



Professional Certificate Programme in

Agentic AI and Applications

Learn to Deploy Functional Agents Through Real-World AI Projects

 5 Months  Live Online Sessions  IIT Madras Guest Faculty Masterclasses













 IITM Research Park Immersion (Optional)  3 IBM Certifications



Additional
Certification from
IBM

Programme Summary

Professional Certificate Programme in Agentic AI and Applications

 Institute Name IITM Pravartak	 Programme Duration 5 Months	 Cost INR 1,15,000 + GST
 Learning Mode Live online sessions by domain experts, select live masterclasses by IIT Madras guest faculty	 Weekly Effort 8-10 hours/week (additional effort required for non-technical students)	 Eligibility Minimum Graduate (10+2+3); basic math and programming knowledge preferred
 Campus Immersion Two-day optional campus immersion event at IIT Madras Research Park	 20+ Agentic AI Tools Hugging Face, Flowise, AutoGen Studio, and more	 Capstone Project One-week capstone project for application-based problem-solving
 IITM Pravartak Certification A verified digital certificate from IITM Pravartak upon successful programme completion	 3 IBM Certificates Additional certifications in AI agent building, generative AI (GenAI) for Business, and Responsible AI	 Career Support Services IIMJobs pro-membership for six months, resume builder and career prep sessions

Learning Experience

- **Unique Programme Design** - Full-fledged Agentic AI programme with theory, tools, and practical applications
- **Virtual Labs** - Access cutting-edge virtual labs for real world simulation and hands-on learning
- **On-Demand learning and Assignments** - Revisit concepts anytime and reinforce learning through guided assignments
- **Select Masterclasses by top IITM guest faculty** - Learn directly from leading guest faculty at IIT Madras
- **Live In-depth sessions** - Weekly instructor-led sessions with hands-on walk-throughs of tools, techniques, and real-world applications
- **3 IBM Certifications** - 3 IBM certs on AI Agent Building, GenAI for Business, and Responsible AI

Frequently Asked Questions

- How is the programme teaching split between IIT Madras guest faculty and domain experts?**
This programme is taught by domain experts via live online sessions and includes select live masterclasses by IIT Madras guest faculty.
- What is the role of the domain experts (DEs)? Are they Institute faculty?**
Domain experts will conduct live sessions where they teach each concept in depth with hands-on tools, real-world applications, and examples. They are not institute faculty but bring rich industry experience to the classroom.
- Who grades/gives inputs on the assignments and projects?**
The grading frameworks for assignments are developed in partnership with domain experts and the Emeritus grading team.
- Is there a qualifying mark/grade and minimum attendance criteria to get the final certification in this programme?**
Yes, overall 50% attendance in both domain-expert led live sessions and live faculty masterclasses are required to achieve programme completion. The qualifying mark for programme completion is 70%.
- What if I miss the assignments for a particular week? Can I attempt them later?**
If you miss an assignment for a particular week, you can complete it any time before the programme concludes. We provide flexibility for you to catch up and submit assignments at your convenience within the programme's duration.
- Who are the faculty for the live masterclasses and doubt-clearing sessions?**
Select live masterclasses are conducted by IIT Madras guest faculty. Live sessions, including doubt-clearing sessions, are carried out by the domain experts, as they monitor individual student progress.
- What if I don't find the programme appropriate for me after starting the sessions? Can I seek a refund?**
We encourage participants to complete the programme to fully understand the concepts and derive valuable learning outcomes. Should you still feel the need to stop your learning journey, a refund request can be initiated before the programme commences. However, after the programme commences, the fee becomes non-refundable.
- For how long will I have access to the learning materials?**
You will have access to the online learning platform and all the videos and programme materials for 12 months following the programme end date. Access to the learning platform is restricted to registered participants per the terms of the agreement.

Note:

- This programme summary is provided only for your convenience. You are advised to refer to the programme brochure for more information.
- Domain expert is the programme leader responsible for conducting weekly live sessions.
- Schedule for faculty masterclass will be shared post programme orientation.

Why Agentic AI Is the Next Frontier of Tech Innovation

Agentic AI is redefining what's possible with technology. Unlike traditional systems that execute isolated tasks, this technology enables intelligent agents to plan, reason, collaborate, and adapt autonomously across complex workflows.

Top Agentic AI Use Cases:



Marketing and Sales: Lead qualification agents, content personalisation bots, campaign summarisation tools



Customer Support: Context-aware chatbots, and multi-turn helpdesk agents with memory



Finance: Report generators, investment research assistants, fraud detection agents



HR and Talent: Resume screening bots, onboarding assistants, and HR policy advisors



Healthcare: Patient triage agents, symptom checkers, and research assistants

With the **Professional Certificate Programme in Agentic AI and Applications by IITM Pravartak**, you'll gain hands-on experience in building these types of intelligent systems using LangChain, CrewAI, Flowise, and OpenAI.

"The agent will orchestrate across multiple SaaS applications. It will be kind of like humans are the swarm of agents. This is the next frontier, and that's where a lot of the productivity will come from. Just like I can build a spreadsheet, I will build thousands and hundreds of agents that will streamline my own work...India will be the use case capital of AI"

- Satya Nadella,
CEO of MicroSoft

"We believe that, in 2025, we may see the first AI agents 'join the workforce' and materially change the output of companies."

- Sam Altman,
CEO of OpenAI

Acquiring Agentic AI Skills = High Demand, Higher Pay

As per LinkedIn India and global hiring trends (2023–2024), professionals with Agentic AI and GenAI skills are commanding significant salary increases:

Prompt Engineer/LLM Specialist	+35% to 45%
RAG Workflow Engineer:	+50%
Agentic AI Developer (LangChain, AutoGen, etc.)	+60%
GenAI Project Contributor:	2× faster promotion rate
GenAI Project Contributor:	+30% (vs standard developers)

These skills are becoming mission-critical for roles in automation, AI tooling, and enterprise GenAI delivery.



Learn One of the Most Advanced AI Use Cases from the Foremost Institutions

Artificial intelligence is a force multiplier—and the future lies with systems that can plan, adapt and act independently. Agentic AI enables the creation of intelligent agents that go beyond passive responses to solve problems dynamically, across contexts.

With the **Professional Certificate Programme in Agentic AI and Applications by IITM Pravartak**, you'll gain the technical, conceptual and practical tools to shape this future—building intelligent agents using LangChain, Flowise, CrewAI and more, deployed in real-world scenarios.

You'll also earn 3 IBM certifications in AI Agent Building, GenAI for Business, and Responsible AI to further boost your credentials. This programme is designed to transform aspiring individuals into **industry-ready Agentic AI experts**.

- **IITM Pravartak:** A technological innovation hub that is preparing the young India for next-gen world-class technology through its rigorous curriculum, equipping them with the foundational knowledge and state-of-the-art techniques in AI and ML.
- **Emeritus:** A global leader in online education, Emeritus ensures a seamless learning experience with world-class instructional design and support services.
- **IBM:** As a global technology leader, IBM brings its industry expertise and cutting-edge tools to provide real-world insights and practical applications.



Who Should Enrol in This Programme?

This programme is ideal for professionals across technical, functional and product roles who are ready to build intelligent AI agents and take advantage of the next wave of automation and decision intelligence.

Specifically, this programme is ideal for:



AI and Data Professionals: Data scientists, ML engineers, developers and technology leads looking to evolve beyond model-building into constructing goal-oriented, memory-enabled AI agents using Python and frameworks such as LangChain and FAISS.



Product and Innovation Leaders: Product managers, automation leads and entrepreneurs aiming to design low-code or no-code intelligent assistants and agentic systems to solve real-world business problems.



Domain Experts and Functional Specialists: Professionals from different domains looking to embed AI agents into their daily operations to enhance efficiency, accuracy, and decision-making.

This is a beginner-friendly programme—foundational Python coding is taught in the early months, making it accessible for newcomers while offering substantial depth for experienced professionals working under time constraints.

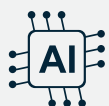
With this programme, you will be able to:

- **Master the art of building intelligent AI agents** that can plan, reason, act, and adapt—just like a human teammate.
- **Get hands-on with cutting-edge tools** such as LangChain, CrewAI, and AutoGen to create real-world AI solutions across industries.
- **Transform static AI into smart, goal-driven systems** using GenAI, RAG, prompt engineering, and adaptive feedback loops.
- **Deploy and optimize your own AI agents** with memory, tools, and monitoring—ready for real users and real-world impact.
- **Become a future-ready AI builder** by solving practical problems through custom multi-agent workflows across business, tech, and beyond.

Elevate Your Career with Agentic AI Expertise

In a world where technology is evolving from passive assistants to autonomous problem-solvers, Agentic AI is fast becoming one of the most in-demand frontier skills. This programme equips you to go beyond prompt-based tools and create digital code that can think, reason, plan, and act—just like a capable human teammate.

What you will gain from this programme:



Launch a career in one of AI's fastest-growing specialisations

Build a strong foundation in agentic systems, LLM orchestration, and memory-enabled automation—with 21 expert-led modules and over 20 real-world projects.



Learn from IIT Madras guest faculty and experienced domain professionals

Receive mentorship through select live IIT Madras guest masterclasses and weekly live sessions led by domain experts—offering practical, real-time engagement.



Gain hands-on expertise with 20+ real-world tools and libraries

Learn and build using tools such as LangChain, CrewAI, Flowise, ChromaDB, FAISS, OpenAI and more.



Earn three prestigious IBM certifications

Get certified by IBM with 3 industry-recognised credentials in AI Agent Building, GenAI for Business, and Responsible AI



Design and deploy your own intelligent agent in the capstone project

Build and present a fully functional AI agent incorporating memory, tools, RAG, and real-user interface—ready for portfolio or production use.



Participate in a two-day optional campus immersion at IIT Madras Research Park

Network with peers and experience India's leading innovation environment first-hand.



Empowered by Emeritus Career Services

Benefit from a 6-months IIMJobs Pro-membership to accelerate your career growth and access smart resume-building automation.



Balance learning with your schedule

Designed for working professionals, the structure allows for a weekly commitment of 8-10 hours, with flexibility to revisit content and catch up when needed.

Learn Agentic AI and its Applications from Renowned IIT Madras Guest Faculty



Prof. Madhusudhanan Baskaran
Programme Director

Prof. Madhusudhanan is a Principal AIML Consultant at IITM Pravartak and Guest Faculty at IIT Madras, specialising in Agentic AI, generative systems, and intelligent automation. With over 32 years of experience across academia, industry, and government, he brings deep expertise in designing AI agents that plan, reason, and adapt autonomously.

His portfolio includes AI-led projects for the Supreme Court of India, CAG, ReBIT, and the Indian Army, focusing on responsible, scalable AI systems using LLMs, speech technologies, and document intelligence. A key voice in India's AI transformation, he actively mentors deep-tech startups and leads initiatives in explainable AI and modular agent architectures.

Publications:

- **The Scientific World Journal:** "Synchronous firefly algorithm for cluster head selection in WSN"
- **International Conference on Computer and Information Sciences:** "Improving security in Wireless Sensor Network using trust and metaheuristic algorithms"
- **Soft Computing 24:** "Computerised grading of brain tumors supplemented by artificial intelligence"



Deliver Real-World Intelligence with Tools, Projects, and Immersion



IITM Guest Faculty Masterclasses

Learn directly from Prof. Madhusudhanan B



20+ Agentic Tools and Libraries

Including LangChain, Flowise, FAISS and Hugging Face



20+ Graded Assignments and Mini Projects

Across modules to maximise practical learning



3 IBM Certifications

Industry-recognised credentials in AI Agent Building, GenAI for Business, and Responsible AI



Capstone Project

Involving agent build and demo



Optional 2-day Campus Visit

Visit the IIT Madras Research Park

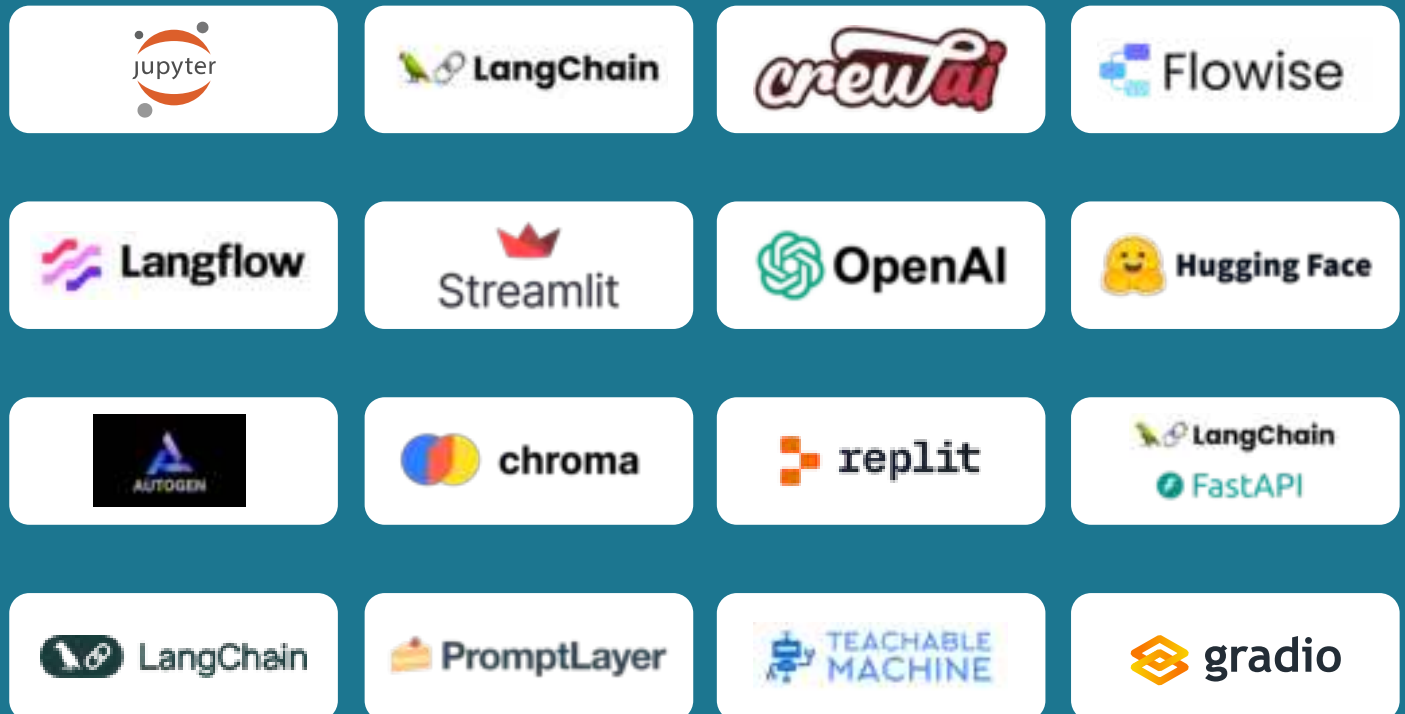
Note:

- All programme highlights stated in this section and across the programme are subject to change at the discretion of IITM Pravartak and Emeritus



More than 20 Agentic Tools and Libraries Covered

Tools and Platforms:



Libraries and Frameworks



Note:

- Programme learning hours and tools are subject to change; updated details will be shared closer to the start date.
- The list of tools covered is not comprehensive. Final details will be shared closer to the start date.
- All product and organisation names are trademarks or registered trademarks of their respective holders, and their use does not imply any affiliation with or endorsement by them.

Industry-Recognised Certificate from IITM Pravartak

Participants will be awarded a completion certificate on successful completion of the programme.



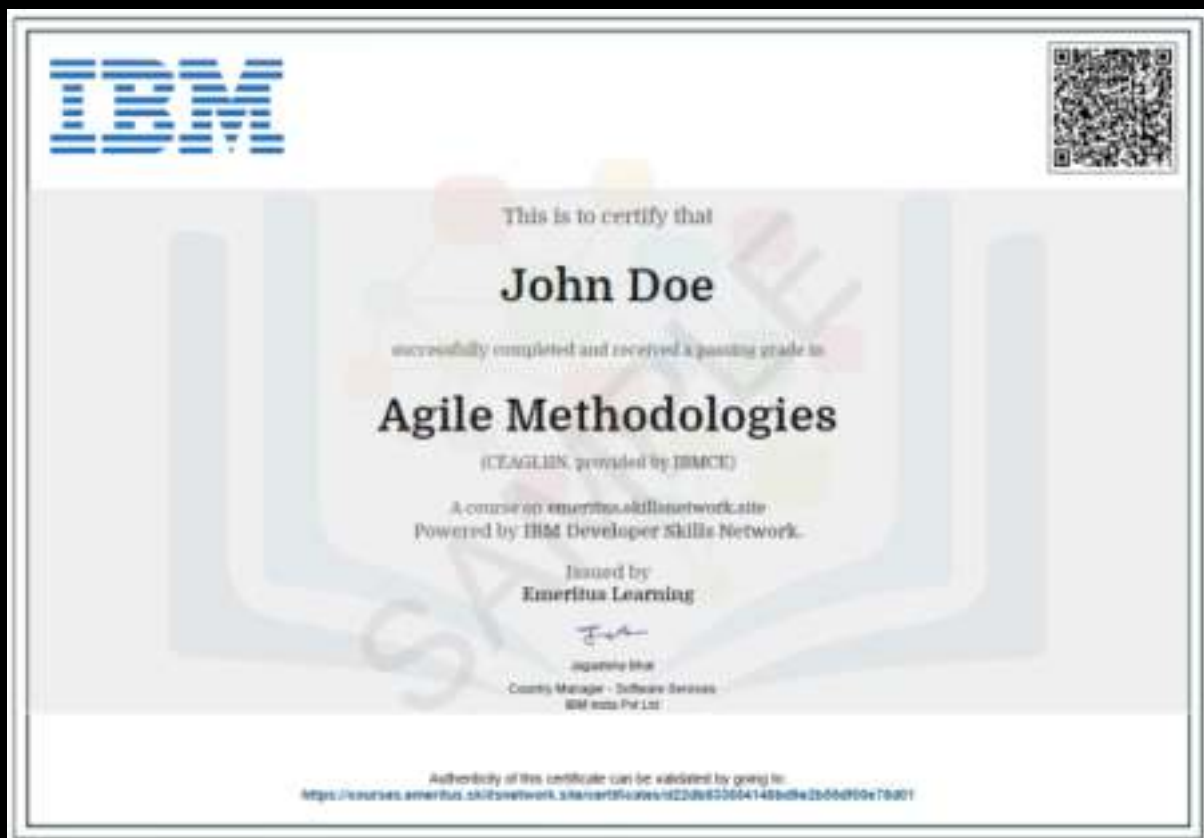
Note:

- All certificate images are for illustrative purposes only and may be subject to change at the discretion of, IITM Pravartak.
- To receive the completion certificate, the participants must score a minimum of 70% in their exams.
- Overall, 50% attendance in both domain-expert led live sessions and live guest faculty masterclasses are required to achieve programme completion.

IBM Certificates

Participants who successfully complete the programme will receive three IBM completion certificates as well as a certificate from IITM Pravartak. They will be certified in the following topics:

- Building AI Agents with RAG and LangChain
- Responsible and Ethical Generative AI
- Generative AI for Business and Professionals



Note:

- All certificate images are for illustrative purposes only and may be subject to change at the discretion of IBM.

Programme Modules

Module 1

Getting Started with Python and ChatGPT

- Installing Python and Jupyter
- What is ChatGPT and how to use it for coding help
- Live: Python installation, writing first program
- ChatGPT for debugging and code explanations

Tools: Python, Jupyter, ChatGPT

Project/Case: Use ChatGPT to create a function to extract keywords from a sentence.

Module 2

Data Types, Variables and Control Flow

- Numbers, strings, lists, dictionaries, loops and conditionals in Python
- Live coding: Build a decision-making chatbot
- Loop exercises and variable tracing

Tools: Python Tutor, Replit, ChatGPT

Project/Case: Build a user-input based chatbot that gives greetings or advice based on age/gender input.

Module 3

Functions and Working with Libraries

- Defining functions, arguments and returns and importing and using libraries
- Working with NumPy and Pandas
- Modular coding session
- Reuse logic from one file in another
- Build a simple calculator CLI
- Calling a public API
- Working with data

Tools: Jupyter, Python

Project/Case: Getting weather data in Python.

Programme Modules

Module 4

Agentic Tools in Python

- Basics of LangChain, OpenAI API, prompt formatting and response parsing
- Demo: Build a simple tool-using agent (e.g., use calculator and search tool)
- Prompt templates introduction

Tools: LangChain, OpenAI, Python

Project/Case: Build a mini assistant that uses a calculator tool and returns a formatted response to 'How many hours in X days?'

Module 5

Introduction to Agentic AI

- What is Agentic AI?
- Autonomous AI vs traditional AI, agent lifecycle, and capabilities
- Types of autonomy in AI systems
- Real-world examples of agents (assistants, planners, scouts)
- Discuss maturity levels of AI autonomy
- Compare rule-based systems vs agents
- Interactive brainstorming: Where can agents be used in business?
- Live demo of a simple agent in action (e.g., task planner)

Tools: Flowise (demo), AutoGen Studio (demo)

Project/Case: Reflection sheet: Identify 3 areas in your work/life where an AI agent can help.

Module 6

Fundamentals of AI and ML

- AI vs ML vs DL, Supervised and Unsupervised learning, Neural networks intro
- Reinforcement Learning basics
- Search and optimisation in AI agents
- Quick quiz/discussion on ML types using case examples
- Demonstration of basic models using visual tools (e.g., classification agent)
- Show DL in real life with pretrained model examples

Programme Modules

Tools: Google Teachable Machine (demo), Scikit-learn (visual), TensorFlow Playground

Project/Case: Use a visual tool to create a basic classifier (e.g., image or sentiment) and share insights.

Module 7

Programming and Frameworks for Agentic Systems

- Agents vs Functions vs APIs
- Overview of agentic libraries: LangChain, Autogen, CrewAI
- Tool abstraction and orchestration basics
- How agents use external tools via APIs
- Walk-through: Building a basic tool-using agent
- Demo: Visual orchestration with LangFlow or Flowise
- Agent execution tracing and debugging demo
- Mini hands-on: Connecting a calculator or search tool

Tools: LangChain, AutoGen, CrewAI, Flowise, LangFlow, OpenAgents (as needed)

Project/Case: Build a basic tool-using agent (e.g., calculator or web search wrapper) using either code or visual builder.

Module 8

Large Language Models (LLMs)

- What are LLMs?
- Transformer architecture (overview)
- Tokenisation and Embeddings
- Context windows and memory limits
- Basics of prompt engineering
- Tokenisation demo (breaking inputs into tokens)
- Visualisation: How attention works in Transformers
- Live exploration: Prompt responses using various LLMs
- Prompt tuning challenge: Generate summaries with context constraints

Programme Modules

Tools: OpenAI Playground, HuggingFace Spaces, LangChain (prompt templates), Tokeniser Visualisers

Project/Case: Prompt engineering challenge: Compare how different prompts produce different results for the same task.

Module 9

Embedding Models and Vector Basics

- What are embeddings?
- Token vectors vs sentence embeddings
- Distance metrics (cosine, Euclidean)
- Intro to similarity search
- Visualise word/sentence embeddings using dimension reduction (PCA/t-SNE)
- Explore cosine similarity between query and docs
- Build basic vector search using OpenAI embeddings and FAISS

Tools: OpenAI Embeddings, HuggingFace Transformers, FAISS, LangChain Embedding Functions, t-SNE tools, ChromaDB

Project/Case: Build a mini 'document similarity finder' using embeddings and FAISS/ChromaDB, where users input text and find top 3 matching docs.

Module 10

Agent Architectures and Collaboration

- Types of agents: Reactive, Deliberative, and Hybrid
- Multi-agent system fundamentals
- Task-oriented vs Goal-oriented agents
- Agent communication and reasoning frameworks
- Diagramming session: Design your own agent architecture
- Demo: CrewAI or AutoGen multi-agent setup
- Simulation: Agent collaboration on a task (e.g., writer + editor agent)
- Agent design role play: Who does what in a team?

Tools: CrewAI, AutoGen, LangChain Agents, AgentVerse (optional)

Project/Case: Design a two-agent team for a collaborative task (e.g., research + summarisation) with clear roles and interactions.

Programme Modules

Module 11

Decision-Making and Planning in Agents

- Goal setting and planning in autonomous agents
- Hierarchical vs reactive planning
- Multi-agent strategies
- Reinforcement loops in planning
- Live demo: Agent planning task using CrewAI or LangChain planning agent
- Hands-on: Modify plan based on changing goals
- Group activity: Define agent goals and break into tasks
- Scenario simulation: Travel planning agent with constraints

Tools: LangChain Agents (PlannerAgent), CrewAI, AutoGen Planning Loops

Project/Case: Build a simple goal-oriented planner agent (e.g., event scheduler or itinerary builder) with fallback handling.

Module 12

Memory and Knowledge Retrieval in Agents

- Short-term vs long-term memory in agents
- Vector stores and embedding storage
- Semantic similarity and chunking
- Retrieval Augmented Memory (RAG) loop
- Demo: Building an agent with memory (short-term + long-term)
- Hands-on: Document chunking + vector search
- Workshop: Improve agent response with memory access
- Case study: Memory use in customer support agents

Tools: ChromaDB, Pinecone, LangChain Memory, FAISS, OpenAI Embeddings

Project/Case: Create a memory-augmented agent for a document Q&A or repeat-user tracking scenario

Module 13

Prompt Engineering and Adaptive Instructions

- Prompt types: Zero-shot, One-shot, and Few-shot
- Chain-of-thought prompting

Programme Modules

- Instruction tuning basics
- Dynamic prompt construction patterns
- Prompt engineering lab: Refine prompts for clarity, tone, reasoning
- Demo: Chain-of-thought and step-by-step tasks
- Hands-on: Modular prompt assembly using LangChain or Flowise
- Activity: Fix a badly behaving agent by prompt rewriting

Tools: OpenAI Playground, LangChain PromptTemplates, Flowise, PromptLayer (optional)

Project/Case: Prompt Design Challenge: Create 3 versions of a task-solving prompt (basic, step-by-step, role-specific) and evaluate their outputs.

Module 14 Learning and Adaptation in Agents

- Reinforcement Learning fundamentals
- RLHF (Reinforcement Learning with Human Feedback)
- Reward systems for agents
- Adaptive behaviour tuning
- Demo: Adaptive agent adjusting to new inputs (using OpenAI functions or simulated RL)
- Walkthrough: Feedback loops in task agents
- Group activity: Design a reward system for a learning agent
- Comparison: Hardcoded vs adaptive behaviours

Tools: OpenAI API (with temperature tuning), LangChain + feedback loops, RL demo environments (e.g., CleanRL, simple Gridworld visual)

Project/Case: Define a reward mechanism for a hypothetical agent (e.g., support agent, or recommender) and simulate its improvement logic or rules.

Module 15 Advanced Retrieval-Augmented Generation (RAG)

- RAG architecture overview
- Combining retrieval and generation flows
- Contextual embeddings and relevance ranking
- Customising RAG for Q&A, summarisation
- Demo: Build a document Q&A bot with RAG
- Hands-on: Connect embedding model + vector store + LLM chain

Programme Modules

- RAG tuning exercise: Improve relevance, reduce hallucination
- Group debugging: Why is this RAG agent failing?

Tools: LangChain RAG Chain, ChromaDB/Pinecone, Hugging Face Transformers, Flowise

Project/Case: Build a custom RAG-powered assistant that answers questions based on a given knowledge base (PDF, text, or URL dump).

Module 16

Deploying and Monitoring Agentic Systems

- Hosting options for agents (cloud, serverless, embedded)
- API deployment walk-through
- Latency optimisation basics
- Monitoring principles
- Demo: Deploying an agent on Hugging Face, Streamlit, or LangChain + FastAPI
- Performance testing: latency and response quality
- Add observability using LangSmith or OpenTelemetry
- Live deployment of one agent end to end

Tools: Hugging Face Spaces, Streamlit, LangChain + FastAPI, LangSmith, Render/Replit

Project/Case: Deploy your own agent (e.g., Q&A bot or planner) on a cloud/no-code platform and test it live with users

Module 17

Agent Evaluation and Debugging

- Why agent evaluation is hard
- Key metrics: task success, coherence, correctness, coverage, latency
- Logging and tracing basics
- Manual vs automated evaluation approaches
- Demo: Agent tracing and error inspection using LangSmith
- Case review: Diagnosing agent failure (RAG or Planner)
- Hands-on: Design a custom evaluation rubric
- Activity: Fix a broken agent based on logs

Programme Modules

Tools: LangSmith, PromptLayer, AutoGen logs, LangChain Tracing, Gradio logs

Project/Case: Evaluate a given agent using a checklist or metric rubric; submit improvement recommendations and patch changes.

Module 18

Ethics, Safety and Governance in Agentic AI

- What is responsible AI?
- Risks with autonomous agents (bias, hallucinations, misuse)
- Data privacy and consent for agent interactions
- Group debate: Should AI agents make decisions independently?
- Walk-through: Designing a safety layer (rate limiting, content filtering)
- Review real-world agent failures and ethical breaches

Tools: OpenAI Moderation API, Guardrails AI, AI Fairness Checklist, and Ethics Cards Toolkit

Project/Case: Scenario Design: Learners create an agent with built-in safety mechanisms (e.g., content moderation or intent validation); Document trade-offs between autonomy and control.

Module 19

Real-World Applications and Case Studies

- Agent use cases across domains (business, education, healthcare, customer support, research)
- ROI of agent adoption
- Success stories and failure lessons
- Demo: Business workflow automation agent (e.g., lead qualifier or research assistant)
- Group discussion: Analyse case studies
- Ideation: Brainstorm your domain-specific agent
- Interactive Q&A with instructor

Tools: OpenAgents, LangChain Hub, Flowise, CrewAI templates, Streamlit demos

Project/Case: Identify a relevant agent use case in your domain and outline a basic agent design with roles, tools, and outcomes.

Module 20

Low-Code Tools Deep Dive

- What are low-code/no-code tools for agents?
- Pros and cons of visual pipelines

Programme Modules

- Intro to Flowise, LangFlow, AutoGen Studio
- When to use low code over code
- Guided walk-through: Build a multi-tool agent in Flowise or LangFlow
- Explore visual node linking, memory blocks, and prompt templates
- Live debugging with flow-based tools

Tools: Flowise, LangFlow, AutoGen Studio, OpenAgents (UI), LangChainHub visual flows

Project/Case: Assignment: Use Flowise to build a planner agent that fetches event info, stores it in memory, and gives recommendations. Learners submit a visual flow screenshot and agent output.

Module 21

Capstone Project—Build Your Own Agent

- Project guidelines and success checklist
- Project templates: research agent, planner, assistant, tutor, etc.
- Tips on deployment and UI wrapping
- Project planning and peer idea reviews
- Demo: Step-by-step agent build with tools and memory
- Breakout rooms for mentorship support
- Final presentations and feedback
- Group reflection: what worked, what didn't
- Instructor showcase of top submissions

Tools: LangChain, Flowise, CrewAI, OpenAI, Streamlit, Hugging Face, ChromaDB, Pinecone

Project/Case: Design, build, and demo a fully functional AI agent tailored to a use case (with RAG, memory, tools, and deployment)

All programme curriculum - topics, modules, submodules, tools — stated here is subject to change as per the discretion of IITM Pravartak or Emeritus



IBM Certifications

Certificate 1

Building AI Agents with RAG and LangChain

- Course Introduction
- RAG Framework
- Prompt Engineering and LangChain

Certificate 2

Responsible and Ethical Generative AI

- Limitations and Ethical Issues of Generative AI
- Social and Economic Impact and Responsible Generative AI

Certificate 3

Generative AI for Business and Professionals

- Generative AI in Business: Trends, Ideas, and Implementation
- Generative AI: Impact and Opportunities for Career Growth



Fundamental Learning Outcomes



Design and deploy autonomous AI agents that can plan, reason and act using LLMs, memory, and tool integration.



Develop intelligent applications using industry-standard frameworks such as LangChain, CrewAI and AutoGen.



Apply GenAI concepts such as Retrieval-Augmented Generation (RAG), prompt engineering, and reward tuning to create context-aware, intelligent systems.



Monitor, evaluate and optimise agent behaviour using tracing, logging and performance metrics.



Solve domain-specific problems in business, finance, education, healthcare, customer service and more through multi-agent orchestration.



Build and present a real-world AI agent, end to end, via a guided Capstone Project.



Earn globally recognised certifications from IITM Pravartak and IBM to validate your capabilities.

Emeritus Career Services Benefits

Fifteen recorded sessions and resources in the following categories

(Please note: These sessions are not live):

IIMJobs Pro-Membership



Navigating Job Search



LinkedIn Profile Optimisation



Resume and Cover Letter



Interview Preparation









Key benefits:

- **Pro-Membership and features of IIMJobs and Hrist:** Access to job insights recruiter action status, follow-up actions, and ability to chat with recruiters who have shortlisted your profile
- **Spotlight on IIMJobs and Hrist:** Profile boost for applied jobs (that align with acquired certification), greater profile visibility - highlighted with institute name along with a testimony of certificate acquisition by the candidate
- **Spotlight Plus:** All the benefits of Spotlight and added advantages like profile and rank boost in the recruiter search database
- **Resume builder tool:** 6-month access to DIY resume builder, auto resume creator, optimization suggestions based on key parameters, guide on information to be incorporated, and unlimited resume iterations within the duration.

Please note:

- IITM Pravartak or Emeritus do NOT promise or guarantee a job or progression in your current job. Career Services are only offered as a service that empowers you to manage your career proactively.
- The Career Services mentioned here are offered by Emeritus. IITM Pravartak is NOT involved in any way and makes no commitments regarding the Career Services mentioned here.
- This service is available only for Indian residents enrolled into selected Emeritus programmes.

Programme Details

 Programme Duration	5 Months
 Programme Start Date	30 September 2025
 Programme Fee	INR 1,15,000 + GST
 Payment Options	Basic instalment plans
 Special Pricing	Up to 10% fee benefit for corporate plans
 Programme Format	Weekly live sessions, Select live guest faculty masterclasses, IIT Madras Research Park campus immersion for 2 days (optional)*

**Note: Only participants who have successfully completed the programme will be allowed to visit the campus.*

Eligibility Criteria:

Graduates (10+2+3) can apply; math and programming knowledge preferred

**Note:*

- Only participants who have successfully completed the programme will be allowed to visit the IITM Research Park campus.
- The immersion will only be conducted with a minimum number of learners signing up.
- Schedule for faculty masterclass will be shared post programme orientation.



About IITM Pravartak

IITM Pravartak is funded by the Department of Science and Technology, Government of India, under its National Mission on Interdisciplinary Cyber-Physical Systems, and hosted as a Technology Innovation Hub (TIH) by IIT Madras. The NM-ICPS is a comprehensive Mission aimed at complete convergence with all stakeholders by establishing strong linkages between academia, industry, Government, and International Organisations.

About Emeritus

Emeritus is committed to teaching the skills of the future by making high-quality education accessible and affordable to individuals, organisations and governments worldwide. It does this by collaborating with more than 80 top-tier universities across the United States, Europe, Latin America, Southeast Asia, India, and China. Emeritus's short courses, degree programmes, professional certificates, and senior executive programmes help individuals learn new skills and transform their lives, companies, and organizations. Its unique model of state-of-the-art technology, curriculum innovation; and hands-on instruction from senior faculty, mentors, and coaches has educated more than 350,000 individuals across more than 80 countries.



Apply for the programme here

APPLY NOW

Refer your colleague and earn benefits

REFER NOW

Schedule a call with a programme advisor

KNOW MORE



WhatsApp an Advisor on +918657038243*

**This number does not accept any calls. Please message your queries.*

For registration and any other information,
please get in touch with us at tech.certificates@emeritus.org

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