

Agentic AI Developer Certification Program Schedule

The Agentic AI Developer Certification Program is a 12-week, project-based curriculum designed to equip participants with the skills to build intelligent, goal-driven AI systems. Participants will explore foundational concepts, develop multi-agent systems, and prepare their applications for real-world use. Below is the detailed week-by-week schedule, beginning the week of May 19th, 2025.

Module 1: Foundations of Agentic AI (Weeks 1–4)

Week 1: Introduction to Agentic AI Systems (May 19, 2025)

- What is Agentic AI? Definitions, terminology, and motivations
- Core Components of Agentic AI
- Real-world use cases and emerging trends
- Tools and Frameworks
- Differentiation of Agents and Workflows

Week 2: Prompts, Embeddings and RAG (May 26, 2025)

- Basic prompting
- Introduction to RAG systems
- Vector Databases and Embedding Models

Week 3: Hands-On with LLM calls, Workflows and RAG (June 02, 2025)

- Making your first LLM call
- Building a workflow
- Building a RAG system

Week 4: Build a RAG-Powered AI App (Project 1) (June 09, 2025)

- Project-focused week with no new video lectures or required readings
- Participants work on building a question-answering or document-assistant app
- Chain design: Prompt + Retrieval + Response
- Integration with a vector store and basic evaluation loop
- Optional: Add memory, tool usage, or intermediate reasoning
- Deliverable: A simple RAG-based system with working retrieval and output
- Note: Participants may begin project work earlier during Weeks 2–3 if desired

Module 2: Architecting Agentic AI Systems (Weeks 5–8)

Week 5: Agent Architectures & Planning Techniques (June 16, 2025)

- Agent execution models: tool-using agents, reactive vs. deliberative
- Planning mechanisms: zero-shot, few-shot, and learned planning
- Introducing MCP: Model Context Protocol
- Tool abstractions, APIs, and self-reflection
- Introduction to LangGraph and directed workflow graphs
- Building your first agentic workflow in LangGraph

Week 6: Multi-Agent Systems & Collaboration (June 23, 2025)

- Design patterns for multi-agent coordination
- Communication protocols and messaging (e.g., broadcast, direct, shared memory)
- Role assignment and inter-agent task delegation
- Coordinated tool use and shared context
- Use cases: decentralized planning, team-of-agents models
- Best practices for evaluating multi-agent performance

Week 7: Advanced Agent Evaluation Techniques (June 30, 2025)

- Evaluating agent autonomy and reasoning quality
- Measuring collaboration effectiveness in multi-agent systems
- Human-in-the-loop testing and intervention
- Benchmarking against baselines and predefined goals
- Dataset creation for agent evaluation

Week 8: Build a Multi-Agent System (Project 2) (July 07, 2025)

- Project-focused week with no new video lectures or required readings
- Participants design a system of modular, composable agents
- Implement inter-agent communication and memory sharing
- Apply LangGraph to orchestrate role-based agent workflows
- Optionally incorporate persistence via memory layers or vector DBs
- Deliverable: A functional, MCP-aligned multi-agent system capable of collaborative problem solving
- Note: Participants may begin project work earlier during Weeks 6–7 if desired

Module 3: Preparing Agentic AI for Real-World Use (Weeks 9–12)

Week 9: Guardrails, Evaluation, and Safety (July 14, 2025)

- Prompt protection and safety frameworks (Guardrails.ai, Rebuff, etc.)
- Input/output validation and structured output constraints
- Defining evaluation metrics: success, efficiency, alignment
- Instrumentation and logging (LangSmith, OpenTelemetry basics)

- Case studies: agent failure modes and mitigation

Week 10: Deployment & Scalability Considerations (July 21, 2025)

- When and how to deploy agentic systems
- Testing: validation of agent behavior through test cases and simulated user flows
- Lightweight deployment: FastAPI + containers
- Hosting options: Hugging Face Spaces, Render, Streamlit, Gradio
- Vector DB hosting, rate-limits, and cost considerations
- Monitoring basics: tracing, usage tracking, user feedback

Week 11: Advanced Deployment Case Studies & Troubleshooting (July 28, 2025)

- Real-world examples of agentic system launches
- Troubleshooting common deployment issues
- Optimizing for cost, scale, and performance
- Real-world case studies and deployment architectures

Week 12: Final Project – Production-Aware Agentic AI System (August 04, 2025)

- Project-focused week with no new video lectures or required readings
- Capstone project: Productionize your Week 8 multi-agent system
- Add guardrails, logging, and simple deployment wrapper
- Document limitations, assumptions, and intended use
- Deliverable: A portfolio-ready, production-aware agentic AI application
- Note: Participants may begin final project work earlier during Weeks 10–11 if desired