

## MS-AI102T00: DEVELOP AI SOLUTIONS IN AZURE

DURATION	LEVEL	TECHNOLOGY	DELIVERY METHOD	CERTIFICATION
5 Days	Intermediate	Azure AI	Instructor-led	AI-102 Exam

### INTRODUCTION

AI-102: Develop AI solutions in Azure is intended for software developers wanting to build AI infused applications that leverage Azure AI Foundry and other Azure AI services. Topics in this course include developing generative AI apps, building AI agents, and solutions that implement computer vision and information extraction.

### AUDIENCE PROFILE

This course was designed for software engineers concerned with building, managing and deploying AI solutions that leverage Azure AI Foundry and other Azure AI services. They are familiar with C# or Python and have knowledge on using REST-based APIs and SDKs to build generative AI, computer vision, language analysis, and information extraction solutions on Azure.

### PREREQUISITES

Before attending this course, delegates must have:

- Knowledge of Microsoft Azure and ability to navigate the Azure portal
- Knowledge of either C#, Python, or JavaScript

### COURSE OBJECTIVES

After completing this course, students will be able to:

- Create, configure, deploy, and secure Azure Cognitive Services
- Integrate speech services
- Integrate text analytics
- Create language understanding capabilities with LUIS
- Create and manage Azure Cognitive Search solutions
- Create intelligent agents using the Bot Framework
- Implement Computer Vision solutions

### COURSE CONTENT

#### **Module 1: Develop generative AI apps in Azure**

Generative Artificial Intelligence (AI) is becoming more accessible through comprehensive development platforms like Azure AI Foundry. Learn how to build generative AI applications that use language models to chat with your users.

#### **Module 1.1: Plan and prepare to develop AI solutions on Azure**

Microsoft Azure offers multiple services that enable developers to build amazing AI-powered solutions. Proper planning and preparation involve identifying the services you'll use and creating an optimal working environment for your development team.

#### **Module 1.3: Develop an AI app with the Azure AI Foundry SDK**

Use the Azure AI Foundry SDK to develop AI applications with Azure AI Foundry projects.

#### **Module 1.5: Develop a RAG-based solution with your own data using Azure AI Foundry**

Retrieval Augmented Generation (RAG) is a common pattern used in generative AI solutions to ground prompts with your data. Azure AI Foundry provides support for adding data, creating indexes, and integrating them with generative AI models to help you build RAG-based solutions.

#### **Module 1.7: Implement a responsible generative AI solution in Azure AI Foundry**

#### **Module 1.2: Choose and deploy models from the model catalogue in Azure AI Foundry portal**

Choose the various language models that are available through the Azure AI Foundry's model catalog. Understand how to select, deploy, and test a model, and to improve its performance

#### **Module 1.4: Get started with prompt flow to develop language model apps in the Azure AI Foundry**

Learn about how to use prompt flow to develop applications that leverage language models in the Azure AI Foundry.

#### **Module 1.6: Fine-tune a language model with Azure AI Foundry**

Train a base language model on a chat-completion task. The model catalog in Azure AI Foundry offers many open-source models that can be fine-tuned for your specific model behavior needs.

#### **Module 1.8: Evaluate generative AI performance in Azure AI Foundry portal**

Evaluating copilots is essential to ensure your generative AI applications meet user needs, provide accurate responses,

Generative AI enables amazing creative solutions but must be implemented responsibly to minimize the risk of harmful content generation.

and continuously improve over time. Discover how to assess and optimize the performance of your generative AI applications using the tools and features available in the Azure AI Studio.

## 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 Azure AI Foundry Agent Service and Semantic Kernel Agent Framework. By the end of this learning path, you will have the skills needed to develop AI agents on Azure.

### Module 2.1: Get started with AI agent development on Azure

AI agents represent the next generation of intelligent applications. Learn how they can be developed and used on Microsoft Azure.

### Module 2.3: Integrate custom tools into your agent

Built-in tools are useful, but they may not meet all your needs. In this module, learn how to extend the capabilities of your agent by integrating custom tools for your agent to use.

### Module 2.5: Integrate MCP Tools with Azure AI Agents

Enable dynamic tool access for your Azure AI agents. Learn how to connect MCP-hosted tools and integrate them seamlessly into agent workflows.

### Module 2.7: Orchestrate a multi-agent solution using Microsoft Agent Framework

Learn how to use the Microsoft Agent Framework SDK to develop your own AI agents that can collaborate for a multi-agent solution.

### Module 2.2: Develop an AI agent with Azure AI Foundry Agent Service

This module provides engineers with the skills to begin building agents with Azure AI Foundry Agent Service.

### Module 2.4: Develop a multi-agent solution with Azure AI Foundry Agent Service

Break down complex tasks with intelligent collaboration. Learn how to design multi-agent solutions using connected agents.

### Module 2.6: Develop an AI agent with Microsoft Agent Framework

This module provides engineers with the skills to begin building Azure AI Foundry Agent Service agents with Microsoft Agent Framework.

### Module 2.8: Discover Azure AI Agents with A2A

Learn how to implement the A2A protocol to enable agent discovery, direct communication, and coordinated task execution across remote agents.

## 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 the Language service to build language models for your applications and explore Azure AI Foundry to use generative models for speech.

### Module 3.1: Analyze text with Azure AI Language

The Azure AI Language service enables you to create intelligent apps and services that extract semantic information from text.

### Module 3.3: Build a conversational language understanding model

The Azure AI Language conversational language understanding service (CLU) enables you to train a model that apps can use to extract meaning from natural language.

### Module 3.5: Custom named entity recognition

Build a custom entity recognition solution to extract entities from unstructured documents

### Module 3.7: Create speech-enabled apps with Azure AI services

The Azure AI Speech service enables you to build speech-enabled applications. This module focuses on using the speech-to-text and text to speech APIs, which enable you to create apps that are capable of speech recognition and speech synthesis.

### Module 3.2: Create question answering solutions with Azure AI Language

The question answering capability of the Azure AI Language service makes it easy to build applications in which users ask questions using natural language and receive appropriate answers.

### Module 3.4: Create a custom text classification solution

The Azure AI Language service enables processing of natural language to use in your own app. Learn how to build a custom text classification project.

### Module 3.6: Translate text with Azure Translator service

The Translator service enables you to create intelligent apps and services that can translate text between languages.

### Module 3.8: Translate speech with the Azure AI Speech service

Translation of speech builds on speech recognition by recognizing and transcribing spoken input in a specified language, and returning translations of the transcription in one or more other languages.

### **Module 3.9: Develop an Audio-enabled generative AI Application**

A voice carries meaning beyond words, and audio-enabled generative AI models can interpret spoken input to understand tone, intent, and language. Learn how to build audio-enabled chatapps that listen and respond to audio.

### **Module 4: Develop Computer vision solutions in Azure**

Computer vision is an area of artificial intelligence that deals with visual perception. Azure AI includes multiple services that support common computer vision scenarios.

#### **Module 4.1: Analyze images**

With the Azure AI Vision service, you can use pre-trained models to analyze images and extract insights and information from them.

#### **Module 4.3: Detect, analyze, and recognize faces**

The ability for applications to detect human faces, analyze facial features and emotions, and identify individuals is a key artificial intelligence capability.

#### **Module 4.5: Detect objects in images**

Object detection is used to locate and identify objects in images. You can use Azure AI Custom Vision to train a model to detect specific classes of object in images.

#### **Module 4.7: Develop a vision-enabled generative AI application**

A picture says a thousand words, and multimodal generative AI models can interpret images to respond to visual prompts. Learn how to build vision-enabled chat apps.

### **Module 5: Develop AI information extraction solutions in Azure**

Use AI to extract information from content to support scenarios like Data capture, business process automation, meeting summarization and analysis, Digital asset management, knowledge mining.

#### **Module 5.1: Create a multimodal analysis solution with Azure AI Content Understanding**

Use Azure AI Content Understanding for multimodal content analysis and information extraction.

#### **Module 5.3: Use prebuilt Document intelligence models**

Learn what data you can analyze by choosing prebuilt Forms Analyzer models and how to deploy these models in a Document intelligence solution.

#### **Module 5.5: Create a knowledge mining solution with Azure AI Search**

Unlock the hidden insights in your data with Azure AI Search. In this module, you'll learn how to implement a knowledge mining solution that extracts and enriches data, making it searchable and ready for deeper analysis.

#### **Module 4.2: Read text in images**

The Azure AI Vision Image Analysis service uses algorithms to process images and return information. This module teaches you how to use the Image Analysis API for optical character recognition (OCR).

#### **Module 4.4: Classify images**

Image classification is used to determine the main subject of an image. You can use the Azure AI Custom Vision services to train a model that classifies images based on your own categorizations.

#### **Module 4.6: Analyze video**

Azure Video Indexer is a service to extract insights from video, including face identification, text recognition, object labels, scene segmentations, and more.

#### **Module 4.8: Generate images with AI**

In Azure AI Foundry, you can use image generation models to create original images based on natural language prompts.

#### **Module 5.2: Create an Azure AI Content Understanding client application**

Use the Azure AI Content Understanding REST API for multimodal content analysis and information extraction.

#### **Module 5.4: Extract data from forms with Azure Document intelligence**

Document intelligence uses machine learning technology to identify and extract key-value pairs and table data from form documents with accuracy, at scale. This module teaches you how to use the *Azure Document intelligence* cognitive service.

### **ASSOCIATED CERTIFICATIONS & EXAM**

This course will prepare delegates to write the AI-102: Designing and Implementing an Azure AI Solution exam