AI-Powered MERN & App Development Course

Master the modern web, mobile, and AI-driven development stack with real-world tools, hands-on projects, and industry-grade practices. From HTML fundamentals to Generative AI agents — this is your complete launchpad.

FULL-STACK · MOBILE · AI · MERN



What You'll Master

Your Complete Learning Roadmap

This course covers every layer of modern development — structured into focused modules that build on each other from the ground up.

🌐 Web Foundations

HTML5, CSS3, Flexbox, responsive design, and semantic markup

⚡ JavaScript & AJAX

Core JS, DOM, ES6+, Fetch API, Promises, Async/Await

⚛️ React & Redux

Hooks, routing, state management, Redux Toolkit, React Query

📱 React Native

Mobile UI, navigation, API integration, device capabilities

🖥️ Node.js & MongoDB

Express APIs, Mongoose, JWT auth, backend architecture

🤖 Generative AI

LLMs, Prompt Engineering, AI Agents, RAG with LangChain

CHAPTER 1

HTML — The Language of the Web

Every web experience starts with HTML. This module builds your structural foundation — from basic tags to HTML5's powerful new elements for forms, audio, and video.

1

Structure

Headings, paragraphs, lists, anchor and image tags

2

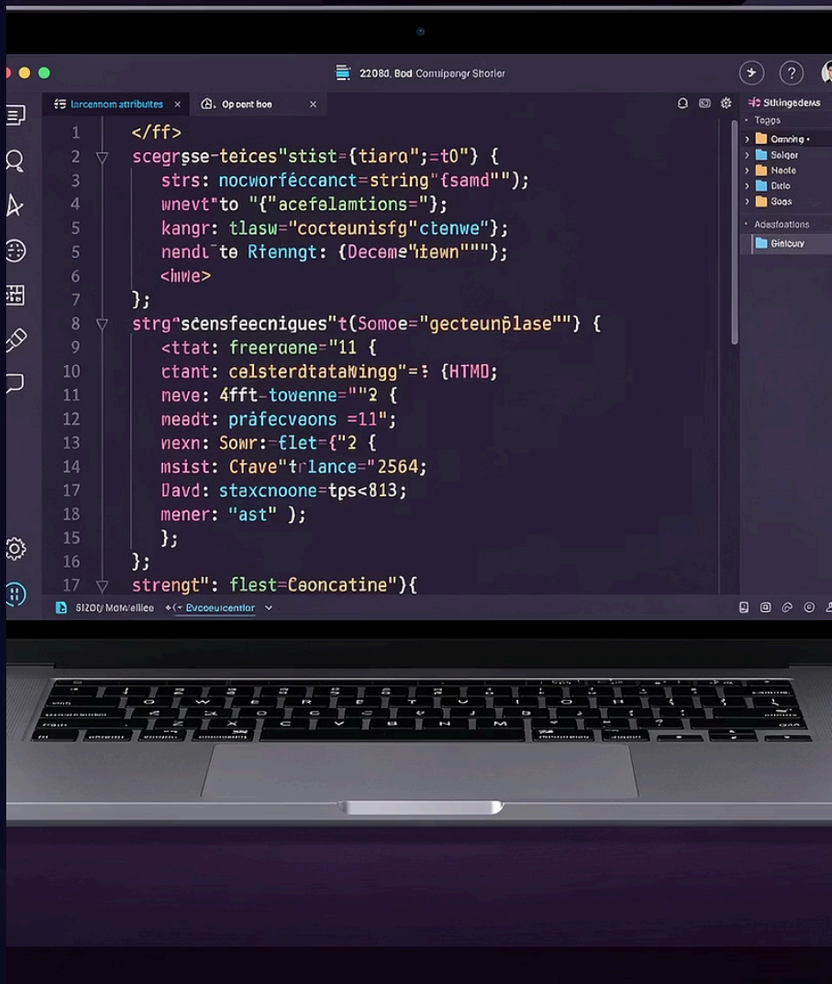
Tables & Forms

Complex tables, input types, dropdowns, scrollable lists

3

HTML5 & Media

Web Forms 2.0, DataList, audio/video controls, new input elements



CHAPTER 2

CSS — Styling the Modern Web

Core Concepts

- Types of CSS & Selectors
- Inheritance, Units (Absolute vs Relative)
- Backgrounds, Fonts, Google Fonts
- Pseudo-classes & Styling Links
- Lists, Tables & Zebra Striped Tables

Layout & Positioning

- The CSS Box Model — Border, Padding, Margin
- Float, Display & Visibility properties
- CSS Positioning (static, relative, absolute, fixed)
- Semantic HTML tags and `div` vs `span`
- **Flexbox** — the modern layout system

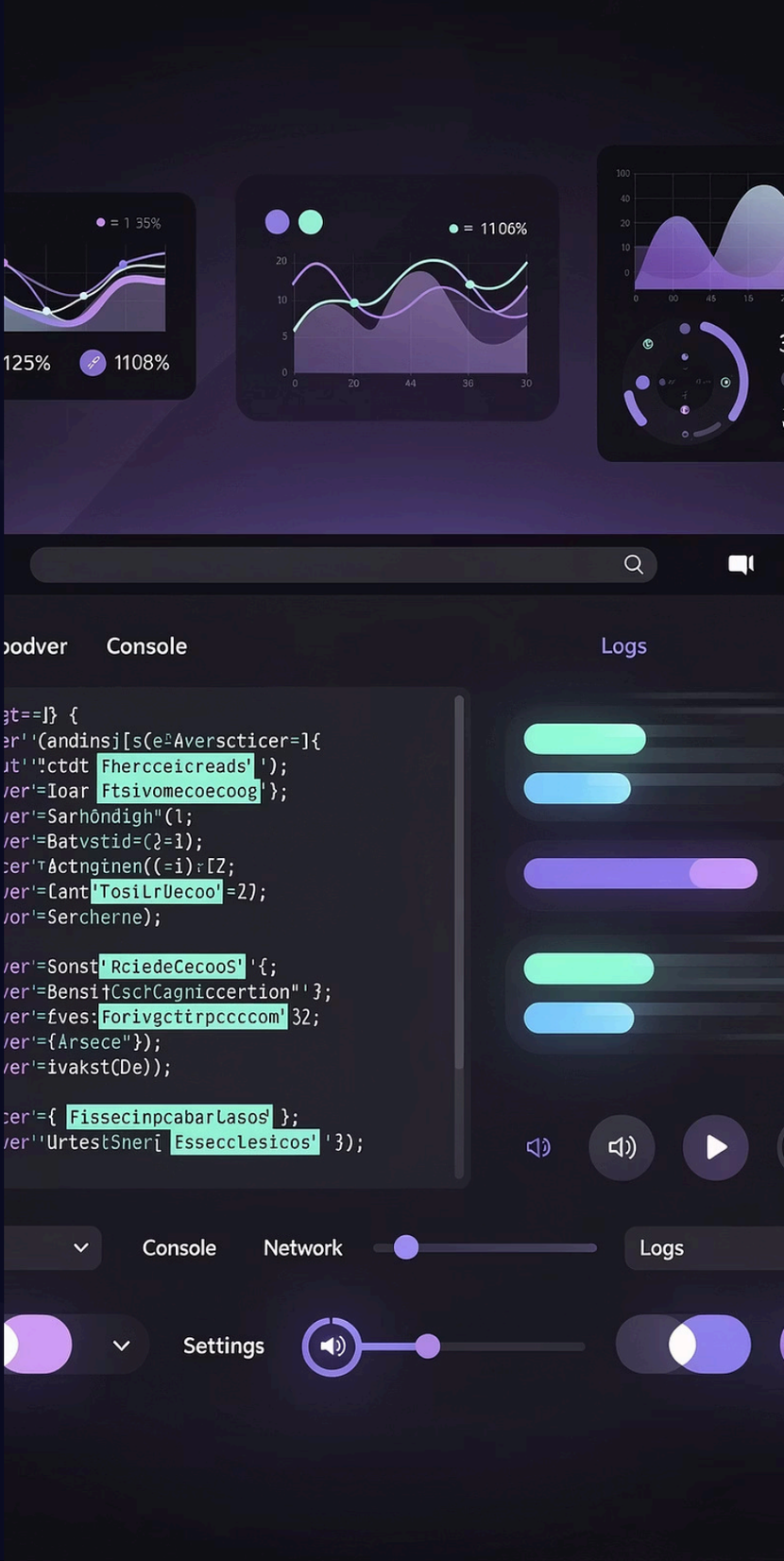
CSS transforms raw HTML into polished, responsive, visually compelling interfaces that work across all screen sizes.

CHAPTER 3

JavaScript — Powering Interactive Experiences

JavaScript is the engine of the modern web. This deep-dive module covers everything from core syntax to advanced patterns that power professional applications.

1	**Language Foundations** Variables, data types, operators, conditionals, loops, type coercion, template strings, and dialog boxes
2	**Functions & Objects** Named, anonymous, arrow, and callback functions; user-defined objects, JSON, this keyword, nested objects
3	**DOM & Events** DOM selection, traversal, creating elements, event handling, bubbling, delegation, keyboard & mouse events
4	**Advanced Patterns** ES6+ features, array methods, Promises, Async/Await, Fetch API, AJAX, error handling with Try/Catch



AJAX, Fetch & APIs

From Callbacks to Async/Await

Modern web apps talk to servers constantly. This module teaches you how to communicate with APIs cleanly and reliably — from old-school AJAX to the latest Async/Await patterns.

- AJAX programming steps & ready state values
- JSON: converting, parsing, and working with objects
- Introduction to Web APIs and key terminologies
- Promises: resolve, reject, `.then()` and `.catch()`
- Async/Await for clean asynchronous code
- Fetch API: GET and POST requests with Try/Catch

AJAX

Classic async communication

Promises

Cleaner async control flow

Async/Await

Modern, readable async code

Fetch API

Native browser HTTP requests

CHAPTER 4

React JS — Building Modern Interfaces

React is the world's most popular UI library. This comprehensive module takes you from your very first component all the way to production-ready apps with routing, state management, performance optimization, and deployment.

Foundations & Basics

What React solves, SPAs, JSX deep dive, functional components, props, conditional rendering, and asset handling

Hooks (Core & Advanced)

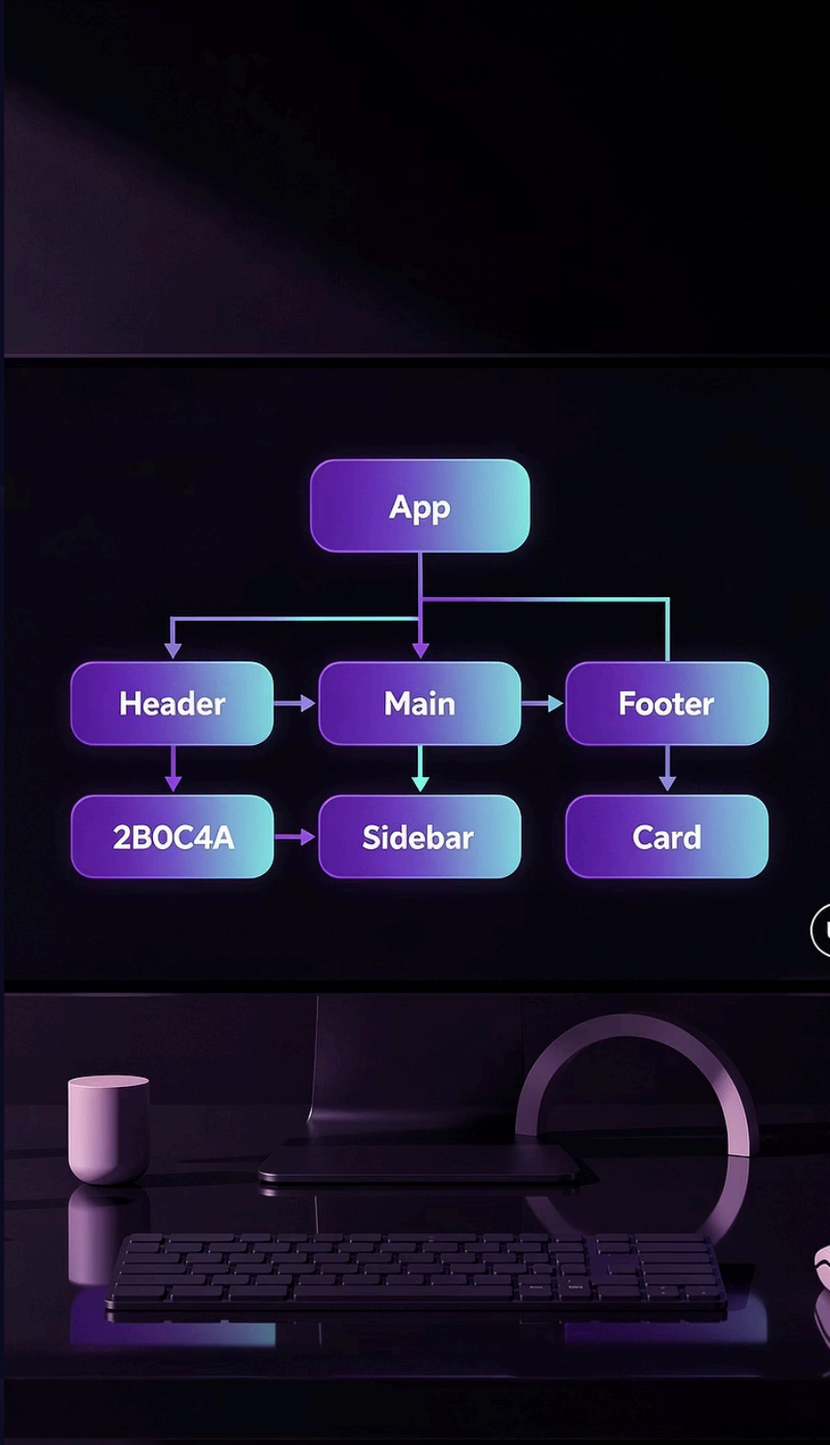
`useState`, `useEffect`, `useContext`, `useReducer` — side effects, cleanup, and dependency arrays

Routing & Forms

React Router v6, dynamic routes, protected routes, nested routing, `useNavigate`, controlled vs uncontrolled forms

State Management

Context API, prop drilling solutions, Redux Toolkit, `createSlice`, `createAsyncThunk`, React Query for API data



React in Depth: Hooks & Redux Toolkit

Core Hooks You'll Master

- **useState** — managing component state correctly
- **useEffect** — side effects, cleanup, dependency pitfalls
- **useContext** — sharing state across components
- **useReducer** — complex state logic alternative

Redux Toolkit Essentials

Redux Toolkit eliminates boilerplate and applies best practices by default. You'll learn:

- `configureStore`, `createSlice`, `createAction`
- Immutable state updates with built-in Immer
- `useSelector` & `useDispatch` hooks
- Async thunks with `createAsyncThunk`
- Handling loading, success, and error states for API calls

React Capstone Project

Bring everything together in a complete, production-ready React application. This capstone integrates all major course concepts into one real-world project.



Authentication & Protected Routes

Implement full user auth flow with login, registration, and route guards



Forms with Validation

Use Formik or React Hook Form + Yup for robust, validated multi-field forms



API Integration

Fetch and manage server data efficiently using React Query with caching and loading states



Deployment

Deploy your finished app to Vercel or Netlify with proper environment configuration



CHAPTER 5

React Native — Go Mobile

Take your React skills to native iOS and Android development. Using Expo for a streamlined workflow, you'll build real mobile apps with professional-grade architecture from day one.

Module 1–2

RN architecture, Expo setup, core components: View, Text, Image, FlatList, user interaction

Module 3–4

StyleSheet, Flexbox, responsive UI, platform-specific styling, navigation (Stack, Tab, Drawer)

Module 5–6

Hooks, Context API, REST API integration, live data fetching, Async Storage for local persistence

Module 7–8

Device APIs, permissions, fonts & icons, FlatList optimization, clean folder structure, industry standards

React Native Projects & Outcomes

Hands-On Projects

Beginner

Counter App, To-Do App, Static Multi-Screen App — core component and navigation fundamentals

Intermediate

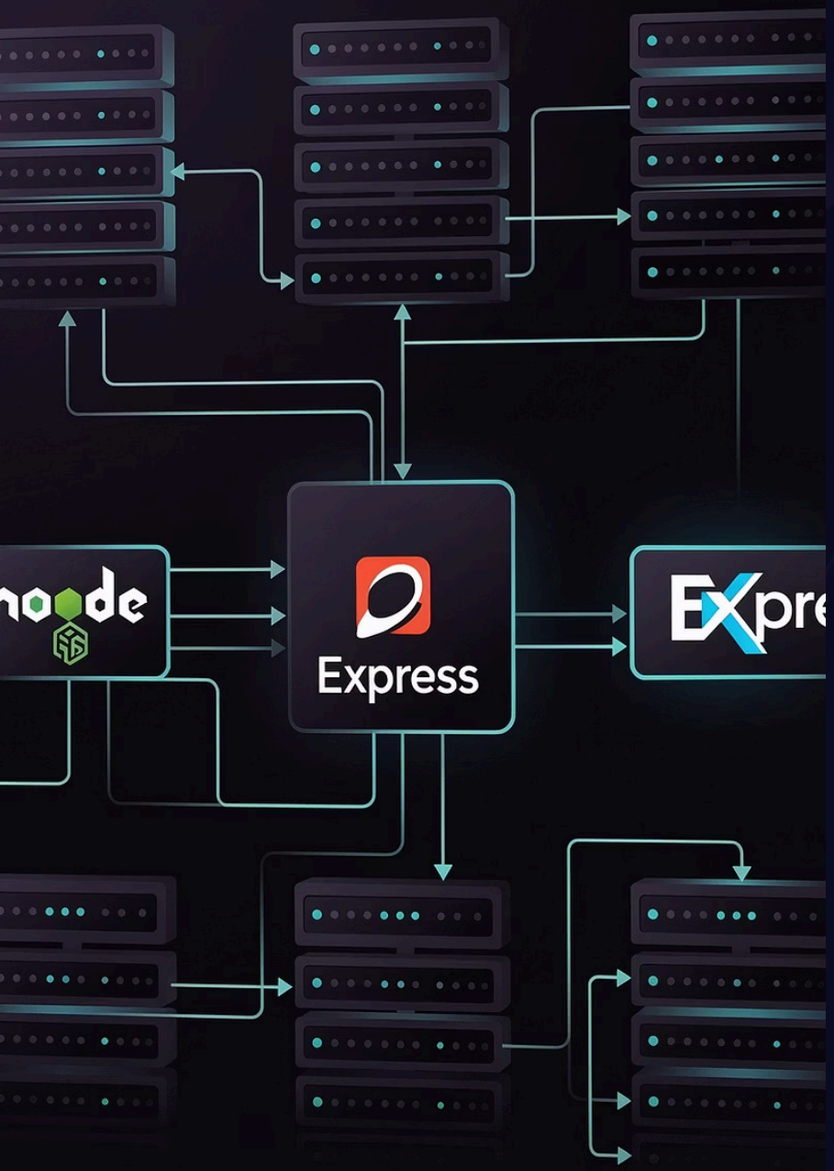
API-Driven Mobile App, Authentication Flow (Login/Logout), Multi-Screen App with Local Storage

Assignments

- UI Screen Replication
- Flexbox Layout Challenges
- Navigation Flow Tasks
- API Integration Exercises
- State Management Practice

What You'll Be Able to Do

- Build real-world, production-ready mobile apps
- Apply a strong React Native architectural foundation
- Navigate complex multi-screen app flows confidently
- Integrate live APIs and manage local device data
- Ready for advanced mobile development and freelance work



CHAPTER 6

Node.js & Express — Backend Mastery

Node.js brings JavaScript to the server. You'll build fast, scalable RESTful APIs with Express, connect to databases, and secure your backend with industry-standard authentication — all in one cohesive stack.

1. **Node.js Core**
   Modules (CommonJS & ES), File System, Path, debugging
2. **Express Fundamentals**
   Routes, HTTP status codes, headers, JSON responses, Postman testing
3. **Advanced Express**
   Middlewares, custom middleware, RESTful API principles, query & route params
4. **Auth & Security**
   JWT tokens, bcrypt password hashing, signup/login flow, protected routes

MongoDB & Mongoose — Data That Scales

MongoDB Foundations

MongoDB is the go-to database for modern JavaScript apps. You'll learn the full spectrum from raw queries to elegant Mongoose schemas.

- Introduction to databases & types
- Creating databases, collections, and documents
- MongoDB Atlas cloud setup, Compass & Shell tools
- Full CRUD operations with queries

Mongoose & Node Integration

- Connecting MongoDB to Node.js
- CRUD with MongoDB native driver
- Defining Schemas & Models with Mongoose
- Data validation built into schemas
- **Project:** Build a Secure Authentication API with JWT & bcrypt

Connecting Frontend & Backend

The final piece of the full-stack puzzle — making React and Node.js work seamlessly together in a secure, production-ready application.



HTTP Communication

Axios vs Fetch comparison, handling CORS issues, proxy configuration in React for development environments



Environment Variables

Managing `.env` files in both frontend and backend, keeping secrets out of version control



Protected API Consumption

Login, register, and user info flows from React; token storage best practices — LocalStorage vs Cookies



Redux + Backend

Managing auth state in Redux, using Thunk middleware for API requests, integrating Redux with your Node backend



CHAPTER 7

Generative AI — Build the Future

Step into the frontier of AI-powered development. This module gives you hands-on experience with real LLM APIs, prompt engineering, intelligent agents, and Retrieval Augmented Generation — skills that are transforming the industry.

Module 1: Foundations

AI vs ML vs Deep Learning vs GenAI, LLM fundamentals, GPT, transformers, tokens, tokenization, training basics

Module 2: APIs & Billing

OpenAI, Gemini, Claude APIs — generate API keys, authenticate, tokenization code, positional encoding, self-attention

Module 3: Prompt Engineering

Few-shot, one-shot, chain-of-thought prompting techniques with code implementations and best practices

Module 4–5: Agents & RAG

Build AI agents, WeatherNow agent, RAG architecture (Retriever → LLM → Generator), LangChain integration

🚀 Project: PersonaCraft AI

What You'll Build

Design and deploy a chatbot that speaks and behaves like a chosen personality — making every conversation feel personal, lifelike, and contextually aware.

This capstone integrates everything from Modules 1–3 of the Generative AI section into one deployable application.

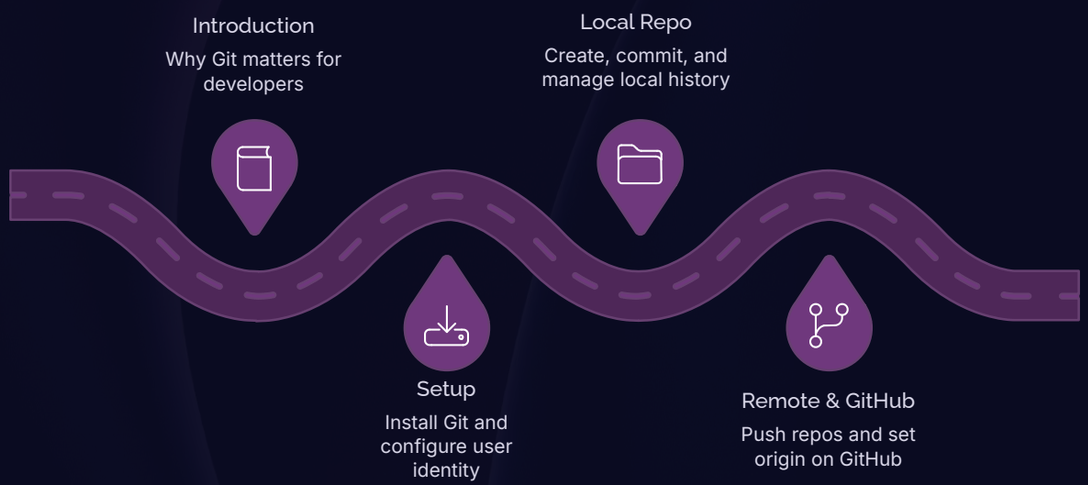
Skills Applied

- OpenAI or Gemini API integration
- Persona design through system-level prompting
- Few-shot examples to shape personality and tone
- Chain-of-thought prompting for nuanced responses
- Full code implementation from API call to UI
- Assignment and peer review

CHAPTER 8

Git & GitHub — Version Control for Professionals

Version control is a non-negotiable skill for every developer. This module takes you from zero to confident — installing Git, committing code, collaborating on GitHub, and even automating workflows with GitHub Actions.



Each module builds directly on the last — by the end, you'll work with Git the way professional teams do every day.



Git Essentials: From Local to Remote

Working Locally

- Create a local Git repo, make your first commit
- `git show`, `git checkout`, `git restore`, `git reset`
- Exploring history with different `git log` options

Connecting to GitHub

- Remote repository concepts
- Linking local repo to GitHub
- `git push`, `git pull`, `git clone`

Branching & Collaboration

- Branching and merging strategies
- Resolving merge conflicts confidently
- Forking and Pull Requests for open-source collaboration

Advanced Operations

- `.gitignore` & `git clean`
- Git Tags for versioning
- GitHub Issues, Wiki, and Actions (CI/CD intro)
- Hosting your site on **GitHub Pages**



What You'll Walk Away With

This isn't just a course — it's a transformation. By the time you complete every module, you'll have the skills, portfolio projects, and confidence to build and ship real-world applications independently.

8+

Technology Modules

HTML, CSS, JS, React, React Native, Node.js, GenAI, Git

10+

Real Projects Built

From Counter Apps to AI-powered chatbots and full-stack MERN apps

100%

Hands-On Learning

Every concept reinforced with assignments, projects, and code implementations

Start Building. Start Shipping. Start Now.

> "The best way to learn development is to build real things with real tools — and that's exactly what this course is designed for."

🌐 Full-Stack Web

Build end-to-end MERN applications with secure auth, clean APIs, and polished frontends

📱 Mobile Apps

Ship iOS & Android apps built with React Native and professional mobile patterns

🤖 AI Integration

Embed Generative AI into your apps using real LLM APIs, agents, and RAG pipelines

🛠️ Professional Workflow

Version control, deployment, clean architecture, and industry-standard coding practices

Every module includes practical assignments and projects so you're always building — never just watching. Your portfolio grows with every section you complete.