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Learning Style: Virtual Classroom

Technology: Microsoft

Difficulty: Intermediate

Course Duration: 4 Days

Develop AI Apps and Agents on Azure (AI-103)



About This Course:

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.

Course Objectives:

- 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
- 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
- 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
- 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
- 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

Audience:

- This course was designed for software engineers concerned with building, managing and deploying AI solutions that leverage Microsoft Foundry.

Prerequisites:

- Student should be familiar with Python and have knowledge on using APIs and SDKs to build agents and generative AI solutions on Azure.

Course Outline:

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

2 - Select, deploy, and evaluate Microsoft Foundry models

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

3 - Develop a generative AI chat app with Microsoft Foundry

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

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

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

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

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

8 - Integrate custom tools into your agent

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

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

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

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

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

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

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

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

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

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

18 - Develop a speech-capable generative AI application

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

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

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

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

22 - Translate text and speech with Microsoft Foundry Tools

- Translation in Microsoft Foundry
- Translate text

- Translate speech
- Module assessment

23 - Develop a vision-enabled generative AI application

- Use a vision-capable model in the Microsoft Foundry portal
- Develop a vision-based chat app
- Module assessment

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

25 - Generate videos with Microsoft Foundry

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

26 - Analyze images with Content Understanding

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

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

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

29 - Extract data with Azure Document Intelligence

- What is Azure Document Intelligence?
- Use the Document Intelligence Studio
- Use prebuilt models
- Train and use custom models
- Module assessment

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