

Full Stack Development with MERN Bootcamp

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 Prepared by: Abdul Basit

 WhatsApp: 0307-5630721

◆ Module 1: Frontend Fundamentals with HTML & CSS (Weeks 1–4)

- Introduction to Web Development & Tools Setup
- HTML5 Essentials (Forms, Semantic Tags, Media, Accessibility)
- CSS3 (Selectors, Flexbox, Grid, Animations)
- Responsive Design with **Tailwind CSS**
- Mini Project: **Portfolio Website with Tailwind CSS**

◆ Module 2: Modern JavaScript & ES6+ (Weeks 5–8)

- JavaScript Basics (Variables, Functions, Loops, DOM, Events)
- ES6+ Features (Arrow Functions, Let/Const, Template Strings, Modules)
- Advanced JavaScript (Arrays, Objects, Higher-Order Functions)
- Fetch API & Async/Await
- Git & GitHub (Version Control, Branching, Collaboration)
- Mini Project: **Weather App using Fetch API**

◆ Module 3: React.js Fundamentals (Weeks 9–12)

- Introduction to React & Components
- JSX & Props
- State & Events
- React Hooks (useState, useEffect)
- Forms & Validation in React
- Tailwind + React Integration
- Mini Project: **To-Do App with React Hooks**

◆ Module 4: Advanced React Development (Weeks 13–16)

- React Router (Multi-Page Apps)
- Context API & State Management
- API Integration in React (REST APIs)

- Custom Hooks
- Introduction to Redux (Optional Advanced Topic)
- Mini Project: **Movie Search App (React + API Integration)**

◆ **Module 5: Backend Development with Node.js & Express.js (Weeks 17–20)**

- Introduction to Node.js & NPM
- Core Modules (fs, path, http, events)
- Express.js Basics (Routing & Middleware)
- REST API Development with Express
- Authentication with JWT & Sessions
- Error Handling & Validation
- Mini Project: **Blog API with Authentication**

◆ **Module 6: Database Management with MongoDB (Weeks 21–24)**

- Introduction to NoSQL & MongoDB
- MongoDB CRUD Operations
- Mongoose ORM Basics
- Relationships & Data Modeling in MongoDB
- Connecting MongoDB with Express.js APIs
- Mini Project: **Task Manager API with MongoDB**

◆ **Module 7: Full Stack Integration (Weeks 25–28)**

- Connecting React Frontend with Node.js + Express + MongoDB
- User Authentication System (Register/Login with JWT)
- Session Management & Cookies
- Role-Based Access Control (Admin/User)
- Real-Time Communication with Socket.io (Chat App Basics)
- Deployment (Frontend on Vercel, Backend on Render/Heroku, DB on MongoDB Atlas)
- Mini Project: **MERN Chat Application**

◆ **Final Project (Weeks 29–32)**

- Project Planning & Requirement Analysis

- Database Design & ERD Mapping
- Full MERN Stack Implementation
- API Integration (3rd Party APIs – Payment, Maps, Weather, etc.)
- Testing & Debugging
- Deployment (Live Full Stack App)
- Documentation & Presentation
- Final Project Showcase & Certification

