

AI 103: Develop AI Apps and Agents on Azure



Duration: 4 days

Audience: This course is intended for software developers wanting to build AI infused applications that leverage Microsoft Foundry. Topics in this course include developing generative AI apps, building AI agents, and solutions that implement knowledge connections or tools in your agentic applications. This course also covers multimodal capabilities and understanding of complex content. This course was designed for software engineers concerned with building, managing and deploying AI solutions that leverage Microsoft Foundry. They are familiar with Python and have knowledge on using APIs and SDKs to build agents and generative AI solutions on Azure.

Prerequisites: Before attending this course, students must have: Familiarity with Python programming, experience using REST APIs and SDKs to build cloud-connected applications, foundational knowledge of Azure services and the Azure portal, and an understanding of basic AI/ML concepts such as machine learning models and inferencing. Prior experience with Azure AI services is helpful but not required.

Description: This course is designed for software developers building production ready AI solutions on Microsoft Azure. This course covers the full spectrum of development with Microsoft Foundry—from deploying and optimizing generative AI models and implementing RAG pipelines, to building autonomous agents with tool integration, multi-agent orchestration, and responsible AI safeguards. Students also explore multimodal capabilities including vision, speech, natural language analysis, and document/content extraction, learning to connect knowledge sources and external services into intelligent agentic workflows.

OUTLINE:

MODULE 1: DEVELOP GENERATIVE AI APPS IN AZURE

Generative artificial intelligence (AI) is becoming more accessible through comprehensive development platforms like Microsoft Foundry. Learn how to build generative AI applications that use language models to interact with your users.

Lessons:

- Plan and prepare to develop AI solutions on Azure
- Select, deploy, and evaluate Microsoft Foundry models
- Develop a generative AI chat app with Microsoft Foundry
- Develop generative AI apps that use tools
- Optimize generative AI model performance with Microsoft Foundry
- Implement a responsible generative AI solution in Microsoft Foundry

Exercises:

- Prepare for an AI development project
- Select, deploy, and evaluate models
- Create a generative AI chat app

- Create a generative AI chat app that uses tools
- Optimize generative AI model performance
- Apply guardrails to prevent the output of harmful content

MODULE 2: DEVELOP AI AGENTS ON AZURE

Generative Artificial Intelligence (AI) is becoming more functional and accessible, and AI agents are a key component of this evolution. This learning path will help you understand the AI agents, including when to use them and how to build them, using Microsoft Foundry Agent Service and Microsoft Agent Framework. By the end of this learning path, you will have the skills needed to develop AI agents on Azure.

Lessons:

- Develop AI agents with Microsoft Foundry and Visual Studio Code
- Integrate custom tools into your agent
- Integrate MCP Tools with Azure AI Agents
- Build knowledge-enhanced AI agents with Foundry IQ
- Integrate your agent with Microsoft 365

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- Build agent-driven workflows using Microsoft Foundry
- Develop an AI agent with Microsoft Agent Framework
- Orchestrate a multi-agent solution using the Microsoft Agent Framework
- Discover Azure AI Agents with A2A

Exercises:

- Build and deploy an AI agent
- Build an agent with custom tools
- Connect MCP tools to Azure AI Agents
- Integrate an AI agent with Foundry IQ
- Publish a Foundry agent to Teams
- Create an Agent-driven Workflow
- Develop an Azure AI agent with the Microsoft Agent Framework SDK
- Develop a multi-agent solution
- Connect to remote Azure AI Agents with the A2A protocol

MODULE 3: DEVELOP NATURAL LANGUAGE SOLUTIONS IN AZURE

Natural language solutions use language models to interpret the semantic meaning of written or spoken language, and in some cases respond based on that meaning. You can use Microsoft Foundry to develop AI apps and agents that can analyze text, transcribe and synthesize speech, and translate languages.

Lessons:

- Analyze text with Azure Language in Foundry Tools
- Develop a text analysis agent with the Azure Language MCP server
- Develop a speech-capable generative AI application
- Create speech-enabled apps with Azure Speech in Microsoft Foundry Tools
- Develop a speech agent with the Azure Speech MCP server
- Develop an Azure Speech Voice Live Agent in Microsoft Foundry
- Translate text and speech with Microsoft Foundry Tools

Exercise:

- Analyze text
- Develop a text analysis agent

- Use speech-capable generative AI models
- Create a speech-enabled app
- Use Azure Speech in an agent
- Develop a Voice Live agent
- Translate text and speech

MODULE 4: EXTRACT INSIGHTS FROM VISUAL DATA ON AZURE

Use generative AI, computer vision, and Content Understanding capabilities in Azure to extract insights from visual data, supporting scenarios like:

- Image analysis
- Image and video generation
- Content Understanding and enrichment
- Visual search and classification
- Digital asset management (DAM)
- Multimodal AI solutions

Lessons:

- Develop a vision-enabled generative AI application
- Generate images with AI
- Generate videos with Microsoft Foundry
- Analyze images with Content Understanding
- Create a multimodal analysis solution with Azure Content Understanding
- Create an Azure Content Understanding client application
- Extract data with Azure Document Intelligence
- Create a knowledge mining solution with Azure AI Search

Exercise:

- Develop a vision-enabled chat app
- Generate images with AI
- Generate video with Sora 2 in Microsoft Foundry
- Analyze images with Content Understanding
- Extract information from multimodal content
- Develop a Content Understanding client application
- Analyze documents with Document Intelligence
- Create a knowledge mining solution

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