

Course Content / Outline

Course Name: MERN Stack Development

Week	Course Content / Outline	Hours Required	Resource Required
Week 01	<p>Day 01: Introduction to HTML and Basic HTML Tags</p> <ul style="list-style-type: none">• What is HTML?• HTML syntax and structure• HTML document structure (head, title, body)• Basic HTML tags and attributes (headings, paragraphs, links, images) <p>Day 02: Advanced HTML and Basic CSS</p> <ul style="list-style-type: none">• Lists (unordered and ordered)• Tables• Forms and inputs• Introduction to CSS• CSS syntax• Selectors and combinators• CSS properties and values• Box model (margin, padding, border)• Backgrounds and borders• Positioning and layout <p>Day 03: Introduction to Bootstrap</p> <ul style="list-style-type: none">• What is Bootstrap?• The Bootstrap grid system• Typography and text utilities• Buttons and forms		
Week 02	<p>Day 01: Introduction to JavaScript Control Flow</p> <ul style="list-style-type: none">• What is JavaScript?• JavaScript history and evolution• How to run JavaScript code• Basic syntax and data types• Variables and operators• Conditionals (if/else statements)• Loops (for, while, do while) <p>Day 02: JavaScript Functions Arrays and Objects</p> <ul style="list-style-type: none">• Functions (declaration, expressions, parameters, arguments)• Arrays (declaration, access, manipulation)• Objects (declaration, properties, methods)• JSON format		

	Day 03: Introduction to ES6 <ul style="list-style-type: none"> • What is ES6? • Block scoping (let, const) • Arrow functions • Template literals • Default parameters and rest/spread operators • For..of & For..in 		
Week 03	Day 01: Introduction to DOM Manipulation with Vanilla JS <ul style="list-style-type: none"> • What is the DOM? • Accessing and manipulating DOM elements • Handling events • Modifying element styles and attributes • Creating and deleting DOM elements Day 02: Advanced DOM Techniques with Vanilla JS <ul style="list-style-type: none"> • Traversing the DOM • Working with forms • Using timers and intervals • Animation with CSS and JavaScript Day 03: Callbacks and Promises <ul style="list-style-type: none"> • What are callbacks? • Passing functions as arguments • Higher order functions • Using callbacks for asynchronous programming • What are promises? • Creating and using promises • Chaining promises • Handling promises rejections 		
Week 04	Day 01: Introduction to Node.js and Server-side Programming <ul style="list-style-type: none"> • What is Node.js and why use it? • Installing Node.js and setting up a development environment • Understanding server-side programming basics • Creating a simple "Hello, World!" server using Node.js • Understanding HTTP requests and responses • Creating routes for different HTTP requests using Node.js • Handling URL parameters in Node.js 		

	<p>Day 02: Introduction to NPM and Managing Dependencies</p> <ul style="list-style-type: none"> • What is NPM and why use it? • Installing packages using NPM • Creating a package.json file • Updating and removing packages <p>Day 03: Introduction to Express.js and Routing Basics</p> <ul style="list-style-type: none"> • What is Express.js and why use it? • Installing Express.js • Creating routes for different HTTP requests using Express.js • Handling route parameters in Express.js 		
Week 05	<p>Day 01: Introduction to MongoDB and NoSQL Databases</p> <ul style="list-style-type: none"> • Understanding MongoDB and NoSQL databases • Installing MongoDB and setting up a database • Creating collections and documents in MongoDB • Understanding CRUD operations in MongoDB • What is Mongoose and why use it? • Installing Mongoose and connecting to a MongoDB database • Creating a schema for a database model • Understanding Mongoose validation <p>Day 02: Performing CRUD Operations with Mongoose</p> <ul style="list-style-type: none"> • Understanding how to create, read, update, and delete data using Mongoose. • Querying and filtering data in MongoDB with Mongoose • Understanding the difference between save() and update() <p>Day 03: Creating a RESTful API with Node.js, Express.js, and MongoDB</p> <ul style="list-style-type: none"> • Understanding RESTful APIs and why use them • Creating routes for different HTTP requests using Node.js and Express.js • Performing CRUD operations on MongoDB using Mongoose • Testing the RESTful API using tools like Postman 		

Week 06	<p>Day 01: Introduction to React</p> <ul style="list-style-type: none"> • What is React? • The benefits of using React • Understanding the virtual DOM and JSX • Creating a simple React component <p>Day 02: Props, State and Component Lifecycle</p> <ul style="list-style-type: none"> • Understanding the difference between props and state • How to use props and state in a React component • Updating state with setState • Understanding the component lifecycle in React • Using lifecycle methods such as componentDidMount, componentDidUpdate, and componentWillUnmount <p>Day 03: Handling Events and Introduction to React Router</p> <ul style="list-style-type: none"> • Understanding how to handle events in React • Binding event handlers • Using arrow functions for event handlers • What is React Router? • Setting up React Router in a project • Creating routes in a React application 		
Week 07	<p>Day 01: Introduction to React Hooks</p> <ul style="list-style-type: none"> • What are React Hooks? • Understanding how to use useState and useEffect hooks • Using the useContext and useReducer hooks <p>Day 02: Advanced React Hooks</p> <ul style="list-style-type: none"> • Using the useMemo and useCallback hooks • Creating custom hooks • Best practices for using React Hooks <p>Day 03: Building a Full-Stack MERN Application</p> <ul style="list-style-type: none"> • Integrating React, Express, and MongoDB • Setting up the project structure • Creating the backend API 		

Week 8	<p>Day 01: Frontend Integration with Backend</p> <ul style="list-style-type: none">• Connecting the React frontend to the backend API• Creating components to display data from the API• Handling errors and loading states <p>Day 02: Introduction to Git and version control</p> <ul style="list-style-type: none">• Understanding what is Git and its advantages• Installing Git• Creating a Git repository <p>Day 03: Using Git with GitHub</p> <ul style="list-style-type: none">• Understanding how to use GitHub for collaboration.• Creating a GitHub repository• Pushing code to GitHub		
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