

AI-First Dev: Copilot, LangChain & LlamaIndex

Learn to build AI-first applications using Copilot, LangChain and LlamaIndex, from prompting and RAG to agentic systems.

12 Days

96 HOURS

71

TOPICS

9

HANDS-ON ACTIVITIES

COURSE OVERVIEW

This course begins with AI-assisted software engineering using GitHub Copilot within VS Code, then covers Python foundations for AI use cases including data manipulation and visualisation. It progresses through generative AI and large language model fundamentals, prompt engineering, and retrieval-augmented generation, including chunking, embeddings, and vector databases. Learners then build chatbots and multimodal AI applications before moving into agentic AI concepts, agent design with LangChain, and agentic RAG with LlamaIndex. The course concludes with an end-to-end document AI application and a capstone project where a complete AI solution is designed, built, and presented.

WHO THIS COURSE IS FOR

Software Developers

AI Engineers

Python Developers

Application Developers

Machine Learning Practitioners

PREREQUISITES

- Knowledge of python like data types, data structures, functions, OOPs

LEARNING OBJECTIVES

- AI-first software engineering mindset
- Enable developers to use AI pair-programming tools effectively
- Build strong foundations in Generative AI, RAG, and Agentic AI
- Design and implement agent-based systems using LangChain & LlamaIndex
- Deliver production-ready AI applications
- Validate learning through industry-aligned capstone projects

71 Topics

DAY 1

01

Hands-On

AI-First Software Engineering

TOPICS

- AI-first development mindset
- Traditional vs AI-assisted engineering
- Introduction to Copilot-assisted development
- Using VS Code with Copilot

PROMPTING COPILOT FOR:

- Code generation
- Code explanation
- Refactoring and optimization
- Reviewing, validating, and securing AI-generated code

DAY 2

02

Hands-On

AI and Programming with Python

TOPICS

Python fundamentals for AI use cases · Data manipulation using Python (Pandas) · Basic data analysis workflows · Data visualization concepts · Integrating Python with AI tools and APIs

DAY 3

03

Hands-On

Generative AI & LLM Foundations

TOPICS

- Introduction to Generative AI
- High-level understanding of Large Language Models
- Tokens, context windows, and inference
- Prompt engineering fundamentals

WRITING EFFECTIVE PROMPTS FOR:

- Tasks
- Conversations

LLM USAGE PATTERNS:

- Single-shot
- Multi-turn interactions

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Hands-On

Retrieval-Augmented Generation (RAG)

TOPICS

- Limitations of standalone LLMs
- RAG architecture and workflow
- Document loading and preprocessing
- Chunking strategies (fixed, semantic)
- Embedding generation
- Indexing and querying workflows
- Vector database fundamentals

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Hands-On

Building Chatbots & Multimodal AI

TOPICS

Designing a RAG-based chatbot · Document ingestion pipeline · Query engine configuration · Chat interaction flow · Introduction to multimodal AI · Vector stores for multimodal RAG

06

Hands-On

Agentic AI - Concepts & Design

TOPICS

Introduction to Agentic AI · RAG vs Agentic RAG

AGENT LIFECYCLE:

Planning · Execution · Reflection

Agent behaviors and roles · Tool calling concepts · Agent safety and guardrails

07

Hands-On

Agentic AI with LangChain

TOPICS

LangChain architecture · Chains vs Agents · Tools and toolkits · Function calling · Memory types in LangChain · Multi-step agent execution · Building agentic workflows

08

Hands-On

Agentic RAG with LlamaIndex

TOPICS

LlamaIndex architecture · Query routing strategies · Tool-augmented agents · Agent reasoning workflows · Implementing Agentic RAG systems

09

Hands-On

AI-Powered Document Applications

TOPICS

- Responsive UI for document upload
- Document chat interface (RAG)
- Auto-generated document insights dashboard
- Multi-format document support (PDF, DOCX, TXT)
- Streaming LLM responses
- Persistent chat history
- Context-aware multi-turn conversations
- Advanced prompt grounding
- Response reference citation

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Capstone Project

Participants will design, build, and present one complete AI solution.

CAPSTONE OPTIONS

AI-First Code Assistant · RAG-based Enterprise Document Chat · Agentic Research Assistant (LangChain) · Multimodal Document Intelligence System

EVALUATION TRACKS

Generative AI · Multimodality · Agentic AI

Outcome: Production-ready demo + evaluation

Capstone Evaluation

Students present their solution for evaluation

Trainer demonstrates the solution

NOTES

- Format: Instructor-led | Hands-on | Capstone-driven
- Level: Intermediate (Python required)
- By the end of this course, participants will be able to: Apply AI-assisted development workflows in real projects; Build Generative AI and RAG-based applications; Design Agentic AI systems with reasoning and tool usage; Implement agents using LangChain and LlamaIndex; Deploy and evaluate enterprise-ready AI solutions; Work on a complete capstone project demonstrating applied skills

HANDS-ON ACTIVITIES

Practise What You Learn

#	MODULE	ACTIVITY
01	AI-First Software Engineering	AI-assisted coding and refactoring exercises
02	AI and Programming with Python	Python → Data → AI mini pipeline
03	Generative AI & LLM Foundations	Prompt design and optimization labs
04	Retrieval-Augmented Generation (RAG)	Build a complete RAG pipeline
05	Building Chatbots & Multimodal AI	Document chatbot implementation
06	Agentic AI - Concepts & Design	Simple agent reasoning workflows
07	Agentic AI with LangChain	Agentic system using LangChain
08	Agentic RAG with LlamaIndex	Agentic RAG implementation
09	AI-Powered Document Applications	End-to-end document AI application

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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