Full Stack Development Curriculum

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MODULE 1: Web Foundations I – HTML, CSS, JS

Week 1: Introduction to HTML

- Lecture 1: Basic Structure of HTML, Elements, Tags
- Lecture 2: Attributes, Lists, Links, Images, Tables
- Lecture 3: Forms and Input Elements, Semantic Tags

Week 2: Introduction to CSS

- Lecture 1: CSS Syntax, Basic Selectors, Color Formats, Padding, Margin
- Lecture 2: Box Model, Display, Position
- Practical Session: Personal Portfolio

Week 3: Advanced CSS & Introduction to Git and Github

- Lecture 1: Flexbox, Grid
- Lecture 2: Specificity, Introduction to Responsiveness, Absolute/Relative styling, Media Queries, Meta tags
- Lecture 3: Introduction to Git and Github, Repositories: Local/Remote, Branches, Local Workflow, Working with Remotes

Week 4: CSS Frameworks and Introduction to JavaScript

- Lecture 1: Introduction to Bootstrap, Components, Layouts
- Practical Session: Connections Page UI
- Lecture 2: Intro to JavaScript, Data Types, Variables, Constants, Displaying Output, Popups, Operators, etc.

Week 5: JavaScript Fundamentals

- Lecture 1: Strings and String Methods, Conditions
- Lecture 2: Loops, var/let/const, Scopes: global scope, block scope
- Lecture 3: Type Conversions, Truthy/Falsy values, Arrays and Array Methods

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MODULE 2: Web Foundations II – Intermediate & Advanced JS

Week 6: Intermediate JavaScript

- Lecture 1: Functions, Scopes: function scope
- Lecture 2: Objects, ‘this’ keyword
- Practical Session: Password Strength Checker

Week 7: Intermediate JavaScript

- Lecture 1: Execution Context, Hoisting, Temporal Dead Zone
- Lecture 2: ES6 Syntaxes, Shallow copy, Deep copy
- Lecture 3: Call Stack, Lexical Environment, Scope Chaining

Week 8: Intermediate JavaScript Continued

- Lecture 1: IIFE, HOFs, Closures, Callback Syntax
- Lecture 2: Array Higher Order Methods
- Lecture 3: DOM Manipulation

Week 9: Intermediate JavaScript Continued

- Lecture 1: Events, Event Handlers, Form Handling
- Lecture 2: Form Validations, Event Listeners, Event Bubbling
- Practical Session: NetBanking Simulator

Week 10: Advanced JavaScript

- Lecture 1: Introduction to Async JavaScript and Timer Methods, Callbacks
- Lecture 2: Callback Hell, Promises Intro, Promise Chaining
- Practical Session: Order Tracking App

Week 11: Advanced JavaScript Continued

- Lecture 1: Error Handling, Async/Await, Fetch Method and API Integration
- Lecture 2: JS Engine: Event Loop, Task Queues, Web APIs; Modules in JavaScript
- Practical Session: Youtube Clone (Major Project -1)

MODULE 3: Frontend Development – React.js

Week 12: Introduction to React

- Lecture 1: Introduction to React, Setup, JSX, Components, Props
- Lecture 2: Conditional Rendering, Rendering Lists, State, Event Handling
- Lecture 3: Controlled and Uncontrolled Components, React Bootstrap framework

Week 13: Intermediate React

- Lecture 1: Component Lifecycle phases and methods, Hooks
- Lecture 2: React Router
- Practical Session: E-Commerce App

Week 14: Advanced React

- Lecture 1: React Redux
- Lecture 2: React Redux continued, Redux Thunk
- Practical Session: News App (Major Project -2)

MODULE 4: Backend Development – Node.js, Express.js & MongoDB

Week 15: Introduction to Node.js and Express.js

- Lecture 1: Introduction to Node.js, Modules, CommonJS vs. ES Modules
- Lecture 2: File System & Path, Debugging Node.js
- Lecture 3: Introduction to Express.js, folder structure, request/response, status codes (200/404/500), headers, JSON

Week 16: Express.js Fundamentals

- Lecture 1: Testing using Postman, Middlewares and custom middlewares, File upload using multer
- Lecture 2: RESTful APIs, Query & Route Params
- Practical Session: RESTful APIs for Task Manager App

Week 17: Introduction to Databases & MongoDB

- Lecture 1: Introduction to Databases, Types of Databases, Introduction to MongoDB, Create DB, collections and documents in MongoDB Atlas
- Lecture 2: MongoDB Setup (Compass, Shell), Queries and Operations
- Lecture 3: Integration w/ Node.js, CRUD operations

Week 18: Mongoose Basics

- Lecture 1: Mongoose: Schemas, Models, Validation
- Lecture 2: Model relationships, References vs. Embedded Docs
- Practical Session: Social Media App-1 (Backend)

MODULE 5: Full Stack Development, Capstone & Interview Prep

Week 19: User Authentication

- Lecture 1: JWT, bcrypt, Authentication Flow (Signup/Login)
- Lecture 2: Protected Routes, Auth Middleware, Role-Based Access
- Practical Session: Secure Auth API (User Login/Register)

Week 20: Connecting Frontend & Backend

- Lecture 1: Axios vs. Fetch, Handling CORS, Proxy Configuration in React, Managing Environment Variables (.env) in Frontend & Backend
- Lecture 2: Consuming Protected APIs in React (Login/Register/User Info), Token Storage Best Practices (LocalStorage vs. Cookies), Redux Thunk Middleware for API requests
- Practical Session: Social Media App-2 (Full Stack) (Major Project -3)

Week 21: Capstone Project

- Lecture 1: Team Task Tracker Application
- Lecture 2: Team Task Tracker Application
- Lecture 3: Team Task Tracker Application

Week 22: Interview Preparation

- Lecture 1: Interview Prep-1: Frontend Master Recap (MIT re-visits) & Answering Strategies
- Lecture 2: Interview Prep-2: Backend Master Recap (MIT re-visits) & Answering Strategies
- Lecture 3: Interview Prep-3: Mock Interview/ Quiz Sessions & Coding Challenges

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