

MERN Stack Syllabus

<u>Web Basics</u>	<u>Advanced JavaScript</u>
<ul style="list-style-type: none"> • HTML5 (structure, forms, semantic tags) • CSS3 (selectors, box model, flexbox, grid) • JavaScript basics • ES6+ features • DOM manipulation • Events handling 	<ul style="list-style-type: none"> • Scope & Closures • Hoisting • Promises • Async/Await • Fetch API • Error handling • Modules (import/export)
<u>Git & GitHub</u>	<u>React.js (Frontend)</u>
<ul style="list-style-type: none"> • Git basics • Repository creation • Commit, push, pull • Branching & merging • GitHub workflow 	<ul style="list-style-type: none"> • React Introduction • JSX • Components (Functional & Class) • Props & State • Event handling • Conditional rendering • Lists & keys • React Hooks (useState, useEffect, useContext) • React Router • Form handling • API integration • Component lifecycle
<u>Node.js (Backend)</u>	<u>Express.js</u>
<ul style="list-style-type: none"> • Introduction to Node.js • Event loop • Modules (built-in & custom) • File system • HTTP module • NPM packages • REST API basics 	<ul style="list-style-type: none"> • Express setup • Routing • Middleware • Request & Response • REST API creation • Error handling • Authentication basics
<u>MongoDB (Database)</u>	<u>Authentication & Security</u>
<ul style="list-style-type: none"> • NoSQL database introduction • Collections & Documents • CRUD operations 	<ul style="list-style-type: none"> • JWT Authentication • Password hashing (bcrypt) • Cookies & Sessions

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<ul style="list-style-type: none">• Mongoose ODM• Schema & Models• Relationships (Embedding & Referencing)	<ul style="list-style-type: none">• Role-based access control• CORS
API Development	Deployment
<ul style="list-style-type: none">• REST API design• CRUD APIs• MVC architecture• Validation• Middleware usage• API testing (Postman)	<ul style="list-style-type: none">• Frontend deployment (Netlify / Vercel)• Backend deployment (Render / Railway)• MongoDB Atlas setup• Environment variables (.env)
Advanced Topics	Projects
<ul style="list-style-type: none">• Redux / Context API• Performance optimization• WebSockets (real-time apps)• File uploads (Multer)• Payment gateway integration	<ul style="list-style-type: none">• Todo App• Blog App• E-commerce Website• Chat Application• Authentication System• Full MERN Stack Major Project

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