redux**

- Introduction to Redux
- Understanding the need for state management
- Basic concepts: actions, reducers, store
- Setting Up Redux
- Installing Redux and setting up a store
- Creating actions and reducers
- Connecting React with Redux
- Using connect to connect components to the store
- Dispatching actions

## **SECTION 21: Asynchronous Programming and API Integration**

- AJAX and Fetch API
- Making HTTP requests in React
- Fetching data from an API
- Async/Await and Promises

## **SECTION 22: Handling errors in React application**

- Error Handling and Debugging

- Debugging React apps
- Performance Optimization
- Memoization
- React.memo and PureComponent

### **SECTION 23: React JS Virtual DOM**

- What is DOM ?
- Disadvantages of real DOM
- Virtual DOM
- How does virtual DOM actually make things faster?
- How virtual DOM Helps React?
- Virtual DOM Key Concepts
- Differences between Virtual DOM and Real DOM

### **SECTION 24: Unit Testing Overview**

### **SECTION 25: Lazy Loading**

### **SECTION 26: Code Splitting**

### **SECTION 27: Server-Side Rendering**

### **SECTION 28: Micro FrontEnd Overview**

### **SECTION 29: Deploying a React application**

### **SECTION 30: Getting Started with Node Js**

- Welcome Preview
- What is Node Preview
- Node Architecture Preview
- How Node Works Preview
- Installing Node Preview
- Your First Node Program

## **SECTION 31: Understanding Node Module System**

- Introduction
- Creating a Module
- Loading a Module
- Modules and modularity
- Global Object
- OS Module
- Path Module
- File System Module
- Events Module
- HTTP Module

## **SECTION 32: Node Package Manager**

- Introduction to NPM
- Installing a Node Package
- NPM Packages and Source Control
- Semantic Versioning
- Registry Info for a Package
- How to install specific version of the package
- How to update Local Packages
- Uninstall the packages
- Dev Dependencies
- Publishing Package

## **SECTION 33: Asynchronous Programming**

- What is Asynchronous Programming in JavaScript?
- Synchronous vs Asynchronous
- JavaScript EventLoop
- Callbacks
- Callback Hell
- Promises in JavaScript



- Promise Chaining
- Async Await

### **SECTION 34: Rest API & HTTP**

- What is HTTP
- Understand how HTTP works?
- List of HTTP response codes
- HTTP Module in Node
- HTTP Methods - GET, POST, PUT & DELETE
- Processing Form Data
- Sending response back to Server

### **SECTION 35: Understanding Express JS**

- What is Express JS?
- Installing Express JS
- Creating HTTP Server
- Nodemon
- Environment Variables
- Routing
- Route Parameters
- Handling Multiple Routes
- Input Validation
- Handling HTTP Method - Get, Post, Put & Delete using Express

### **SECTION 36: MongoDB & Mongoose**

- What is MongoDB
- MongoDB Advantages
- Installing MongoDB
- Mongoose ODM
- Schemas
- Models
- Documents

- Saving a Document
- Querying Documents
- Logical & Comparison Query Operators
- Regular Expressions
- Counting
- Pagination
- CRUD Operations in MongoDB using Mongoose and Express

### **SECTION 37: Data Validation in MongoDB**

- Understanding Validation in MongoDB
- Built-in Validators
- Custom Validators
- Validation Errors

### **SECTION 38: Authentication and Authorization**

- Introduction
- User Model
- User Registration
- Hashing Passwords
- Authenticating Users
- JSON Web Token
- Generating Authentication Tokens
- Setting Response Headers
- Auth Protect Middleware
- Protecting Routes
- Role-based Authorization

### **SECTION 39: Handling Errors**

- Introduction
- Express Async Errors
- Logging Errors

## **SECTION 40: Deployment**

- Preparing the App for Production
- Adding the Code to a Git Repository
- Setting Environment Variables

## **SECTION 41: Real Time Projects**

- 5+ Real-time projects (Full stack coverage)
- Setup Git for local repository
- Create a GitHub account
- Sync the code base with GitHub repo
- Firebase Hosting Overview
- Setting up Firebase in local
- Host your project in Firebase

## **SECTION 42: Placements**

- Build your Professional Resume
- Update LinkedIn Profile
- Interview based Training – GD, Tech round, HR panel
- Minimum 5 Mock interviews before Real interview
- 100% Placement Guaranteed
- Join your Dream Job