

Full Stack Web Development with JavaScript

Duration: 20 Days

Tools: HTML, CSS, JavaScript (ES6+), Git, Bootstrap, Node.js, Express.js, MySQL, EJS

Prerequisites: Knowledge of Web Application Development

Day 1: Introduction to Web & HTML Foundations

Topics:

- Introduction to Web Development & Tools
- Roles: Frontend, Backend, Full Stack
- How Web Works: HTTP, Clients, Servers
- Introduction to HTML5
- HTML Page Structure
- Headings, Paragraphs, Lists, Links, Media Elements

Labs:

- Create a basic profile page using semantic tags
 - Add image gallery with captions
 - Create a recipe article with headings, lists, images
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Day 2: Advanced HTML & Forms

Topics:

- Tables and Forms (input, select, textarea)
- Form Attributes & Validation
- Fieldsets, Legends, Labels
- Embedding Multimedia: video, audio, iframe
- SEO Basics: meta tags, canonical URLs

Labs:

- Build a registration form with validations
 - Create a product catalog table
 - Add embedded video to an article
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Day 3: Introduction to CSS & Styling Essentials

Topics:

- Inline, Internal, External CSS
- Colors, Fonts, Text, and Borders
- Backgrounds and Gradients
- Box Model in-depth
- CSS Units: %, em, rem, vh, vw
- Element Display: block, inline, inline-block

Labs:

- Apply custom styling to previous HTML pages
 - Create a styled quote block with gradients
 - Build a "card" component with image and content
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Day 4: CSS Layouts (Flexbox & Grid)**Topics:**

- CSS Positioning (static, relative, absolute, fixed)
- Introduction to Flexbox: axis, wrap, gap
- Flexbox Properties: justify-content, align-items
- CSS Grid: grid-template, gap, areas
- Responsive Design Basics

Labs:

- Design a 3-column layout with Flexbox
 - Build a pricing section using CSS Grid
 - Create responsive navbar with Flexbox
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Day 5: Responsive Design & Media Queries**Topics:**

- Mobile-First Design
- Breakpoints and Screen Width Targeting
- Viewport meta tag
- Responsive images and videos
- Accessibility & ARIA basics

Labs:

- Convert static site to responsive using media queries
 - Build responsive portfolio site
 - Create collapsible sections using only CSS
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Day 6: CSS Frameworks (Bootstrap)**Topics:**

- Introduction to Bootstrap 5
- Grid System & Responsive Utilities
- Components: Navbars, Modals, Alerts, Forms
- Customizing Bootstrap with Utility Classes

Labs:

- Recreate a webpage using Bootstrap only
 - Build a responsive dashboard using cards and tables
 - Implement modal login form
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Day 7: JavaScript Basics (Syntax, Operators, Control Flow)

Topics:

- Variables and Data Types
- Arithmetic and Logical Operators
- Conditional Statements (if, switch)
- Loops (for, while, do-while)

Labs:

- Calculator logic using JavaScript
 - Build a number guessing game
 - Create dynamic quote generator
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Day 8: Functions, Arrays & Objects

Topics:

- Function Declarations, Expressions, Arrow Functions
- Arrays: methods, iteration
- Objects: properties, methods, nesting
- JSON Format

Labs:

- Student record manager using objects
 - Expense tracker using array of objects
 - Search/filter functionality using array methods
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Day 9: Advanced JS – DOM Manipulation

Topics:

- DOM Tree & Selectors
- getElementById, querySelector, etc.
- Handling events: click, change, submit
- Changing HTML/CSS via JS
- Creating and removing elements

Labs:

- Interactive to-do list
- Create a dropdown menu dynamically
- Form validator with error highlights

Day 10: Browser Storage & Modern JavaScript Features

Topics:

- LocalStorage and SessionStorage
- ES6+ Features: let/const, destructuring, spread
- Template Literals
- Short-circuiting and Optional Chaining

Labs:

- Theme switcher with LocalStorage
 - Save and restore to-do list
 - Quiz app with stored scores
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Day 11: Fetch API, Promises & Async/Await

Topics:

- Call external APIs with Fetch
- Handling JSON responses
- Promise chaining
- Async/Await syntax and error handling

Labs:

- Weather app using OpenWeather API
 - Movie search using OMDb API
 - GitHub profile fetcher
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Day 12: Git, GitHub & Collaboration Tools

Topics:

- Git Setup and CLI
- Repo Initialization and Workflow
- Git Branching & Merging
- Working with GitHub: clone, push, pull, forks

Labs:

- Setup Git for all previous projects
 - Collaborate on a repo with branching
 - Write a complete README in Markdown
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◆ Day 13: Node.js Fundamentals

Topics:

- Node.js Runtime Overview
- npm and package.json
- Modules and require()
- FileSystem and path module
- Intro to Event Loop

Labs:

- Build CLI tool to read/write files
 - Create dynamic config loader
 - Build logger with timestamps
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◆ **Day 14: Express.js Web Server**

Topics:

- Express setup and structure
- Basic routes (GET/POST)
- Route parameters and query strings
- Middleware and static files

Labs:

- Hello world web server
 - Static website with Express
 - Custom middleware for logging
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Day 15: Templating with EJS

Topics:

- View Engines overview
- Using EJS with Express
- Layouts, partials, includes
- Passing dynamic data

Labs:

- Build blog homepage with EJS
 - Dynamic profile page using data
 - Render post list using loop
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Day 16: MySQL Fundamentals

Topics:

- Introduction to Relational Databases
- Installing and configuring MySQL Server & Workbench
- SQL vs NoSQL – Key Differences

- Creating Databases and Tables
- SQL Basics: SELECT, INSERT, UPDATE, DELETE
- Data Types and Constraints

Labs:

- Create a student DB with students and courses tables
 - Practice basic SQL operations
 - Create relational schema for a blog app
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Day 17: SQL Joins, Relationships & Sequelize Setup

Topics:

- Foreign Keys and Relationships
- Joins: INNER, LEFT, RIGHT, FULL
- Aggregate Functions & Grouping
- Introduction to Sequelize ORM
- Connecting Express with MySQL using Sequelize

Labs:

- Write SQL queries using JOINS
 - Build schema for Posts, Users, and Comments
 - Connect Node.js project with MySQL via Sequelize
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Day 18: Sequelize Advanced + Authentication with MySQL

Topics:

- Querying with Sequelize (where, order, limit)
- Sequelize Transactions
- Password Hashing and Authentication with MySQL
- JWT Tokens with MySQL backend
- Protecting Routes using Middleware

Labs:

- Build login/signup routes with hashed passwords
 - Save user sessions or tokens to DB
 - Protect routes with JWT auth and role checks
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Day 19: Frontend Integration + AJAX (with MySQL Data)

Topics:

- Connecting frontend forms to backend APIs

- Fetching data from MySQL and rendering in UI
- Form validation & dynamic content update via JS

Labs:

- Submit post via frontend form (store in MySQL)
 - Fetch and display blog posts dynamically
 - Implement frontend login with JWT
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Day 20: Capstone Project

Project Examples:

- Blog Platform with Auth, Post, Comment (CRUD)
- Task Manager with Users, Tasks, Priorities
- Inventory System with Category & Products

Labs:

- Design DB schema with ER Diagram
- Build full backend with Express + Sequelize
- Create EJS-based frontend interface
- Deploy frontend and backend