

Roadmap to Learn Web Development with the MERN Stack

Phase 1: Web Development Fundamentals (2 Weeks)

HTML & CSS (3–4 Days)

- • Semantic HTML5 (Forms, Media, Accessibility)
- • CSS3 (Flexbox, Grid, Box Model, Selectors)
- • Responsive Design (Media Queries)
- • Tools: freeCodeCamp HTML/CSS, MDN Docs
- • What to Learn: Forms, Inputs, Tables, Semantic Tags, Flex/Grid, Units, Media Queries

Important HTML Tags

- • <html>, <head>, <title>, <body>
- • <h1>–<h6> (Headings), <p>, , <div>
- • <a>, , <video>, <audio>, <iframe>
- • , , , <table>, <tr>, <td>, <th>
- • <form>, <input>, <label>, <textarea>, <select>, <option>, <button>
- • Semantic: <header>, <footer>, <main>, <nav>, <section>, <article>, <aside>
- • <meta>, <link>, <script>, <style>

JavaScript Basics (4–5 Days)

- • Variables (var, let, const), Data Types
- • Functions, Loops, Conditionals
- • Arrays, Objects, and Methods
- • DOM Manipulation, Event Listeners
- • ES6+ Features (Arrow functions, Destructuring, Template literals)
- • What to Learn: Scope, Hoisting, Promises, Async/Await, Callbacks, Closures
- • Tools: JavaScript.info, Eloquent JavaScript

Git & GitHub (2 Days)

- • Version Control Basics
- • Git CLI (add, commit, push, pull, branch)
- • Creating and collaborating on GitHub repositories
- • What to Learn: Rebase, Merge, Pull Requests, Conflict Resolution

Phase 2: Frontend with React.js (1.5 Weeks)

React Basics

- • Create React App / Vite setup
- • Components, Props, State
- • Event Handling, JSX Syntax
- • React Dev Tools
- • What to Learn: Virtual DOM, Component Lifecycle, Props Drilling

React Advanced

- • React Router DOM
- • React Hooks (useState, useEffect, useRef, useContext)
- • Conditional Rendering & Lists
- • Lifting State Up

Styling

- • Tailwind CSS / CSS Modules / Styled Components

Projects

- • Build a simple Todo App
- • Create a responsive portfolio site

Phase 3: Backend with Node.js and Express.js (1 Week)

Node.js

- • What is Node? Non-blocking I/O
- • Core Modules (fs, path, http)
- • NPM Packages & Package.json
- • What to Learn: Event Loop, File System, Module System

Express.js

- • Setting up an Express server
- • Middleware, Routing
- • REST API fundamentals (CRUD operations)
- • Handling JSON requests, Error handling
- • What to Learn: Routers, Middleware stack, Express Generator

Project

- • Simple REST API for a Task Manager

Phase 4: Database with MongoDB (1 Week)

MongoDB Basics

- • NoSQL vs SQL
- • CRUD operations in MongoDB
- • MongoDB Compass GUI
- • What to Learn: Document Structure, Collections, Indexing

Mongoose (ODM)

- • Connecting Node.js to MongoDB
- • Schema design & Models, Queries & Validation
- • Relationship (populate, ref)
- • What to Learn: Virtuals, Middleware, Model Methods

Project

- • Blog backend with Express & MongoDB

Phase 5: Full-Stack Integration (1.5 Weeks)

Connecting Frontend with Backend

- • Axios / Fetch API for HTTP Requests
- • CORS and Middleware
- • Auth flows: Registration, Login, Logout
- • JSON Web Token (JWT) Authentication
- • Protecting Routes
- • What to Learn: Cookie vs Local Storage, Middleware Chaining

Deployment

- • Frontend: Vercel/Netlify
- • Backend: Render/Cyclic
- • Database: MongoDB Atlas
- • Environment Variables

Project

- • Full-stack Blog or E-commerce App

Phase 6: Advanced Topics (2 Weeks)

State Management

- Context API
- Redux Toolkit (optional)

Advanced MongoDB & Backend

- Pagination, Filtering, Search
- File Uploads (Multer, Cloudinary)
- Email Notifications

Performance

- Code Splitting in React
- Lazy Loading Components
- Debouncing

Testing

- Unit Testing (Jest)
- API Testing (Postman / Thunder Client)

Phase 7: Building Projects & Portfolio (Ongoing)

Mini Projects Ideas

- Recipe Finder
- Weather App (API based)
- Chat App using Socket.io

Capstone Projects

- E-commerce Platform with Admin Panel
- Social Media App with Authentication
- Course Selling Platform (with Razorpay/Stripe)

Portfolio

- Showcase your best 2–3 projects
- Use GitHub Pages or Vercel for hosting
- Add About, Projects, Blog sections