

GENERATIVE AI MASTERCLASS

SYLLABUS

Module 1: Introduction to Generative AI

- What is Generative AI?
- Generative AI vs Traditional AI
- How modern AI systems work
- LLMs and foundation models
- Common Generative AI applications
- AI limitations and responsible usage

Module 2: Large Language Models & AI Assistants

- Understanding LLMs
- Tokens and context
- Chat-based AI assistants
- ChatGPT, Gemini, Claude and Copilot
- Choosing the right AI model
- Practical AI tasks

Module 3: Prompt Engineering

- Prompt fundamentals
- Role and context
- Instructions and constraints
- Few-shot prompting
- Structured prompts
- Output formatting
- Prompt optimization

Module 4: AI APIs & SDKs

- Introduction to AI APIs
- API keys and authentication

- Sending prompts through APIs
- Working with structured responses
- Integrating AI into applications
- API usage and cost considerations

Module 5: Generative AI Application Development

- AI-powered applications
- Chatbot architecture
- Text generation
- AI content generation
- Connecting AI with web applications
- Building practical AI features

Module 6: Retrieval-Augmented Generation (RAG)

- What is RAG?
- Knowledge bases
- Embeddings
- Vector databases
- Document-based question answering
- Building a basic RAG workflow

Module 7: AI Agents & Automation

- What are AI agents?
- Agent workflows
- Tools and function calling
- Multi-step AI tasks
- AI automation
- Practical business workflows

Module 8: Multimodal AI

- Text + image AI
- Image understanding
- Vision models

- AI image generation
- Audio and video AI
- Multimodal applications

Module 9: AI for Software Development

- AI-assisted coding
- Code generation
- Debugging with AI
- Code explanation and documentation
- GitHub Copilot and coding assistants
- Developer productivity

Module 10: AI Security, Ethics & Responsible AI

- AI hallucinations
- Privacy and sensitive information
- Bias and fairness
- Copyright and plagiarism
- Secure AI usage
- Responsible AI practices

Module 11: AI Deployment & Business Applications

- Deploying AI applications
- AI in education
- AI in business
- AI customer support
- AI productivity systems
- AI-powered automation
- Freelancing and career opportunities

Module 12: Capstone Projects

- Project planning
- AI application development
- Testing and refinement

- Documentation
- GitHub portfolio
- Final project presentation