Agentic Coding Bootcamp: From Generative AI Basics to Autonomous Dev Workflows

Unlock the future of software development by mastering the skills every engineer will need in the AI era. Whether you want to lead, automate, or safeguard codebases, this course will empower you to architect, build, and control agentic AI workflows with confidence.

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Master Agentic Coding: Build, Orchestrate, and Secure AI-Driven Workflows

- Gain hands-on experience building AI agents that interact with code, files, and external tools
- Understand, debug, and control how generative AI models work—and where their limits are
- Design robust coding workflows using Model Context Protocols (MCP) and streaming interfaces
- Implement memory and retrieval strategies (RAG) to overcome context limits
- Compare state-of-the-art agentic coding tools and environments to find your team's best fit
- Build confidence orchestrating multi-agent and human-in-the-loop workflows that balance power and safety

A Deep Dive Into Practical Agentic Coding

You'll explore not just the theory but the hands-on engineering behind next-gen software development. Each module delivers actionable knowledge—starting from transformer fundamentals and LLM behaviors, through to agent orchestration, safe tool use, and retrieval-augmented memory. You'll work with a range of real-world agentic platforms, experiment with coding labs, and develop patterns for secure and efficient workflow design. By the end, you'll know how to put AI to work on real software tasks—safely, reliably, and with full understanding.

Throughout this course, you'll get live expert-led sessions, coding projects, and practical quizzes—plus take-home templates and pattern libraries for future work. Each lab and project is designed to reinforce both understanding and real coding skill. By graduation, you'll be ready to build and manage agentic AI systems in any modern engineering team.

Generative AI Course Syllabus

This document outlines the high-level modules of a Generative AI course, detailing the key topics, take-aways, and hands-on exercises for each module. The course covers foundational concepts, agentic AI, model-context-protocol interfaces, memory and retrieval strategies, agentic coding toolchains, and workflow design principles.

Course Modules

1. Foundations of Generative AI

- Key topics & take-aways: Transformer primer • Token-by-token generation • What it can vs can't do (hallucinations, context limits, non-determinism)
- Hands-on exercise: Prompt "X-ray": trace why an LLM produced a buggy answer & fix the prompt

2. Agentic AI 101 – Power & Peril

- Key topics & take-aways: What an agent is • Tool use (files, shell, code exec) • Autonomy loops (plan-act-reflect) • Safety failures & guard-rails
- Hands-on exercise: Run a toy agent that renames files; build a kill-switch & policy check

3. MCPs & Streaming Interfaces

- Key topics & take-aways: Model-Context-Protocol anatomy • Trusted registries (OpenRouter, Tavily, GitHub MCP hub) • Creating/using MCPs over STDIO vs SSE • Latency tips

- Hands-on exercise: Wrap a "GitHub PR-review MCP" and stream comments into your terminal

4. Memory, Retrieval & Context Strategies

- Key topics & take-aways: Why context windows bite • Short vs long-term memory patterns • Vector RAG pipelines • Chunking & re-ranking • "Scratchpad" vs "Summary" memory
- Hands-on exercise: Build a mini-RAG: store, embed, & retrieve snippets to answer queries

5. Agentic Coding Toolchain

- Key topics & take-aways: Vibe tools (REPL, Lovable, Bolt) vs Pro IDEs (Cursor, Windsurf, Cline, Roo, Copilot, Claude-Code, Firebase Studio) vs Remote sandboxes (Jules, Codex, Cursor Remote)
- Hands-on exercise: Compare two IDE agents on the same refactor task; log pros & cons

6. Workflow Design & Anti-Vibe Practices

- Key topics & take-aways: Task decomposition • Prompt versioning • Layered AI review • Mandatory human sign-off (blog post lessons)
- Hands-on exercise: Capstone: design, build, & defend a safe multi-agent coding workflow