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MERN Stack Roadmap & Syllabus

A popular stack for startups and product companies. React on the frontend, Node.js and Express on the backend, and MongoDB for data — all in JavaScript/TypeScript.

JavaScript · TypeScript · React · Next.js · Node.js · Express.js · MongoDB

FRESHERS & STUDENTS	EXPERIENCED (JOB SWITCHERS)	WORKING PROFESSIONALS
5–6 months	**3 months**	**3–6 months (alongside work)**

Durations are approximate and assume about 2–3 hours of focused study a day. Move faster or slower as you need — understanding matters more than speed.

Contents: 1. Freshers & Students · 2. Experienced (Job Switchers) · 3. Working Professionals · 4. Complete Syllabus

Freshers & Students

Starting from the basics and preparing for a first developer job.

Approximate duration: 5–6 months — From JavaScript basics to a deployed React + Node.js + MongoDB application.

1 HTML, CSS & JavaScript — 5 weeks

- Responsive layouts with Flexbox and Grid
- JavaScript fundamentals and DOM
- Async JavaScript and fetch

Milestone: Build an interactive, responsive web page that calls a public API.

2 React Fundamentals — 6 weeks

- Components, props and state
- Hooks and side effects
- Forms and React Router
- Context for shared state

Milestone: Build a multi-page React app with forms and API data.

3

Node.js, Express & MongoDB

5 weeks

- REST APIs with Express
- MongoDB with Mongoose
- JWT authentication
- Validation and error handling

Milestone: Build a secure API and connect it to your React app.

4

Full Project & Interview Prep

4 weeks

- Complete and deploy a full project
- React and JavaScript interview questions
- Explaining your project
- Mock interviews

Milestone: Demo and explain a complete MERN application.

Projects to build

- Expense tracker with charts and authentication
- Job board with search, filters and applications
- Social media mini-app with posts, likes and comments

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Experienced (Job Switchers)

1–4 years of experience, preparing to switch jobs or move to a stronger role.

Approximate duration: 3 months — Master the React and Node.js depth expected in mid-level interviews.

1

Advanced React

4 weeks

- Rendering, reconciliation and keys
- Memoisation and performance
- Custom hooks and patterns
- Error boundaries and Suspense

Milestone: Find and fix unnecessary re-renders in a real app.

2

State, Data & Next.js

3 weeks

- Redux Toolkit or Zustand
- TanStack Query caching
- Next.js App Router, SSR and SSG
- Server vs client components

Milestone: Choose a rendering and state strategy and explain why.

3

Node.js & MongoDB Depth

3 weeks

- Event loop and async patterns
- API security and rate limiting
- Schema design, indexes, aggregation
- Testing APIs

Milestone: Design a scalable API and data model for a feature.

4

Interview Readiness

2 weeks

- JavaScript output and closure questions
- Machine-coding rounds in React
- Project scenario questions
- Mock interviews

Milestone: Complete a timed machine-coding round confidently.

Projects to build

- Next.js e-commerce with SSR product pages
- Real-time collaboration board with WebSockets
- Admin dashboard with role-based access and analytics

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Working Professionals

Working developers upskilling toward senior, lead or architect responsibilities.

Approximate duration: 3–6 months (alongside work) — Lead React and Node.js architecture, performance and quality across a team.

1

Frontend Architecture

4–6 weeks

- Design systems and component libraries
- Monorepos (Turborepo/Nx)
- Micro-frontends trade-offs
- Accessibility at scale

Milestone: Define frontend architecture standards for a team.

2

Backend & System Design

4 weeks

- API design and versioning
- Caching with Redis
- Queues and background jobs
- Scaling Node.js services

Milestone: Design a backend that handles growth without rewrites.

3

DevOps & Observability

3–4 weeks

- Docker and CI/CD
- Cloud hosting options
- Logging, metrics and tracing
- Performance budgets

Milestone: Run a production app with alerts and dashboards.

4

Leadership & AI Features

Ongoing

- Mentoring and code reviews
- Estimation and planning
- LLM features with the Vercel AI SDK or LangChain.js
- Responsible AI tool use

Milestone: Lead a feature from design to release.

Projects to build

- Shared component library with documentation
- Background job system with queues and retries
- AI chat assistant over your product documentation

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Complete MERN Stack Syllabus

Everything this track covers, grouped by topic. Use it as a checklist.

01 Web Fundamentals

- HTML5 and accessibility basics
- CSS, Flexbox and Grid
- Responsive design
- HTTP and browser basics

02 JavaScript & TypeScript

- Closures, this and prototypes
- Promises, async/await and the event loop
- ES6+ features and modules
- TypeScript types and generics

03 React

- JSX and components
- Props and state
- Hooks: useState, useEffect, useMemo, useCallback
- Custom hooks
- Forms and controlled inputs
- React Router

04 State & Data Fetching

- Context API
- Redux Toolkit or Zustand
- Data fetching with TanStack Query
- Loading and error states

05 Next.js

- App Router and layouts
- Server and client components
- SSR, SSG and caching
- API routes

06 Node.js & Express.js

- Express routing and middleware
- REST API design
- Validation (Zod/Joi)
- Error handling and logging

07 MongoDB

- CRUD and query operators
- Mongoose schemas and relations
- Indexes
- Aggregation pipeline

08 Auth, Testing & Deployment

- JWT and cookie-based auth
- Role-based access
- Jest and React Testing Library
- Deploying frontend and API

Roles this track prepares you for

MERN Stack Developer · React Developer · Node.js Developer · Full Stack Developer

Want a personal plan or interview preparation?

Visit rsquareitsupport.com or contact us: rsquareitsupport@gmail.com · +91 90190 83213 · +91 87679 68300.

Roadmaps are for learning guidance and do not guarantee jobs or placements.

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