



## GenAI / Agentic AI Course Curriculum

1. Introduction to Generative AI
  - What is Generative AI?
  - Evolution from traditional AI to GenAI
  - Key applications in industry
  - Risks and ethical considerations
2. Foundations of LLMs & Multimodal Models
  - Large Language Models (LLMs) overview
  - Transformers and attention mechanism
  - Text, Image, Audio, and Video generation
  - Popular models: GPT, Gemini, Claude, LLaMA
3. Introduction to Agentic AI
  - What is an AI Agent?
  - Difference between Agentic AI and single LLMs
  - Components: Reasoning, Planning, Acting
  - Agent loops and multi-agent systems
4. Core Agentic AI Techniques
  - ReAct (Reason + Act) framework
  - Chain-of-Thought reasoning
  - Tree of Thoughts (ToT)
  - LangGraph for workflow orchestration
5. Tools & Integrations
  - LangChain for building AI pipelines
  - LangGraph for multi-step reasoning
  - Vector databases (Pinecone, Weaviate, FAISS)
  - External tool use: APIs, SQL, file handling
6. Enterprise Use Cases
  - Agentic AI in customer service (chatbots)
  - Fraud detection & compliance automation
  - Data quality & MDM with AI agents
  - Test case automation & HITL pipelines
  - Knowledge assistants for corporate teams
7. Advanced Topics
  - Multi-agent collaboration
  - Self-healing pipelines
  - Human-in-the-Loop (HITL) governance



- Privacy, security, and compliance in Agentic AI

### 8. Deployment & Scaling

- Building APIs with Flask/FastAPI
- Streamlit dashboards for GenAI apps
- Cloud deployment (GCP, AWS, Azure)
- Monitoring and feedback loops

### 9. Hands-on Labs

- Build an AI Agent for SQL query generation
- Create a self-healing ETL pipeline
- Develop a Q&A assistant on internal policies
- Automate test case generation in Gherkin format

### 10. Capstone Project

- End-to-End Agentic AI system
- Data ingestion → Reasoning → Action → Validation
- Deliverable: Working AI Agent with documentation