



Microsoft Azure AI Fundamentals

Course AI-900T00: 1 days; Instructor-Led

Introduction

This course introduces fundamental concepts related to artificial intelligence (AI), and the services in Microsoft Azure that can be used to create AI solutions. The course is not designed to teach students to become professional data scientists or software developers, but rather to build awareness of common AI workloads and the ability to identify Azure services to support them. The course is designed as a blended learning experience that combines instructor-led training with online materials on the Microsoft Learn platform (<https://azure.com/learn>). The hands-on exercises in the course are based on Learn modules, and students are encouraged to use the content on Learn as reference materials to reinforce what they learn in the class and to explore topics in more depth.

Audience

The Azure AI Fundamentals course is designed for anyone interested in learning about the types of solution artificial intelligence (AI) makes possible, and the services on Microsoft Azure that you can use to create them. You don't need to have any experience of using Microsoft Azure before taking this course, but a basic level of familiarity with computer technology and the Internet is assumed. Some of the concepts covered in the course require a basic understanding of mathematics, such as the ability to interpret charts. The course includes hands-on activities that involve working with data and running code, so a knowledge of fundamental programming principles will be helpful.

Job role: AI Engineer

Preparation for exam: [AI-900](#)

Prerequisites

Prerequisite certification is not required before taking this course. Successful Azure AI Fundamental students start with some basic awareness of computing and internet concepts, and an interest in using Azure AI services.

Specifically:

- Experience using computers and the internet.
- Interest in use cases for AI applications and machine learning models. A willingness to learn through hands-on exploration.

Course Outline

Module 1: Fundamental AI Concepts

With AI, we can build solutions that seemed like science fiction a short time ago; enabling incredible advances in health care, financial management, environmental protection, and other areas to make a better world for everyone.

In this module, you will:

- Learn about the kinds of solution AI can make possible and considerations for responsible AI practices.

Lessons

- Introduction to AI
- Understand machine learning
- Understand computer vision
- Understand natural language processing
- Understand document intelligence and knowledge mining
- Understand generative AI
- Challenges and risks with AI
- Understand Responsible AI

Module 2: Fundamentals of machine learning

Machine learning is the basis for most modern artificial intelligence solutions. A familiarity with the core concepts on which machine learning is based is an important foundation for understanding AI.

In this module, you will:

- Describe core concepts of machine learning
- Identify different types of machine learning
- Describe considerations for training and evaluating machine learning models
- Describe core concepts of deep learning
- Use automated machine learning in Azure Machine Learning service

Lessons

- Introduction
- What is machine learning?
- Types of machine learning
- Regression
- Binary classification
- Multiclass classification
- Clustering
- Deep learning
- Azure Machine Learning
- Exercise - Explore Automated Machine Learning in Azure Machine Learning

Module 3: Fundamentals of Azure AI services

In this module, you learn the fundamentals of how Azure AI services can be used to build applications.

In this module, you will:

- Understand applications Azure AI services can be used to build
- Understand how to access Azure AI services in the Azure portal
- Understand how to use Azure AI services keys and endpoint for authentication
- Create and use an Azure AI services resource in a Content Safety Studio setting

Lessons

- Introduction
- AI services on the Azure platform
- Create Azure AI service resources
- Use Azure AI services
- Understand authentication for Azure AI services
- Exercise - Explore Azure AI Services

Module 4: Fundamentals of Computer Vision

Azure AI Vision service enables software engineers to create intelligent solutions that extract information from images; a common task in many artificial intelligence (AI) scenarios.

In this module, you will:

- Learn how to use the Azure AI Vision service to analyze images.

Lessons

- Introduction
- Images and image processing
- Machine learning for computer vision
- Azure AI Vision
- Exercise - Analyze images in Vision Studio

Module 5: Fundamentals of Facial Recognition

Face detection, analysis, and recognition are important capabilities for artificial intelligence (AI) solutions. Azure AI Face service in Azure makes it easy integrate these capabilities into your applications.

In this module, you will:

- Learn how to use Azure AI Face service to detect and analyze faces in images.

Lessons

- Introduction
- Understand Face analysis
- Get started with Face analysis on Azure
- Exercise - Detect faces in Vision Studio

Module 6: Fundamentals of optical character recognition

Optical character recognition (OCR) enables artificial intelligence (AI) systems to read text in images, enabling applications to extract information from photographs, scanned documents, and other sources of digitized text.

In this module, you will:

- Learn how to read text in images with Azure AI Vision.

Lessons

- Introduction
- Get started with Azure AI Vision
- Get started with Vision Studio on Azure
- Exercise - Read text in Vision Studio

Module 7: Fundamentals of Text Analysis with the Language Service

Explore Azure AI Language's natural language processing (NLP) features, which include sentiment analysis, key phrase extraction, named entity recognition, and language detection.

In this module, you will:

- Learn how to use Azure AI Language for text analysis

Lessons

- Introduction
- Understand Text Analytics
- Get started with text analysis
- Exercise - Analyze text with Language Studio

Module 8: Fundamentals of question answering with the Language Service

Create a custom question answering knowledge base with Azure AI Language and create a bot with Azure AI Bot Service that answers user questions.

In this module, you will:

- After completing this module, you'll be able to understand how to use Azure AI Language and Azure AI Bot Service to create a bot.

Lessons

- Introduction
- Understand question answering
- Get started with the Language service and Azure Bot Service
- Exercise - Use question answering with Language Studio

Module 9: Fundamentals of conversational language understanding

In this module, we introduce you to conversational language understanding, and show how to create applications that understand language with Azure AI Language.

In this module, you will:

- Learn what conversational language understanding is.
- Learn about key features, such as intents and utterances.
- Build and publish a natural-language machine-learning model.

Lessons

- Introduction
- Describe conversational language understanding
- Get started with conversational language understanding in Azure
- Exercise - Use Conversational Language Understanding with Language Studio

Module 10: Fundamentals of Azure AI Speech

Learn how to recognize and synthesize speech by using Azure AI Speech.

In this module, you will:

- Learn about speech recognition and synthesis
- Learn how to use Azure AI Speech

Lessons

- Introduction
- Understand speech recognition and synthesis
- Get started with speech on Azure
- Exercise - Explore Speech Studio

Module 11: Fundamentals of Azure AI Document Intelligence

Document processing is a common task in many business scenarios. Organizations can use Azure AI Document Intelligence to automate data extraction across document types, such as receipts, invoices, and more.

In this module, you will:

- Learn how to use the prebuilt receipt processing capabilities of Azure AI Document Intelligence.

Lessons

- Introduction
- Explore capabilities of document intelligence
- Get started with receipt analysis on Azure
- Exercise - Extract from data in Document Intelligence Studio

Module 12: Fundamentals of Knowledge Mining and Azure AI Search

Use Azure AI Search to make your data searchable.

In this module, you will:

- Explore Azure AI Search
- Create an Azure AI Search index
- Import data to the index
- Query the Azure AI Search index

Lessons

- Introduction
- What is Azure AI Search?
- Identify elements of a search solution
- Use a skillset to define an enrichment pipeline
- Understand indexes

- Use an indexer to build an index
- Persist enriched data in a knowledge store
- Create an index in the Azure portal
- Query data in an Azure AI Search index
- Exercise - Explore an Azure AI Search index (UI)

Module 13: Fundamentals of Generative AI

In this module you'll explore the way in which large language models (LLMs) enable AI applications and services to generate original content based on natural language input. You'll also learn how generative AI enables the creation of AI-powered copilots that can assist humans in creative tasks.

In this module, you will:

- Understand generative AI's place in the development of artificial intelligence
- Understand large language models and their role in intelligent applications
- Describe how Azure OpenAI supports intelligent application creation
- Describe examples of copilots and good prompts

Lessons

- Introduction
- What is generative AI?
- Large language models
- What is Azure OpenAI?
- What are copilots?
- Improve generative AI responses with prompt engineering
- Exercise - Explore generative AI with Bing Copilot

Module 14: Fundamentals of Azure OpenAI Service

Get to know the connection between artificial intelligence (AI), Responsible AI, and text, code, and image generation. Understand how you can use Azure OpenAI to build solutions against AI models within Azure.

In this module, you will:

- Describe Azure OpenAI workloads and access the Azure OpenAI Service
- Understand generative AI models
- Understand Azure OpenAI's language, code, and image capabilities
- Understand Azure OpenAI's responsible AI practices and limited access policies

Lessons

- Introduction
- What is generative AI
- Describe Azure OpenAI
- How to use Azure OpenAI
- Understand OpenAI's natural language capabilities
- Understand OpenAI code generation capabilities
- Understand OpenAI's image generation capabilities
- Describe Azure OpenAI's access and responsible AI policies
- Exercise - Explore Azure OpenAI Service

Module 15: Fundamentals of Responsible Generative AI

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

In this module, you will:

- Describe an overall process for responsible generative AI solution development
- Identify and prioritize potential harms relevant to a generative AI solution
- Measure the presence of harms in a generative AI solution
- Mitigate harms in a generative AI solution
- Prepare to deploy and operate a generative AI solution responsibly

Lessons

- Introduction
- Plan a responsible generative AI solution
- Identify potential harms
- Measure potential harms
- Mitigate potential harms
- Operate a responsible generative AI solution
- Exercise - Explore content filters in Azure OpenAI