

Full Stack Development

6 Months Duration

Offline Course



SYLL ABUS

Each module is designed to build your skills progressively and practically.

Frontend Development

Backend Development

DevOps & Deployment

MERN Stack Expertise

01

Introduction

- Course Introduction
- Jobs salary range and skills
- What tools you need for web development
- Basic Computer Skills
- How to setup your code editor

02

Introduction to C Programming

- Compiler + Setup
- Variables, Data types, Input, Output
- Instructions & Operators
- Conditional Statements
- Loop Control Statements
- Functions & Recursion
- Pointers, Arrays, Strings
- Structures, File I/O
- Dynamic Memory Allocation
- Practical Exercises and Assessment

03

Basics of Web Development

- How Does the Internet Actually Work?
- How Do Websites Actually Work?
- A big picture of web application
- Understanding Client-Server Architecture
- Browser Developer Tools Introduction
- Frontend, backend and APIs
- Web Standards and Organizations (W3C, WHATWG)
- Mobile-First vs Desktop-First Development
- Web Accessibility Fundamentals
- Performance and Optimization Basics
- Development vs Production Environments
- Team Collaboration in Web Projects
- Practical Exercises and Assessment

04

Learn HTML

- Introduction to HTML and Document Structure
- HTML Elements, Syntax and Emmet
- Block vs Inline Elements with Implementation
- Text, Hyperlinks and Lists
- Tables and Forms
- Input Types and Form Controls
- Media Elements (Images, Audio, Video)
- HTML5 Semantic Elements
- Accessibility (ARIA) and Best Practices
- Interactive Elements (Buttons, Tooltips)
- Building Complete Semantic Pages
- Practical Projects and Assessments

Learn CSS

- Introduction to CSS and Styling Methods
- CSS Selectors and Specificity
- Box Model and Layout Fundamentals
- Colors, Typography, and Styling Text
- Borders, Shadows, and Visual Effects
- Positioning and Display Properties
- Flexbox Layout System
- CSS Grid Layout System
- Responsive Design and Media Queries
- CSS Animations and Transitions
- CSS Variables and Custom Properties
- CSS Frameworks (Bootstrap Basics)
- Modern CSS Features and Best Practices
- CSS Organization and Architecture
- Cross-browser Compatibility
- Performance Optimization
- Practical Projects and Assessments

05

06

Learn Tailwind CSS

- Introduction to Utility-First CSS and Setup
- Core Concepts and Basic Utilities
- Responsive Design with Tailwind
- Flexbox and Grid Systems
- Colors, Typography, and Spacing
- Components and Layout Patterns
- Interactive Elements and States
- Animations and Transitions
- Dark Mode and Theme Customization
- Framework Integration (React/Next.js)
- Performance Optimization
- Building Real-World Projects
- Practical Exercises and Assessment

07

JavaScript Foundation

- JavaScript story – from console to V8 engine
- How JavaScript executes code – behind the scenes
- Datatypes, variables, and constants
- Operations in JavaScript
- Primitives and Non-Primitives
- Conditional logic and control flow
- Arrays and methods
- Loops and iteration techniques
- Functions and arrow functions
- Understanding this and execution context
- Higher-order functions and nested functions
- Practical coding with types, variables, arrays, loops, and functions
- Practical Exercises and Assessment

08

JavaScript OOP (Object-Oriented Programming)

- Prototypes and inheritance
- Functional constructors and error handling
- Classes and object creation
- Inheritance and method overriding
- Encapsulation, abstraction, polymorphism, and property accessors
- Practical implementation of OOP principles in JavaScript
- Practical Exercises and Assessment

09

Advanced JavaScript & Browser Interaction

- DOM and BOM essentials
- DOM manipulation and event handling
- Asynchronous JavaScript with the event loop
- Closures and lexical scope
- Promises, chaining, and `async/await`
- Binding context and advanced usage of `this`
- Prototypal inheritance in depth
- Iterators and generators
- Working with ES6 Modules and CommonJS
- Hands-on development with advanced JavaScript and browser APIs
- Practical Exercises and Assessment

10

Git & GitHub – Mastering Version Control

- DOM and BOM essentials
- Initializing Git and exploring the `.git` folder
- Making commits and reviewing logs
- Understanding Git's internal workings and configurations

11

- Merging branches and resolving conflicts
- Using Git diff and stash effectively
- Understanding Git rebase
- Pushing code to GitHub
- Creating pull requests and contributing to open source
- Practical Exercises and Assessment

Backend Development with Node.js

- Getting started with Node.js
- Handling files and building small backend utilities
- Creating a custom server similar to Nginx using Node.js
- Exploring Event-Driven Architecture with a custom logger
- Practical Exercises and Assessment

12

Introduction to Databases

- Overview of databases and their purpose
- Understanding SQL vs NoSQL databases
- Introduction to MongoDB and its features

13

Full-Scale Backend with MongoDB

- Building and launching a Node.js backend
- Using Express and testing APIs with Postman
- Implementing logging with Morgan and Winston
- Designing databases for real-world apps
- Structuring backend projects for scalability
- Connecting MongoDB in a professional setup
- Standardizing error and response formats
- Creating health check routes and testing
- Building MongoDB models with plugins and hooks
- Using JWT for authentication
- Handling file uploads in the backend
- Writing registration and login controllers
- Implementing refresh tokens
- Creating reusable middleware

14

- Performing full CRUD operations
- Fetching complex data with aggregation
- Exploring real-world route development
- Practical Exercises and Assessment

Advanced MongoDB Aggregation Pipelines

- Setting up aggregation pipelines
- Grouping and summing data
- Working with arrays in pipelines
- Using match and project stages
- Applying aggregation operators
- Performing lookups for data joins
- Practical Exercises and Assessment

15

React Essentials & Setup

- React roadmap overview
- Creating React projects and understanding the folder structure
- JSX and creating your own React components
- React architecture, flow, and virtual DOM concepts
- Hooks introduction and why they are needed
- Introduction to Tailwind CSS and using props
- Practical Exercises and Assessment

16

Mastering React Features

- `useEffect`, `useRef`, and `useCallback` with practical use
- Building custom hooks for reusable logic
- React Router – setting up routes in your app
- Context API – understanding and implementing global state
- Context API with local storage integration
- Implementing dark/light mode using Context API
- Practical Exercises and Assessment

17

Full Stack Authentication with Next.js & MongoDB

- Full-stack authentication system using Next.js
- Building signup and login features
- Middleware usage in Next.js
- Sending verification emails
- Deploying the full stack app to Vercel
- Practical Exercises and Assessment

18

Full Stack QnA App with Next.js & Appwrite

- Building a QnA system like Stack Overflow
- Appwrite and Next.js setup for full-stack development
- Designing and modeling data using Appwrite and Node SDK
- Using Zustand for state management with persistence
- Authentication setup using Appwrite and Zustand
- Managing user preferences in Appwrite
- Handling upvotes/downvotes and component review
- Practical Exercises and Assessment

19

Code Deployment & Server Setup

- Introduction to modern deployment strategies
- Setting up a VPS and configuring VPC
- Installing and configuring NGINX
- Implementing rate limiting with NGINX
- Configuring domains on a VPS
- Installing SSL certificates with NGINX on Ubuntu
- Deploying a Node.js API behind NGINX
- Hosting apps with Coolify – your own Vercel on VPS
- Practical Exercises and Assessment

20

Building AI-Powered SaaS with Next.js

- Creating an AI-powered SaaS product using Next.js and Cloudinary
- Configuring Clerk for authentication in Next.js
- Setting up Prisma with NeonDB
- Handling file and media uploads with Cloudinary
- Working with Cloudinary image and video components
- Smart video previews using AI features
- Project wrap-up and scaling suggestions
- Practical Exercises and Assessment

21

SQL Mastery for Web Developers

- Introduction to SQL and key terminology
- Real-world use cases of MySQL, PostgreSQL, and SQLite
- Installing and exploring PostgreSQL and PGAdmin
- MySQL and Workbench setup walkthrough
- CRUD operations and ER diagrams
- SQL commands: DDL, DML, DCL, and TCL
- Database normalization: 1NF, 2NF, 3NF
- SQL Joins: INNER, LEFT, RIGHT, OUTER, CROSS
- Aggregate functions and subqueries
- Transitioning to ORMs – Prisma and Drizzle
- Practical Exercises and Assessment

22

Event-Driven Architecture & Webhooks

- Building a SaaS starter template with Clerk and Next.js
- Event-driven architecture fundamentals
- Handling Clerk webhooks and role-based access
- Custom signup flow with Clerk
- Using NeonDB (PostgreSQL) in a full-stack project
- CRUD and pagination with Prisma
- Making API calls from the frontend in Next.js
- Practical Exercises and Assessment

23

Fastify Framework Deep Dive

- Introduction to Fastify and its ecosystem
- Setting up Fastify server and reading documentation
- Creating and using custom Fastify plugins
- User authentication with Fastify and JWT
- Working with streams and file uploads in Fastify
- Practical Exercises and Assessment

24

Building Secure LMS & Docker for Developers

- Building a secure LMS with payment integration
- Managing development, staging, and production environments
- Implementing logging, error handling, and security best practices
- Advanced Mongoose usage: virtuals, hooks, and indexing
- Payment gateway theory and Razorpay integration
- Validations, health checks, and AWS considerations
- Foundations of Docker and containers
- Installing Docker and running containers
- Writing Dockerfiles and building images
- Containerizing Node.js apps with multi-stage builds
- Practical Exercises and Assessment

25

AI-Powered Development & Smart Web Integration

- Boosting productivity with AI tools like Cursor, GitHub Copilot, and ChatGPT
- Auto-generating code, tests, and documentation using AI assistants
- Using AI in UI/UX design with tools like Figma AI and Uizard
- Understanding AI APIs: OpenAI, Hugging Face, and Google AI
- Implementing text generation, image creation, and sentiment analysis in websites

26

- Building smart features like chatbots, auto-responses, and recommendation systems
- Integrating AI models using REST APIs and SDKs
- Best practices for ethical and secure AI use in apps
- Practical Exercises and Assessment

Professional Skills & Career Readiness

- Evaluating soft skills and communication style
- Collaborating effectively within teams
- Approaching problems with structured thinking
- Managing time and prioritizing tasks efficiently
- Building impactful resumes and portfolios
- Preparing for technical and behavioral interviews
- Presenting projects and personal brand professionally
- Final job-readiness assessment and feedback

Our Features

Hybrid
Learning

100%
Placement
Assistance

AI
Integrated
Training Modules



Contact us
+91 90611 53098



Thevara, Kochi, Kerala