

Develop AI Apps and Agents on Azure

Course AI-103T00 4 Days Instructor-led, Hands on

Course Information

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.

Who Should Attend?

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.

Course Outline

Module 1: Plan and prepare to develop AI solutions on Azure

- What is AI?
- Microsoft Foundry
- Foundry Tools
- Developer tools and SDKs
- Responsible AI
- Module assessment

Module 2: Select, deploy, and evaluate Microsoft Foundry models

- Explore the model catalog
- Select models using benchmarks
- Deploy models to endpoints
- Evaluate model performance

Module 3: Develop a generative AI chat app with Microsoft Foundry

- Explore with the model playground

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- Choose an endpoint and SDK
- Generate responses with the Responses API
- Generate responses with the ChatCompletions API

Module 4: Develop generative AI apps that use tools

- What are tools?
- Use the code_interpreter tool
- Use the web_search tool
- Use the file_search tool
- Use the functions tool
- Module assessment

Module 5: Optimize generative AI model performance with Microsoft Foundry

- Optimize model output with prompt engineering
- Ground your model with Retrieval Augmented Generation
- Fine-tune a model for consistent behavior
- Compare and combine optimization strategies
- Module assessment

Module 6: Implement a responsible generative AI solution in Microsoft Foundry

- Plan a responsible generative AI solution
- Map potential harms
- Measure potential harms
- Mitigate potential harms
- Manage a responsible generative AI solution
- Module assessment

Module 7: Develop AI agents with Microsoft Foundry and Visual Studio Code

- Understand AI agents and Microsoft Foundry Agent Service
- Explore development approaches
- Build your first agent in Microsoft Foundry
- Set up Visual Studio Code for agent development
- Configure and manage agents in Visual Studio Code
- Extend agent capabilities with tools
- Test, deploy, and integrate agents

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Module 8: Integrate custom tools into your agent

- Why use custom tools
- Options for implementing custom tools
- How to integrate custom tools
- Module assessment

Module 9: Integrate MCP Tools with Azure AI Agents

- Understand MCP tool discovery
- Integrate agent tools using an MCP server and client
- Use Azure AI agents with MCP servers
- Module assessment

Module 10: Build knowledge-enhanced AI agents with Foundry IQ

- Understanding RAG for agents
- Explore Foundry IQ
- Configure data sources for knowledge bases
- Configure retrieval with Foundry IQ

Module 11: Integrate your agent with Microsoft 365

- Understand Foundry agent publishing options
- Publish an agent from Foundry portal to Teams
- Advanced - Use Microsoft 365 Agents Toolkit
- Access Microsoft 365 data with Work IQ
- Test and iterate your integrated agent

Module 12: Build agent-driven workflows using Microsoft Foundry

- Understand Workflows
- Identify Workflow Patterns
- Create workflows in Microsoft Foundry
- Add Agents to a Workflow
- Apply Power Fx in Workflows
- Maintain Workflows in Microsoft Foundry
- Use workflows in code
- Module Assessment

Module 13: Develop an AI agent with Microsoft Agent Framework

- Understand Microsoft Agent Framework AI agents
- Create an Azure AI agent with Microsoft Agent Framework
- Add tools to Azure AI agent

Module 14: Orchestrate a multi-agent solution using the Microsoft Agent Framework

- Understand the Microsoft Agent Framework
- Understand agent orchestration
- Use concurrent orchestration
- Use sequential orchestration
- Use group chat orchestration
- Use handoff orchestration
- Use Magentic orchestration

Module 15: Discover Azure AI Agents with A2A

- Define an A2A agent
- Implement an agent executor
- Host an A2A server
- Connect to your A2A agent
- Module assessment

Module 16: Analyze text with Azure Language in Foundry Tools

- Azure Language in Microsoft Foundry Tools
- Detect language
- Extract entities
- Extract personally identifiable information (PII)
- Module assessment

Module 17: Develop a text analysis agent with the Azure Language MCP server

- Understand the Azure Language MCP server
- Connect and use the Language MCP server with an agent

Module 18: Develop a speech-capable generative AI application

- Choose a speech-capable model
- Transcribe speech
- Synthesize speech
- Module assessment

Module 19: Create speech-enabled apps with Azure Speech in Microsoft Foundry Tools

- Azure Speech in Foundry Tools
- Use the Speech to Text API
- Use the Text to Speech API
- Configure audio format and voices
- Use Speech Synthesis Markup Language
- Module assessment

Module 20: Develop a speech agent with the Azure Speech MCP server

- Understand the Azure Speech MCP server
- Connect and use the Speech MCP server with an agent

Module 21: Develop an Azure Speech Voice Live Agent in Microsoft Foundry

- Explore the Azure Voice Live API
- Explore the AI Voice Live client library for Python
- Create a Voice Live agent
- Module assessment

Module 22: Translate text and speech with Microsoft Foundry Tools

- Translation in Microsoft Foundry
- Translate text
- Translate speech
- Module assessment

Module 23: Develop a vision-enabled generative AI application

- Use a vision-capable model in the Microsoft Foundry portal

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- Develop a vision-based chat app
- Module assessment

Module 24: Generate images with AI

- What are image-generation models?
- Explore image-generation models in Microsoft Foundry portal
- Create a client application that uses an image generation model
- Module assessment

Module 25: Generate videos with Microsoft Foundry

- Deploy a video generating model
- Generate video from a prompt
- Generate video in Python
- Module assessment

Module 26: Analyze images with Content Understanding

- What is Content Understanding?
- Analyze images with Content Understanding
- Module assessment

Module 27: Create a multimodal analysis solution with Azure Content Understanding

- What is Azure Content Understanding?
- Create a Content Understanding analyzer
- Use the Content Understanding API
- Module assessment

Module 28: Create an Azure Content Understanding client application

- Prepare to use the AI Content Understanding API
- Create a Content Understanding analyzer
- Analyze content
- Module assessment

Module 29: Extract data with Azure Document Intelligence

- What is Azure Document Intelligence?

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- Use the Document Intelligence Studio
- Use prebuilt models
- Train and use custom models
- Module assessment

Module 30: Create a knowledge mining solution with Azure AI Search

- What is Azure AI Search?
- Extract data with an indexer
- Enrich extracted data with AI skills
- Search an index
- Persist extracted information in a knowledge store
- Module assessment