



TECHNOCATION FREELANCING TRAINING INSTITUTE & SOFTWARE HOUSE

Professional Full-Stack Web Development Course Outline

Module 1: Introduction to Full-Stack Development

- What is Full-Stack Development?
 - Front-End vs. Back-End vs. Full-Stack
 - Overview of Tech Stacks (MERN, MEVN, LAMP, Django, Ruby on Rails)
 - Setting Up a Development Environment (VS Code, Git, Terminal, Package Managers)
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Module 2: Front-End Development

HTML – Structure of Web Pages

- HTML Basics & Semantic Elements
- Forms, Tables, and Accessibility
- SEO-Friendly Markup

CSS – Styling the Web

- CSS Selectors, Box Model, Flexbox & Grid
- Responsive Design (Media Queries, Mobile-First Approach)
- CSS Frameworks (Bootstrap, Tailwind CSS, Material UI)

JavaScript – Making Websites Interactive

- JavaScript Fundamentals (Variables, Functions, Loops, Events)
- ES6+ Features (Arrow Functions, Destructuring, Modules)
- DOM Manipulation & Event Handling
- Fetch API, JSON, and Asynchronous Programming (Promises, Async/Await)

Module 3: Front-End Frameworks & Modern UI Development

- Introduction to React.js (or Vue.js/Angular.js)
- Component-Based Development & Hooks
- State Management (Redux, Vuex, Context API)
- API Integration & Real-Time Data Handling
- Routing with React Router / Vue Router

Module 4: Version Control & Deployment

- Git & GitHub (Repositories, Branching, Merging, Pull Requests)
- CI/CD Basics (GitHub Actions, Netlify, Vercel)
- Hosting & Deployment (Heroku, Firebase, AWS, DigitalOcean)
- Domain Configuration & SSL Implementation

Module 5: Back-End Development with Node.js & Express.js

- Introduction to Node.js & Express.js
- Server-Side Programming & Middleware
- RESTful API Development & Routing
- Handling HTTP Requests & Responses
- MVC (Model-View-Controller) Architecture

Module 6: Databases & Server-Side Data Handling

- SQL (MySQL, PostgreSQL) vs. NoSQL (MongoDB, Firebase)
- CRUD Operations & Writing SQL Queries
- ORM (Mongoose, Sequelize, Prisma)
- Database Indexing & Optimization
- Backup & Data Recovery Strategies

Module 7: Authentication & Security

- User Authentication (JWT, OAuth, Session-Based)
 - Role-Based Access Control (RBAC)
 - Securing APIs & Preventing Attacks (XSS, CSRF, SQL Injection)
 - HTTPS, Data Encryption & Secure Cookies
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Module 8: Full-Stack Integration & API Development

- Connecting Front-End to Back-End via APIs
 - REST API vs. GraphQL
 - WebSockets & Real-Time Communication (Socket.io)
 - File Uploading & Cloud Storage (Cloudinary, AWS S3)
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Module 9: Advanced Full-Stack Development

- Microservices & Serverless Architecture
 - Progressive Web Apps (PWAs) & Service Workers
 - Web Performance Optimization (Lazy Loading, Caching, Code Splitting)
 - Headless CMS (Strapi, Contentful)
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Module 10: DevOps & Deployment Strategies

- CI/CD Pipeline Setup for Automated Deployments
 - Containerization with Docker & Kubernetes
 - Server & Database Scaling Strategies
 - Monitoring & Logging (PM2, ELK Stack, New Relic)
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Module 11: Final Project & Certification Preparation

- Building a Full-Stack Web Application (E-commerce, Blog, Dashboard, Social Media App)
- Performance Testing & Debugging Web Applications
- Preparing for Full-Stack Development Certifications
- Career Guidance & Portfolio Building

