

PROFESSIONAL WEB DEVELOPMENT PROGRAM | CAREER-FOCUSED CURRICULUM

Learning Roadmap

A visual path through the complete 9-module curriculum.

6 Months	9 Modules	Frontend + Backend
Program Duration	Complete Curriculum	Applied Learning

01 Computer Fundamentals & Career Orientation Foundation	**02** HTML5 Web Page Structure
03 CSS3 & Responsive Design Styling & Layout	**04** JavaScript Interactivity & Logic
05 React JS Frontend Framework	**06** Node.js & Express.js Backend Development
07 MongoDB Database	**08** Deployment & Hosting Going Live
09 Real-World Projects Applied Practice	

Program at a Glance

Key information about the Web Development program.

Program	Professional Web Development Program
Duration	6 Months (approx. 26 weeks), 9 modules
Learning Approach	Instructor-led sessions, hands-on labs, module assignments and portfolio projects
Eligibility	Graduates and final-year students from any stream; basic computer knowledge. No prior programming experience required
Technology Stack	HTML5, CSS3, JavaScript, React, Node.js, Express.js, MongoDB
Program Outcome	Confident web developer who can build and deploy complete web applications

Program Structure & Timeline

Module-wise duration, phase and primary tools, progressing from web fundamentals to frontend, backend and deployment.

No.	Module	Phase	Duration	Key Tools
01	**Computer Fundamentals & Career Orientation**	Foundation	1 Week	VS Code, Node.js, Git, Chrome DevTools
02	**HTML5**	Frontend	2 Weeks	HTML5, VS Code, Chrome DevTools
03	**CSS3 & Responsive Design**	Frontend	3 Weeks	CSS3, Flexbox, Grid, Bootstrap, Tailwind CSS
04	**JavaScript**	Frontend	5 Weeks	JavaScript ES6+, DOM, Fetch API
05	**React JS**	Frontend	5 Weeks	React, Vite, Redux Toolkit, Axios
06	**Node.js & Express.js**	Backend	3 Weeks	Node.js, Express.js, Postman, JWT
07	**MongoDB**	Backend	2 Weeks	MongoDB, Mongoose, MongoDB Atlas
08	**Deployment & Hosting**	Deployment	1 Week	GitHub, Netlify / Vercel, Render
09	**Real-World Projects**	Projects	4 Weeks	HTML, CSS, JavaScript, React, Node.js, MongoDB
	Total Program Duration		**26 Weeks**	**Approx. 6 months**

MODULE 01

Computer Fundamentals & Career Orientation

01

Foundation-level orientation to web development, how the web works, essential tools and environment setup.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
1 Week	Beginner	VS Code, Node.js, Git, Chrome DevTools	Ready development environment and a clear understanding of how the web works

Topics Covered

- Introduction to Web Development
- How the Web Works (Client, Server, HTTP/HTTPS, DNS)
- Frontend vs Backend vs Full Stack
- Browsers and Developer Tools
- Web Application Architecture
- Common Data Formats (JSON, XML)
- Command Line Basics
- Version Control Basics

Software to Install

- Visual Studio Code
- Node.js and npm
- Git and GitHub
- Google Chrome
- Postman

Assignment

- Install and verify all required software
- Create and configure a GitHub account
- Create and publish a first repository
- Open a web page and inspect it in Chrome DevTools

MODULE 02

HTML5

02

Structure of web pages: HTML elements, tables, forms, semantic markup, media and accessibility.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
2 Weeks	**Beginner**	**HTML5, VS Code, Chrome DevTools**	**Build semantic, accessible and well-structured web pages**

Part 1: HTML Basics

- Structure of an HTML Document
- Headings and Paragraphs
- Text Formatting
- Links
- Images
- Lists
- Comments
- HTML Entities

Part 2: Tables & Forms

- Tables
- Form Elements
- Input Types
- Form Validation
- Labels and Fieldsets
- Buttons

Part 3: Semantic HTML & Media

- Semantic Tags (header, nav, main, section, article, footer)
- Audio and Video
- iframe
- Meta Tags
- Accessibility Basics
- SEO Basics

Practice Pages

- Personal Profile Page
- Resume Page
- Registration Form

WHAT THIS MODULE SUPPORTS

STRUCTURE	COLLECT	INCLUDE
Organize content with clean, semantic HTML.	Capture user input with forms and validation.	Make pages accessible and search-friendly.

MODULE 03

CSS3 & Responsive Design

03

Styling and layout of web pages using CSS3, Flexbox, Grid, responsive design techniques and CSS frameworks.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
3 Weeks	**Beginner to Intermediate**	**CSS3, Flexbox, Grid, Bootstrap, Tailwind CSS**	**Style responsive layouts that work on every screen size**

Part 1: CSS Basics

- Selectors
- Specificity and Cascade
- Colors and Units
- Typography and Web Fonts
- Box Model
- Backgrounds and Borders
- Display and Position
- Pseudo-classes and Pseudo-elements

Part 2: Layout

- Flexbox
- CSS Grid
- z-index
- Overflow

Part 3: Responsive Design

- Viewport
- Media Queries
- Mobile-first Approach
- Responsive Images

Part 4: Effects

- Transitions
- Transforms
- Animations and Keyframes
- CSS Variables

Part 5: CSS Frameworks

- Bootstrap
- Tailwind CSS

Practice Pages

- Landing Page
- Portfolio Website
- Responsive Navbar and Cards

WHAT THIS MODULE SUPPORTS

STYLE	LAYOUT	ADAPT
Control colors, typography and spacing precisely.	Build page layouts with Flexbox and Grid.	Make every page work on mobile, tablet and desktop.

MODULE 04

JavaScript

04

Programming for the web: JavaScript fundamentals, DOM manipulation, events, asynchronous programming and API calls.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
5 Weeks	**Beginner to Advanced**	**JavaScript ES6+, DOM, Fetch API**	**Add interactivity and consume APIs with modern JavaScript**

Part 1: JavaScript Basics

- Variables (var, let, const)
- Data Types
- Operators
- Conditions
- Loops
- Functions
- Arrow Functions
- Scope and Hoisting

Part 2: Data Handling

- Arrays and Array Methods (map, filter, reduce)
- Objects
- Destructuring
- Spread and Rest
- Strings
- Template Literals
- JSON
- Date and Math

Part 3: DOM & Events

- DOM Selection
- DOM Manipulation
- Event Handling
- Event Bubbling and Delegation
- Form Handling
- Local Storage and Session Storage

Part 4: Advanced JavaScript

- Closures
- this Keyword
- Prototypes and Classes
- Higher-order Functions
- Callbacks
- Promises
- async / await
- Fetch API
- Error Handling
- ES Modules
- Debugging

Practice Projects

- To-Do App
- Calculator
- Weather App (API)
- Quiz App

WHAT THIS MODULE SUPPORTS

PROGRAM	INTERACT	CONNECT
Write clear logic with functions, arrays and objects.	Respond to users through the DOM and events.	Fetch and display data from APIs asynchronously.

MODULE 05

React JS

05

Single-page application development with React: components, hooks, routing, state management and API integration.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
5 Weeks	**Intermediate**	**React, Vite, Redux Toolkit, Axios**	**Build single-page applications integrated with APIs**

Part 1: React Fundamentals

- Node.js and npm
- Vite Project Setup
- JSX
- Components
- Props
- State
- Event Handling
- Conditional Rendering
- Lists and Keys

Part 2: Hooks

- useState
- useEffect
- useRef
- useContext
- useReducer
- useMemo
- useCallback
- Custom Hooks

Part 3: Routing & Forms

- React Router
- Nested and Protected Routes
- Controlled Forms
- Form Validation

Part 4: State Management & APIs

- Context API
- Redux Toolkit
- Axios and Fetch
- Loading and Error States

Part 5: Styling

- CSS Modules
- Tailwind CSS
- Responsive UI

WHAT THIS MODULE SUPPORTS

COMPOSE	NAVIGATE	INTEGRATE
Build reusable components with props and state.	Create multi-page experiences with React Router.	Connect the interface to backend APIs.

MODULE 06

Node.js & Express.js

06

Server-side JavaScript: Node.js, Express.js, REST API development and authentication.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
3 Weeks	Intermediate	Node.js, Express.js, Postman, JWT	Build secure REST APIs with authentication

Part 1: Node.js Fundamentals

- Node.js Runtime
- Modules (CommonJS and ES)
- npm and package.json
- File System
- Events
- Asynchronous Programming

Part 2: Express.js

- Routing
- Middleware
- Request and Response
- Route and Query Parameters
- Error Handling
- Environment Variables (dotenv)
- CORS

Part 3: REST APIs

- HTTP Methods and Status Codes
- CRUD APIs
- Request Validation
- Pagination
- API Testing with Postman
- MVC Folder Structure

Part 4: Authentication

- Password Hashing (bcrypt)
- JWT Authentication
- Protected Routes
- Role-Based Access

WHAT THIS MODULE SUPPORTS

BUILD	VALIDATE	SECURE
Create REST APIs with Express routes and middleware.	Handle input and errors with consistent responses.	Protect routes with hashed passwords and JWT.

MODULE 07

MongoDB

07

Document database fundamentals, querying, data modeling with Mongoose and connecting databases to Node.js applications.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
2 Weeks	Intermediate	MongoDB, Mongoose, MongoDB Atlas	Store, query and model application data

Database Fundamentals

- SQL vs NoSQL
- Documents and Collections
- BSON
- MongoDB Atlas

CRUD & Querying

- insertOne and insertMany
- find with Filters
- update Operations
- delete Operations
- Query Operators
- Projection
- Sorting and Limiting
- Indexes
- Aggregation Pipeline

Mongoose

- Schemas and Models
- Validation
- Embedding vs Referencing
- populate
- Middleware
- Connecting Express to MongoDB

WHAT THIS MODULE SUPPORTS

MODEL	QUERY	CONNECT
Design schemas that fit the application's data.	Retrieve and aggregate data efficiently.	Integrate the database with Express APIs.

MODULE 08

Deployment & Hosting

08

Prepare a web application for production and publish the frontend, backend and database online.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
1 Week	**Intermediate**	**GitHub, Netlify / Vercel, Render**	**Deploy a complete web application with a live URL**

Deployment Workflow

- Git and GitHub Workflow
- Branches and Pull Requests
- Environment Variables
- Production Build

Hosting

- Frontend Hosting (Netlify or Vercel)
- Backend Hosting (Render)
- MongoDB Atlas Setup
- CORS in Production
- Custom Domain
- HTTPS

DEPLOYMENT OUTCOME

PREPARE	PUBLISH	SHARE
Configure environments and create production builds.	Host frontend, backend and database online.	Deliver a live URL and a clean GitHub repository.

MODULE 09

Real-World Projects

09

Applied portfolio work designed to reinforce page building, API development, database design and deployment skills.

DURATION	LEVEL	KEY TOOLS	MODULE OUTCOME
4 Weeks	Applied Practice	HTML, CSS, JavaScript, React, Node.js, MongoDB	Complete a portfolio of working, deployed web projects

01 Portfolio Website	02 Landing Page
03 Weather App	04 Task Manager
05 Blog Platform	06 E-commerce Website
07 Job Portal	08 Food Ordering App

Portfolio Practice

Build projects using the technologies from the previous modules, progressing from static pages to full applications with a React frontend, an Express backend and a MongoDB database. Each project emphasizes planning, clean UI, working features and deployment.

This curriculum is suitable for a 6-month professional training program, progressing from web fundamentals to frontend, backend and deployment.