

### 1. Web & Internet Fundamentals

- A. Introduction to the Internet & Web architecture
- B. Client-Server model, HTTP/HTTPS protocols
- C. Understanding browsers, servers, DNS
- D. Web hosting basics and deployment overview

### 2. HTML (HyperText Markup Language)

- A. HTML syntax, tags, attributes
- B. Headings, paragraphs, lists, links, images
- C. Tables, forms, input controls
- D. Semantic HTML5 elements
- E. Media (audio, video) and iframes
- F. Accessibility basics

### 3. CSS (Cascading Style Sheets)

- A. CSS syntax, selectors, properties
- B. Box model, margin, padding, border
- C. Colors, typography, backgrounds
- D. Layouts: Flexbox, CSS Grid
- E. Responsive design principles
- F. CSS frameworks (Bootstrap, Tailwind basics)

### 4. JavaScript Core

- A. Introduction to JavaScript language
- B. Variables, data types, operators
- C. Control structures (if/else, loops)
- D. Functions, scoping, closures
- E. Arrays and objects
- F. DOM (Document Object Model) manipulation
- G. Event handling
- H. Modern ES6 features (let/const, arrow functions, template literals)

### 5. Advanced JavaScript & Frontend Skills

- A. Asynchronous JavaScript (callbacks, promises, async/await)
- B. Fetch API & HTTP requests
- C. Module imports/exports
- D. Client-side form validations

E. Browser storage (localStorage/sessionStorage)

## 6. Frontend Framework: React.js

- A. Introduction to React & JSX
- B. Components, props & state
- C. Event handling and forms in React
- D. React Router & navigation
- E. Hooks (useState, useEffect, useContext)
- F. Component lifecycles
- G. State management overview (Context API / Redux intro)
- H. Frontend project structure & deployment basics

## 7. Backend Introduction

- A. Introduction to server-side development
- B. Node.js fundamentals
- C. Express.js for REST API creation
- D. Routing & middleware
- E. Request/response handling
- F. Session & basic authentication

## 8. Database Systems

- A. Database fundamentals (RDBMS concepts)
- B. SQL basics: CRUD operations
- C. Schema design, primary/foreign keys
- D. Querying for backend integration
- E. NoSQL concepts (overview of MongoDB)
- F. Connecting database with backend (Express + DB)

## 9. Full Stack Integration & APIs

- A. REST architecture design
- B. Connecting React frontend to backend APIs
- C. Implementing backend data endpoints
- D. CORS & security basics
- E. Authentication & authorization basics (JWT)
- F. Testing API endpoints

## 10. Deployment & DevOps Essentials

- A. Deployment platforms (Vercel, Netlify, Heroku)
- B. Build and production optimization
- C. Environment variables & security best practices
- D. Version control using Git/GitHub
- E. CI/CD basics

## Practical:

Hands-on exercises include:

- Static HTML page creation
- CSS layouts and responsive design
- DOM manipulation exercises
- JavaScript interactive apps
- React component projects
- Building REST APIs with Node/Express
- Database CRUD with SQL/NoSQL
- Full stack web application capstone project



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