



DEVELOPER GURU PRESENTS

MERN STACK

Complete Bootcamp Syllabus

MongoDB • Express.js • React.js • Node.js

24 Weeks

200+ Hours

6 Phases

30+ Projects

2 Capstones

A structured, project-driven curriculum designed to transform beginners into professional full-stack developers — ready for the job market.

Beginner Friendly

Hands-on Projects

Industry Curriculum

Job Ready

Table of Contents

Program Overview & Learning Outcomes	3
Phase 1 — Foundations: HTML, CSS & JS (Weeks 1–4)	4
Phase 2 — Node.js, Express & MongoDB (Weeks 5–8)	5
Phase 3 — React.js Frontend (Weeks 9–13)	6
Phase 4 — MERN Full Stack Integration (Weeks 14–17)	7
Phase 5 — DevOps, Deployment & Performance (Weeks 18–20)	8
Phase 6 — Capstone Projects & Career Prep (Weeks 21–24)	9
30+ Technology Skills Covered	10
Assessment, Grading & Certification	10
Contact Developer Guru	10



Program Overview & Learning Outcomes

Developer Guru's MERN Stack Bootcamp is a comprehensive, hands-on program designed to transform beginners into professional full-stack web developers. Each phase builds on the previous, reinforcing concepts through weekly projects and phase capstones. Graduates leave with two fully deployed applications and a polished portfolio.

After completing this bootcamp, you will be able to:

- ✓ Design and build RESTful APIs with Node.js and Express.js
- ✓ Model and query data efficiently with MongoDB and Mongoose
- ✓ Create interactive, responsive UIs with React, Redux & Tailwind CSS
- ✓ Implement secure JWT-based authentication and authorisation
- ✓ Deploy full-stack applications to the cloud (Vercel, Render, Atlas)
- ✓ Write unit and integration tests for both frontend and backend code
- ✓ Use Git, GitHub Actions CI/CD, and Docker in a professional workflow
- ✓ Optimise applications for performance, accessibility, and SEO
- ✓ Build, present, and deploy a job-ready portfolio with 2 live capstone apps

Prerequisites	Basic computer literacy. No prior programming experience required — we start from absolute zero.	Duration	24 Weeks ~8-10 hrs/week
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Developer Guru

PHASE 1 — Foundations of Web Development

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Weeks 1–4 | ~40 hrs

Build a rock-solid base in HTML, CSS & JavaScript before any framework.

◆ Week 1 — HTML5 & Semantic Markup

- › Document structure, doctype, head/body
- › Semantic tags: header, nav, main, footer, section, article
- › Forms, inputs, labels, validation attributes
- › Tables, lists, media elements (img, audio, video)
- › Accessibility basics — ARIA roles, alt text

★ **Project: Personal Portfolio page (HTML only)**

◆ Week 2 — CSS3 & Responsive Design

- › Box model, display, position, z-index
- › Flexbox — flex-direction, justify-content, align-items
- › CSS Grid — grid-template, auto-fill, minmax
- › Media queries, mobile-first design methodology
- › CSS variables, transitions, animations, @keyframes
- › BEM naming convention for scalable CSS

★ **Project: Responsive Landing Page**

◆ Week 3 — JavaScript Fundamentals

- › Variables (var/let/const), data types, type coercion
- › Operators, conditionals, loops (for, while, for-of, for-in)
- › Functions: declarations, expressions, arrow functions
- › Scope, closures, hoisting, IIFE pattern
- › Arrays & Objects — methods, destructuring, spread/rest
- › DOM manipulation — querySelector, events, event delegation

★ **Project: Interactive To-Do List**

◆ Week 4 — Advanced JavaScript & ES6+

- › Promises, async/await, fetch API for HTTP calls
- › Error handling — try/catch/finally
- › Modules — import/export, CommonJS vs ESM
- › Higher-order functions: map, filter, reduce, forEach
- › Classes, inheritance, prototype chain
- › LocalStorage & SessionStorage

★ **Capstone: Weather App using public API**

PHASE 2 — Node.js & Backend Development

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Weeks 5–8 | ~40 hrs

Learn server-side JavaScript, build REST APIs, and connect to MongoDB.

◆ Week 5 — Node.js Core

- › What is Node.js? Event loop, non-blocking I/O model
- › npm / npx — package.json, scripts, semver versioning
- › Built-in modules: fs, path, os, events, http
- › Creating a basic HTTP server from scratch
- › Streams, Buffers, environment variables with dotenv

★ **Project:** [CLI File Manager Tool](#)

◆ Week 6 — Express.js Framework

- › Express setup, routing (GET/POST/PUT/DELETE/PATCH)
- › Route parameters, query strings, request body parsing
- › Middleware — built-in, third-party (morgan, cors, helmet)
- › Error-handling middleware patterns
- › Static files, MVC folder structure best practices

★ **Project:** [REST API for a Blog](#)

◆ Week 7 — MongoDB & Mongoose ORM

- › NoSQL vs SQL, MongoDB Atlas cloud setup
- › CRUD operations with MongoDB shell & Compass
- › Mongoose schemas, models, validators, virtuals
- › Relationships: embedded vs referenced documents
- › Population (.populate()), indexes, aggregation pipeline

★ **Project:** [Product Catalog API with MongoDB](#)

◆ Week 8 — Authentication & Security

- › JWT (JSON Web Tokens) — sign, verify, expiry
- › bcrypt for password hashing (salting rounds)
- › Cookie-based vs token-based auth strategies
- › Refresh tokens, token revocation techniques
- › CORS, rate limiting, input sanitisation, Helmet.js

★ **Capstone:** [Full Auth System \(register/login/protected routes\)](#)

PHASE 3 — React.js Frontend Development

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Weeks 9–13 | ~50 hrs

Master modern React with Hooks, state management, routing & performance.

◆ Week 9 — React Fundamentals

- › JSX, functional components, props & prop types
- › useState, useEffect — lifecycle patterns in hooks
- › Conditional rendering, lists & keys best practices
- › Event handling, controlled & uncontrolled inputs
- › React DevTools for debugging

★ **Project: Recipe Finder UI**

◆ Week 10 — Advanced Hooks & Patterns

- › useContext, useReducer, useMemo, useCallback, useRef
- › Custom hooks — encapsulating reusable stateful logic
- › React.memo, lazy loading, Suspense, Error Boundaries
- › Lifting state, prop drilling vs context API

★ **Project: Shopping Cart with Context API**

◆ Week 11 — React Router v6 & Navigation

- › BrowserRouter, Routes, Route, Link, NavLink
- › useNavigate, useParams, useLocation hooks
- › Nested routes, layout routes, index routes
- › Protected / private routes with auth guards
- › Code splitting with React.lazy & Suspense

★ **Project: Multi-page Dashboard App**

◆ Week 12 — Redux Toolkit & State Management

- › Redux concepts: store, actions, reducers, middleware
- › Redux Toolkit — createSlice, configureStore
- › useSelector, useDispatch hooks
- › RTK Query — data fetching, caching & invalidation
- › Redux DevTools for time-travel debugging

★ **Project: E-commerce Cart with Redux**

◆ Week 13 — UI Libraries & Form Handling

- › Tailwind CSS — utilities, config, responsive, dark mode
- › shadcn/ui, Radix UI accessible primitives
- › React Hook Form + Zod / Yup schema validation
- › Framer Motion — animations, page transitions
- › Styled-components & CSS Modules approaches

★ **Capstone: Polished Admin Dashboard UI**

PHASE 4 — MERN Full Stack Integration

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Weeks 14–17 | ~40 hrs

Connect React to Express/MongoDB backends — build real full-stack applications.

◆ Week 14 — Connecting Frontend & Backend

- › Axios vs fetch — interceptors, base URL, headers
- › CORS configuration in Express for React frontend
- › Environment variables in Vite / CRA React apps
- › Proxy setup for local development workflow
- › Loading & error states, optimistic UI updates

★ [Project: Full-Stack Notes Application](#)

◆ Week 15 — File Uploads & Cloud Storage

- › Multer middleware for multipart/form-data handling
- › Cloudinary SDK — upload, transform, delete assets
- › Storing image URLs in MongoDB documents
- › React Dropzone — drag-and-drop file uploads
- › Progress bars, upload previews, size validation

★ [Project: Profile Picture Upload System](#)

◆ Week 16 — Real-Time Features with Socket.io

- › WebSockets vs HTTP polling — when to use each
- › Socket.io server (Express) & client (React) setup
- › Rooms, namespaces, broadcasting events
- › Online presence indicators, typing indicators

★ [Project: Real-Time Chat Application](#)

◆ Week 17 — Testing Frontend & Backend

- › Jest — unit testing functions and utilities
- › React Testing Library — component & integration tests
- › Supertest — API endpoint testing with Express
- › Mocking: jest.mock, MSW (Mock Service Worker)
- › Code coverage reports, CI integration

★ [Capstone: Fully Tested Task Manager App](#)

PHASE 5 — DevOps, Deployment & Performance

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Weeks 18–20 | ~30 hrs

Ship apps to the cloud, automate pipelines, and make them lightning-fast.

◆ Week 18 — Git, GitHub & CI/CD Pipelines

- › Git workflow — branching, merging, rebasing, cherry-pick
- › Pull requests, code reviews, branch protection rules
- › GitHub Actions — CI pipeline (lint, test, build)
- › Semantic versioning, changelogs, release management

★ **Exercise:** [Open-source contribution workflow](#)

◆ Week 19 — Cloud Deployment

- › Render / Railway — deploying Node.js backend services
- › Vercel / Netlify — deploying React SPA frontend
- › MongoDB Atlas production cluster, network access
- › Environment secrets management in production
- › Custom domains, SSL/TLS, Nginx reverse proxy basics
- › Docker — Dockerfile, docker-compose for local dev

★ **Project:** [Deploy Full-Stack App end-to-end](#)

◆ Week 20 — Performance & Monitoring

- › Lighthouse audits — performance, a11y, SEO scores
- › Code splitting, lazy loading, image optimisation (WebP)
- › React Query / SWR — stale-while-revalidate caching
- › Backend — compression middleware, Redis caching basics
- › Logging with Winston, uptime monitoring tools

★ **Exercise:** [Achieve 90+ Lighthouse score on an existing app](#)

PHASE 6 — Capstone Projects & Career Prep

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Weeks 21–24 | ~40 hrs

Build two production-grade apps, polish your portfolio, crack interviews.

◆ Weeks 21–22 — Capstone 1: Social Media Platform

- › User auth with JWT & refresh token rotation
- › Post creation with image upload via Cloudinary
- › Follow/unfollow system, paginated feed algorithm
- › Real-time notifications with Socket.io
- › Likes, comments, and nested replies

★ **Deliverable:** [Deployed app](#) + [GitHub](#) + [README](#) + [Demo Video](#)

◆ Week 23 — Capstone 2: E-commerce Store

- › Product catalog with filters, search & sorting
- › Shopping cart with Redux Toolkit state management
- › Stripe payment gateway integration
- › Order management, admin panel with analytics
- › Email notifications via Nodemailer / SendGrid

★ **Deliverable:** [Deployed app](#) + [GitHub](#) + [README](#) + [Demo Video](#)

◆ Week 24 — Career Preparation & Job Readiness

- › Portfolio website — projects, about, contact form
- › Resume / CV tailored specifically for MERN roles
- › LinkedIn profile optimisation strategies
- › GitHub profile — pinned repos, contribution graph
- › DSA interview prep — Arrays, Maps, Sorting, BFS/DFS basics
- › Behavioral interview — STAR method with practice
- › Mock technical interviews and live code reviews

★ **Deliverable:** [Portfolio site live](#) + [2 capstone projects deployed](#)

30+ Technology Skills Covered

HTML5 & CSS3	JavaScript ES6+	Node.js
Express.js	MongoDB	Mongoose ORM
React.js	Redux Toolkit	RTK Query
React Router v6	Tailwind CSS	shadcn/ui
Socket.io	JWT Authentication	bcrypt Hashing
Multer	Cloudinary CDN	Axios / Fetch
REST API Design	Git & GitHub	GitHub Actions CI
Docker Basics	Vercel / Netlify	Render / Railway
Jest & RTL	Supertest	React Hook Form
Framer Motion	Stripe API	Redis Basics

Assessment, Grading & Certification

Component	Weight	Description
Weekly Mini-Projects (24)	30%	Evaluated on functionality, code quality & creativity
Phase Capstones (Phases 1–4)	30%	Larger projects covering all topics in each phase
Final Capstone Projects (2)	30%	Production-ready deployed apps — social media & e-commerce
Code Reviews & Participation	10%	Peer reviews, stand-ups, forum & community contributions

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