

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Six Days Industry Certified Value Added Course

on

"AGENTIC AI"

**From 01.06.2026 to 06.06.2026 in ITFLEX SOLUTIONS PVT LIMITED, MADURAI
(2026 – 2027 ODD SEMESTER)**

Objectives

- Introduce the fundamentals of Artificial Intelligence, Generative AI, and the foundations of Agentic AI, including agent components and architecture.
- Enable students to design effective prompts using prompt engineering techniques and apply AI reasoning with proper context handling.
- Build practical AI agent applications using LangChain, LangGraph, LCEL, and No-Code/Low-Code platforms such as Phidata.
- Develop AI agents capable of tool calling, human-in-the-loop workflows, API integration, and Retrieval-Augmented Generation (RAG) using vector databases and embeddings.
- Equip students with skills in multi-agent systems, AI automation, responsible AI practices, and advanced agent development using Autogen and cloud deployment, culminating in a capstone project.

Unit 1: Introduction to AI and Agentic AI Fundamentals

10 Hours

Introduction to AI-Generative AI Basics-Basics of Agentic AI- Components of AI Agents- AI Agent Architecture- Introduction to Prompt Engineering-Types of Prompting- AI Reasoning- Context Handling.

Unit 2: LangChain and LangGraph Foundations

10 Hours

LangChain- LangGraph Components & Data Pipeline- LCEL & Building AI Agents- Developing AI Agents with Phidata- No-Code/Low-Code Platforms for Agent Development.

Unit 3: AI Agent Architecture and Application Building

10 Hours

AI Agent Architecture- Tool Calling- AI Workflows-Human-in-the-loop Systems- Building AI Applications: Python for AI- APIs-OpenAI-API Integration-Simple AI UI.

Unit 4: RAG and Vector Databases

10 Hours

Retrieval-Augmented Generation (RAG)-Embeddings- Vector Databases-Document-based AI Systems.

Unit 5: Multi-Agent Systems and AI Ethics**10 Hours**

Multi-Agent Systems- AI Automation-Responsible AI-Careers in Agentic AI-Advanced Agent Development with Autogen-Agentic AI on Cloud.

Total:50 HOURS**COURSE OUTCOMES (COs):**

On successful completion of this course, the students will be able to:

CO	Course Outcome	Knowledge Level
CO1	Apply the concepts of AI, Generative AI, and Agentic AI to identify AI agent architecture, components, prompting techniques, reasoning, and context handling for simple applications.	K3
CO2	Apply prompt engineering techniques and build AI agents using LangChain, LangGraph, and LCEL.	K3
CO3	Develop AI applications with tool calling, human-in-the-loop workflows, and OpenAI API integration.	K3
CO4	Implement Retrieval-Augmented Generation (RAG) systems using embeddings and vector databases.	K3
CO5	Design multi-agent systems and apply responsible/ethical AI practices in automation.	K4

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: Professional Skills: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.

PSO2: Problem - Solving Skills: The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

CO - PO MAPPING:

Course Name	CO. No.	POs											PSOs	
		1	2	3	4	5	6	7	8	9	10	11	1	2
AGENTIC AI	CO1	H	H	H	M	M	L	-	-	L	L	M	H	M
	CO2	H	H	H	M	M	L	-	-	L	L	M	H	M
	CO3	H	H	H	M	M	L	-	-	L	L	M	H	M
	CO4	H	H	H	M	M	L	-	-	L	L	M	H	M
	CO5	H	H	H	M	M	L	-	-	L	L	M	H	M

H - High, M - Moderate, L - Low

SDG MAPPING

Course Name	SDGs																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Agentic AI				√				√	√								√

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Trainer

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VAC Course Incharges

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31/7/2016
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