COURSE SYLLABUS

AI Coding Fundamentals Course (Self-Paced)

Build and deploy real web apps with Claude Code, GitHub, Next.js, and Supabase. Learn prompting, version control, full-stack development, debugging, and deployment through hands-on, project-driven training.

Group classes (Live Online) and onsite training are available for this course. For more information, email onsite@graduateschool.edu or visit: https://www.graduateschool.edu/courses/ai-coding-fundamentals



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Course Outline

Section 1: Welcome & Orientation

- Get set up and ready to build
- Welcome to the Course
- What is Vibe Coding?
- Course Structure & Overview
- What You'll Build
- How Claude Code Works
- What is Claude Code?
- Chat vs. Code Mode
- Installing Claude Code
- Desktop App Tour
- Bonus: Using Claude Code in VS Code

Section 2: Git, GitHub & Claude Code Tools

- Version control, the terminal, and core Claude Code settings
- Git & GitHub
- The Terminal & How Claude Uses It
- CLAUDE.md
- Permission Modes
- Your First Interaction with Claude Code
- Lab: Hello Claude Code

Section 3: Prompting & Steering

- Learn to direct Claude Code with precision and confidence

- Steering & Diff Review
- Prompt Engineering
- Outcomes vs. Implementations
- Explore / Plan / Execute / Review
- Context Setting
- Context Management

Section 4: Scaffold Your First Project

- Put your prompting skills to work and build something real
- Scaffolding
- Lab: Scaffold & Extend

Section 5: How the Web Works

- The foundations every web developer needs to understand
- The Web Dev Stack
- URLs, DNS & HTTP
- HTML & CSS Basics
- JavaScript Fundamentals
- Frontend, Backend & APIs
- Dev vs. Production

Section 6: Build, Edit & Debug

- Build features, fix bugs, and write tests with Claude
- Edits to Features
- Building Features
- Debugging
- Testing
- Lab: Build, Edit & Debug

Section 7: App Architecture

- Understand how modern web apps are structured
- Libraries, Packages & npm
- App Architectures
- Next.js Anatomy
- Prompt Comparison
- Plan Mode
- Recovery: When to Steer vs. Restart

Section 8: Business Landing Page

- Build a professional landing page from scratch
- Lab: Business Landing Page

Section 9: Advanced Claude Code & Collaboration

- Power-user workflows and working with teams
- Multi-File Workflows
- Skills & Slash Commands
- Project Planning with Claude Code

- Parallel Sessions with Claude Code
- Hooks & Subagents
- MCP
- CLAUDE.md with Teams

Section 10: Git Workflow

- Advanced Git and collaboration in practice
- Git & GitHub: Advanced
- Pull Requests & Code Reviews with Claude Code
- Lab: Git Workflow

Section 11: Data, Databases & Authentication

- Store data, manage users, and handle forms
- Why Your App Needs a Database
- Database Schemas, Tables & Rows
- Connecting to Supabase: Step by Step
- Environment Variables & .env Files
- Forms & User Input
- User Authentication

Section 12: Notes App

- Build a full-stack app with login and persistent data
- Lab: Notes App

Section 13: APIs, OAuth & Forms

- Connect to the outside world and handle user data
- OAuth
- Working with External APIs
- Getting & Managing API Keys
- The API Marketplace
- Caching

Section 14: Extend the Notes App

- Add OAuth, a weather API, and a shared cache
- Lab: Extend the Notes App

Section 15: Design & UX

- Make your app look and feel like a real product
- UX/UI Fundamentals & Design Inspiration
- Components & Design Systems
- Responsive Design with Tailwind CSS
- Accessibility: Building for Everyone
- Screenshots with Claude Code
- Essential UI States & Browser DevTools

Section 16: Design Makeover

- Apply design and UX improvements to the notes app
- Lab: Design Makeover

Section 17: Security

- Protect your app and your users
- Six Attacks Every Developer Should Know
- Input Validation
- Rate Limiting
- Data Privacy
- Security Terms Every Builder Must Know

Section 18: Security Hardening

- Audit and harden the notes app against common vulnerabilities
- Lab: Security Hardening

Section 19: Deployment

- Take your app from localhost to the live web
- How to Deploy: From Code to Live URL
- Domains & DNS
- SEO & Performance
- Pre-Launch Checklist

Section 20: Launch Day

- Deploy and ship the notes/weather app to the live web
- Lab: Launch Day
- Your Learning Path Forward