

Agentic AI Course Content

1. Introduction to Agentic AI
2. LLM and Prompt Foundations (Hands on)
3. Tool Use and Function Calling (Hands on)
4. Agent Frameworks (Hands on)
5. Memory and Knowledge
6. Multi-Agent Systems (Hands on)
7. Planning, Reasoning and Reflection
8. Evaluation and Observability
9. Safety, Security and Governance
10. Deployment
11. Capstone Projects

Introduction to Agentic AI

- From LLMs to Agents, Agent Types and Use Cases
- Agent Components: Planning, Memory, Tools, Reflection

LLM and Prompt Foundations (Hands on)

- LLM APIs, Function Calling, Structured Outputs
- Prompt Patterns for Agents: ReAct, Plan-and-Execute

Tool Use and Function Calling (Hands on)

- Designing Tools and Schemas
- API, Database, Browser, and Code Execution Tools
- Model Context Protocol (MCP) Servers and Clients

Agent Frameworks (Hands on)

- LangChain and LangGraph: Graphs, State, Nodes, Edges
- CrewAI, AutoGen, LlamaIndex Agents
- OpenAI Agents SDK and Claude Agent SDK Overview

Memory and Knowledge

- Short-Term and Long-Term Memory
- RAG for Agents, Vector Stores, Knowledge Graphs
- Context Management Strategies

Multi-Agent Systems (Hands on)

- Orchestrator and Worker Patterns, Role-Based Agents
- Agent Communication, Handoffs, Delegation
- Human-in-the-Loop Workflows

Planning, Reasoning and Reflection

- Task Decomposition, Self-Critique, Reflection Loops
- Reasoning Models and Test-Time Compute

Evaluation and Observability

- Agent Evaluation Metrics, Benchmarks, Test Datasets
- Tracing and Logging with LangSmith and Similar Tools
- Cost and Latency Optimization

Safety, Security and Governance

- Prompt Injection, Tool Permissions, Sandboxing
- Guardrails, Auditability, Responsible Deployment

Deployment

- FastAPI Services, Docker, Cloud Hosting
- Workflow Automation with n8n and Integrations

Capstone Projects

- Research Agent, Coding Agent, Customer Support Agent, Business Workflow Agent