

Full Stack Development

5 – months | Duration

MODULE 1: INTRODUCTION TO WEB DEVELOPMENT

- Understanding web technologies (Frontend, Backend, Database)
- How the web works (Client, Server, HTTP, DNS)
- Development tools (VS Code, Git, Browser DevTools)
- Setting up your development environment

MODULE 2: HTML – STRUCTURE OF WEB PAGES

- HTML document structure C semantic tags
- Headings, paragraphs, lists, links, and images
- Forms C form validation
- Tables, iframes, audio, and video
- Best practices for accessibility C SEO-friendly HTML



MODULE 3: CSS – STYLING WEB PAGES

- Inline, internal, and external CSS
- Colors, backgrounds, borders, and shadows
- CSS box model, padding, margin
- Flexbox C Grid layouts
- CSS animations C transitions
- Responsive design with media queries
- Introduction to CSS frameworks (Bootstrap/Tailwind CSS)

MODULE 4: JAVASCRIPT – MAKING WEB PAGES INTERACTIVE

- Variables, data types, and operators
- Functions C scope
- Conditional statements C loops

- DOM manipulation C event handling
- ES6+ features (arrow functions, template literals, destructuring)
- Fetch API C AJAX basics
- JSON data handling

MODULE 5: VERSION CONTROL WITH GIT S GITHUB

- Installing Git C basic commands
- Creating C managing repositories
- Branching, merging, and pull requests
- Hosting static websites on GitHub Pages



MODULE 6: FRONTEND FRAMEWORK – REACT.JS

- React components C JSX
- Props C state management
- Event handling C forms in React
- Conditional rendering C lists
- React Router for navigation
- Fetching APIs in React
- Introduction to React Hooks

MODULE 7: BACKEND DEVELOPMENT WITH NODE.JS EXPRESS

Here's a step-by-step roadmap to learn Node.js from basic to advanced:

Empowering Students with Quality Education & Practical Knowledge.

Basics1. Introduction to Node.js

- - What is Node.js? (runtime, event-driven, non-blocking I/O)
- - Installing Node.js and npm
- - Running your first script: `console.log("Hello, Node.js")`

2. Core Concepts

- - REPL (Read-Eval-Print Loop)
- - Node.js architecture (V8 engine, libuv, event loop)
- - Modules and `require()`
- - Built-in modules: `fs`, `path`, `http`, `os`, `events`

3. Working with Files

- - Reading and writing files (sync & async)
- - Streams and buffers



4. NPM (Node Package Manager)

- - Installing and using packages
- - `package.json` and dependencies
- - Creating your own modules

Intermediate5. Web Servers

- - Creating HTTP servers with `http` module
- - Handling routes and responses
- - Serving static files

6. Express.js Framework

- - Setting up Express
- - Routing, middleware, templates
- - Handling forms and JSON data

- - Error handling

7. Asynchronous Programming

- - Callbacks
- - Promises
- - Async/Await

8. Working with Databases

- - Connecting to MongoDB (Mongoose)
- - Connecting to MySQL/PostgreSQL
- - CRUD operations

9. RESTful APIs

- - Designing APIs
- - Using Postman for testing
- - Authentication (JWT, sessions, OAuth)



Advanced10. Real-time Communication

- - WebSockets with Socket.io
- - Building chat apps or live dashboards

11. Advanced Express

- - Middleware patterns
- - Security best practices (helmet, cors, rate-limiting)
- - File uploads (multer)

12. Performance & Scaling

- - Clustering and child processes
- - Load balancing

- - Caching (Redis, memory-cache)

13. Deployment

- - Deploying to Heroku, AWS, DigitalOcean, or Vercel
- - Using PM2 for process management
- - Environment variables and config management

MODULE 8: AUTHENTICATION & SECURITY

- User registration & login system
- Password hashing (bcrypt)
- JSON Web Token (JWT) authentication
- Securing API endpoints
- CORS & HTTPS basics



MODULE 9: DEPLOYMENT

- Deploying frontend on Netlify / Vercel
- Deploying backend on Render / Heroku
- Connecting to MongoDB Atlas
- Managing environment variables

MODULE 10: CAPSTONE PROJECTS

- Personal portfolio website

- Blog application with CRUD
- E-commerce product catalog
- Real-time chat application

MODULE 11: CAREER PREPARATION

- Resume building for developer jobs
- Creating a GitHub project portfolio
- Mock interviews C coding challenges
- Freelancing platforms overview

