# Agentic AI Session Plan

## Duration:  5day X 5hr

## Day 1

- **Topics covered:**
    - Introduction to **GenAI and Agentic AI Basics**, including LLM parameters and provider comparisons.
    - **Prompt Engineering Foundations** (few-shot prompting, structured JSON generation).
    - **RAG Fundamentals** (chunking, embeddings, vector stores).
- **Hands-on:** Environment Setup, LLM API Calls, and Prompt Writing.
- **Tech Stack:** Python, OpenAI, Vector Databases (e.g., ChromaDB/FAISS).

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## Day 2

- **Topics covered:**
    - **Advanced RAG** (hybrid search, re-rankers, multi-modal RAG).
    - **Tools & Execution**: Safely connecting agents to external environments using REST APIs and SQL, including schema guards.
- **Hands-on:** RAG-based Q&A Implementation.
- **Tech Stack:** sqlite, Pydantic, LangChain, Re-ranker option.

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## Day 3

- **Topics covered:**
    - **Planning & Task Decomposition** (structured reasoning, planner-executor model).
    - **Agentic AI Frameworks (LangGraph & MCP)**: Building workflows with nodes/edges and state management.
    - **AutoGen (Multi-agent Patterns)**: Orchestration, role design, and termination rules.
- **Hands-on:** LangGraph Workflow Construction and AutoGen Demo.
- **Tech Stack:** LangGraph, AutoGen, Pydantic, Python tool functions.

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## Day 4

- **Topics covered:**
  - **Agentic RAG** pipeline implementation (Planner → Retriever → Answerer).
  - Practical **Fine-Tuning** using adapters and comparing outputs.
  - **LLMOps (Foundations)**: Logging prompts, tracking latency/cost, and tracing workflows.
- **Hands-on:** Agentic RAG Pipeline Build and Fine-Tuning Demo.
- **Tech Stack:** LangSmith, Transformers, PEFT (Parameter-Efficient Fine-Tuning).

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## Day 5

- **Topics covered:**
  - **LLM Guardrails** (safety policies, PII scrubbing, injection prevention).
  - **Cloud Deployment** (containerization, secrets management, simple UI using Streamlit).
  - **Mini Project** Capstone Session.
- **Hands-on:** Guardrails Implementation and Capstone Project Build.
- **Tech Stack:** Streamlit, Python, Cloud Deployment concepts, Guardrail concepts.