

Full-Stack Training Schedule

Day 1: HTML, CSS & Responsive Web Design

1. HTML Basics & Structure (9:00 AM - 11:00 AM | 120 mins)

- HTML Elements (Headings, Paragraphs, Lists, Links, Tables)
- Forms & Input Fields (Text, Checkbox, Radio, File Upload)
- Semantic HTML & Accessibility

2. CSS Fundamentals (11:15 AM - 1:00 PM | 105 mins)

- Selectors, Properties, Values
- Box Model, Flexbox
- CSS Units (px, em, rem, %, vw, vh)
- Color and Font Properties

3. Responsive Web Design (1:45 PM - 3:15 PM | 90 mins)

- Media Queries for Different Screen Sizes
- Mobile-First Design Approach
- CSS Frameworks (Bootstrap)

4. Version Control with Git (3:30 PM - 4:50 PM | 90 mins)

- Initializing a Git repository
- Basic Git commands (add, commit, push, pull, clone)
- Working with branches & merging

Hands-on Exercise: (4:30 PM - 5:00 PM | 30 mins)

- Build a responsive product listing page with forms and CSS styling

Day 2: JavaScript Basics & DOM Manipulation

1. JavaScript Basics (9:00 AM - 11:00 AM | 120 mins)

- Variables & Data Types (String, Number, Boolean, Array, Object)
- Functions (Regular, Expression Functions, Arrow Functions)
- Loops & Conditionals

2. DOM Manipulation (11:15 AM - 1:00 PM | 105 mins)

- Selecting Elements (getElementById, querySelector)
- Updating Elements Dynamically
- Creating & Removing Elements

3. Event Handling (1:45 PM - 3:15 PM | 90 mins)

- Click, Change, Submit Events
- Event Delegation & Propagation
- Preventing Default Behavior

Hands-on Exercise: (3:30 PM - 5:00 PM | 90 mins)

- Create an interactive product form with JavaScript validation and DOM manipulation

Day 3: React Fundamentals

1. Introduction to React & Setup (9:00 AM - 11:00 AM | 120 mins)

- What is React? Why use it?
- Installing React with Vite
- JSX & Virtual DOM

2. React Components & Props (11:15 AM - 12:00 PM | 45 mins)

- Functional Components
- Props & Reusability

3. State Management in React (12:00 PM - 1:00 PM | 60 mins)

- useState Hook for Managing Component State
- Handling User Input with useState

4. React Event Handling (1:45 PM - 3:15 PM | 90 mins)

- Handling Click, Change, Submit Events in React
- Passing Functions as Props

5. Lists & Conditional Rendering (3:30 PM - 4:30 PM | 60 mins)

- Mapping over Lists
- Conditional Rendering with Ternary Operator

Hands-on Exercise: (4:30 PM - 5:00 PM | 30 mins)

- Build a product listing page using React components and state

Day 4: Advanced React - Forms, Routing, and API Calls

1. Forms in React (9:00 AM - 11:00 AM | 120 mins)

- Form handling with useRef hook
- Handling Form Submission & Validation

2. React Router (11:15 AM - 1:00 PM | 105 mins)

- Setting Up Routes
- Dynamic Route Parameters
- Protected Routes & Authentication-Based Navigation

3. API Calls in React (1:45 PM - 3:15 PM | 90 mins)

- Fetching Data using Fetch API & Axios
- Handling Loading, Success & Error States

Hands-on Exercise: (3:30 PM - 5:00 PM | 90 mins)

- Create a product form with validation and navigation using React Router

Day 5: Introduction to Backend with Node.js & Node-RED

1. Introduction to Web Servers & Backend Development (9:00 AM - 11:00 AM | 120 mins)

- What is a Web Server?
- Overview of Backend Development

2. Server-Side Languages: Node.js & Node-RED (11:15 AM - 1:00 PM | 105 mins)

- What is Node.js? (Introduction & Use Cases)
- Introduction to Node-RED & Flow-Based Development
- Installing & Running Node-RED

3. Creating RESTful APIs with Node-RED (1:45 PM - 3:15 PM | 90 mins)

- Creating an HTTP Endpoint
- Handling GET & POST Requests
- Testing APIs using Postman

Hands-on Exercise: (3:30 PM - 5:00 PM | 90 mins)

- Build a simple REST API with Node-RED and test it using Postman

Day 6: Database Integration (SQL & NoSQL) with Node-RED

1. Database Integration (MySQL & MongoDB) (9:00 AM - 11:00 AM | 120 mins)

- SQL vs. NoSQL: When to Use Which?
- Setting Up MySQL & MongoDB with Node-RED

2. Performing CRUD Operations in Databases (11:15 AM - 1:00 PM | 105 mins)

- Creating Tables & Collections
- Storing, Retrieving & Deleting Data

3. RESTful APIs & Web Services in Node-RED (1:45 PM - 3:15 PM | 90 mins)

- Connecting REST APIs with MySQL & MongoDB
- Retrieving Data & Sending JSON Responses

Hands-on Exercise: (3:30 PM - 5:00 PM | 90 mins)

- Store product details in MySQL and MongoDB and fetch them using APIs

Day 7: Security, Authentication & Data Validation

1. Authentication & Authorization (9:00 AM - 11:00 AM | 120 mins)

- User Authentication with JWT (Login, Signup)
- Role-Based Access Control (Admin vs. User)

2. Web Security Basics (11:15 AM - 1:00 PM | 105 mins)

- Understanding HTTPS, CORS & CSRF
- Preventing SQL Injection in APIs
- Encrypting Passwords & User Data

3. Session Management & Cookies (1:45 PM - 2:30 PM | 45 mins)

- Storing Sessions in Local Storage & Cookies
- Implementing Logout Functionality

4. Data Validation & Sanitization (2:30 PM - 3:15 PM | 90 mins)

- Validating API Input Data
- Preventing Malicious Input Attacks

Hands-on Exercise: (3:30 PM - 5:00 PM | 90 mins)

- Implement secure user authentication and validate API inputs in Node-RED

Day 8: Final Project - Product Management App

 **Goal:** Build a fully functional Product Management App

1. Frontend (React) (9:00 AM - 11:00 AM | 120 mins) & (11:15 AM - 1:00 PM | 105 mins)

- **User Authentication:** Signup/Login with JWT
- **Product Management:** Add, Edit, Delete, View Products
- **State Management:** Context API for Global State
- **Routing & Navigation:** React Router with Protected Pages
- **Forms & API Calls:** Handling user input, submitting to backend

2. Backend (Node-RED) (1:45 PM - 3:15 PM | 90 mins)

- **User Authentication APIs**
- **CRUD APIs for Product Management**
- **Database Integration:** MySQL / MongoDB for storing products
- **Logging & Error Handling**

3. Security & Validation Enhancements (3:30 PM - 5:00 PM | 90 mins)

- **Secure API Endpoints with JWT Authentication**
- **Validate and Sanitize API Input Data**

Daily Schedule:

- **9:00 AM - 11:00 AM** (120 mins) → **Session 1**
- **11:00 AM - 11:15 AM** (15 mins) → **Short Break**
- **11:15 AM - 1:00 PM** (105 mins) → **Session 2**
- **1:00 PM - 1:45 PM** (45 mins) → **Lunch Break**
- **1:45 PM - 3:15 PM** (90 mins) → **Session 3**
- **3:15 PM - 3:30 PM** (15 mins) → **Short Break**
- **3:30 PM - 5:00 PM** (90 mins) → **Session 4**