

COURSE OUTLINE



Course Code: AI-102T00

Course Name: Designing and implementing a Microsoft Azure AI (Artificial Intelligence) Solution

DURATION	SKILL LEVEL	DELIVERY METHOD	TRAINING CREDITS	TECHNOLOGY
4 days	Intermediate	VILT/ILT	N/A	Azure

Course Overview

AI-102 Designing and Implementing an Azure AI Solution is intended for software developers wanting to build AI infused applications that leverage Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework. The course will use C# or Python as the programming language.

Pre-Requisites

Before starting this module, you should already have familiarity with Azure and the Azure portal, and a basic understanding of software engineering.

- Experience of provisioning and managing Azure services in the Azure portal.
- A knowledge of C# or Python.
- Active Azure subscription
- Ability to navigate the Azure portal.
- Understanding of networking concepts
- Be familiar with Azure services and the Azure portal.

- Have experience of provisioning Azure AI Services resources.
- Learners should have an Azure account and be familiar with navigating the Azure portal.
- Learners should also have experience with Docker and containers.

Target Audience

Software engineers are concerned with building, managing, and deploying AI solutions that leverage Azure Cognitive Services, Azure Cognitive Search, and Microsoft Bot Framework. They are familiar with C# or Python and have knowledge on using REST-based APIs to build computer vision, language analysis, knowledge mining, intelligent search, and conversational AI solutions on Azure.

Job role:

AI Engineer

Exam Requirements:

AI-102

Topics

Module 1: Prepare to develop AI solutions on Azure.

As an aspiring Azure AI Engineer, you should understand core concepts and principles of AI development, and the capabilities of Azure services used in AI solutions.

- Define artificial intelligence.
- Understand AI-related terms.
- Understand considerations for AI Engineers
- Understand considerations for responsible AI.
- Understand capabilities of Azure Machine Learning
- Provision Azure AI Services resources in an Azure subscription.
- Identify endpoints, keys, and locations required to

- Understand capabilities of Azure AI Services
- Understand capabilities of the Azure Bot Service
- Understand capabilities of Azure Cognitive Search

Module 2: Create and consume Azure AI Services

Azure AI Services enable developers to easily add AI capabilities into their applications. Learn how to create and consume these services.

- Consume Azure AI Services from a Container
 - consume an Azure AI Services resource.
 - Use a REST API to consume an Azure AI service.
 - Use an SDK to consume an Azure AI service
-

Module 3: Secure Azure AI Services

Securing Azure AI Services can help prevent data loss and privacy violations for user data that may be a part of the solution.

- Consider authentication for Azure AI Services
- Manage network security for Azure AI Services

Module 4: Monitor Azure AI Services

Azure AI Services enable you to integrate artificial intelligence into your applications and services. It is important to be able to monitor Azure AI Services to track utilization, determine trends, and detect and troubleshoot issues. Implement Azure virtual network connectivity for Azure Virtual Desktop.

- Monitor Azure AI Services costs
- Create alerts.
- View metrics
- Manage diagnostic logging.

Module 5: Deploy Azure AI services in containers.

Learn about Container support in Azure AI Services allowing the use of APIs available in Azure and enable flexibility in where to deploy and host the services with Docker containers.

- Create Containers for Reuse
- Deploy to a Container
- Secure a Container
- Use the Text to speech API to implement speech synthesis.
- Configure audio format and voices.
- Use Speech Synthesis Markup Language (SSML)

Module 6: Extract insights from text with the Azure AI Language service

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

- Detect language.
- Extract key phrases.
- Analyze sentiment.
- Extract entities
- Extract linked entities.

Module 7: Translate text with the Azure AI Translator service.

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

- Provision an Azure AI Translator resource
- Understand language detection, translation, and transliteration.
- Specify translation options.
- Define custom translations.

Module 8: 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 capable of speech recognition and speech synthesis.

- Provision an Azure resource for the Azure AI Speech service
- Use the Azure AI Speech to text API to implement speech recognition.
- Process predictions from an Azure AI Language in your app

Module 9: 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.

Provision Azure resources for speech translation.

- Generate text translation from speech.
- Synthesize spoken translations.

Module 10: 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. Plan for FSLogix.

- Provision Azure resources for Azure AI Language resource
- Define intents, utterances, and entities.
- Use patterns to differentiate similar utterances.
- Use pre-built entity components.
- Train, test, publish, and review an Azure AI Language model.

Module 11: Develop an app with Azure AI Language

After creating an Azure AI Language Understanding model, you can publish it and consume it from client applications.

- Understand capabilities of an Azure AI Language Understanding model

Module 12: Build a question answering solution.

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.

- Understand the question answering.
- Compare question answering to language understanding.
- Create a knowledge base.
- Implement multi-turn conversation.
- Test and publish a knowledge base.
- Consume a knowledge base.
- Implement active learning.
- Create a question answering bot.

Module 13: Create a bot with the Bot Framework SDK

Learn how to build a bot by using the Microsoft Bot Framework SDK.

- Understand principles of bot design
- Use the Bot Framework SDK to build a bot.
- Deploy a bot to Azure.

Module 14: Create a Bot with the Bot Framework Composer

User the Bot Framework Composer to quickly and easily build sophisticated conversational bots without writing code.

- Understand dialogs.
 - Plan conversational flow
 - Design the user experience.
 - Create a bot with the Bot Framework Composer
-

Module 15: Analyze images

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

- Provision an Azure AI Vision resource
- Analyze an image.
- Generate a smart-cropped thumbnail.

Module 16: Analyze video

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

- Describe Azure Video Indexer capabilities.
- Extract custom insights.
- Use Azure Video Indexer widgets and APIs.

Module 17: 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.

- Provision Azure resources for Azure AI Custom Vision
- Understand image classification.
- Train an image classifier

Module 18: 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.

- Provision Azure resources for Azure AI Custom Vision
- Understand object detection.
- Train an object detector
- Consider options for labeling images.
- image

Module 19: 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.

- Identify options for face detection, analysis, and identification.
- Understand considerations for face analysis.
- Detect faces with the Azure AI Vision service.
- Understand capabilities of the Face service
- Compare and match detected faces.
- Implement facial recognition.

Module 20: Read Text in Images and Documents with the Azure AI Vision Service

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

- Read text from images with the Read API
- Use the Azure AI Vision service with SDKs and the REST API
- Develop an application that can read printed and handwritten text.

Module 21: Extract data from forms with Azure Document Intelligence

Azure 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* Azure AI service.

- Identify how Azure Document Intelligence's layout service, prebuilt models, and custom service can automate processes.

- Use Azure Document Intelligence's Optical Character Recognition (OCR) capabilities with SDKs, REST API, and Azure Document Intelligence Studio
- Develop and test custom models.

Module 22: Create an Azure Cognitive Search solution.

Unlock the hidden insights in your data with Azure Cognitive Search.

- Create an Azure Cognitive Search solution.
- Develop a search application.

Module 23: Create a custom skill for Azure Cognitive Search

Use the power of artificial intelligence to enrich your data and find new insights.

- Implement a custom skill for Azure Cognitive Search
- Integrate a custom skill into an Azure Cognitive Search skillset.

Module 24: Create a knowledge store with Azure Cognitive Search

Persist the output from an Azure Cognitive Search enrichment pipeline for independent analysis or downstream processing.

- Create a knowledge store from an Azure Cognitive Search pipeline.
- View data in projections in a knowledge store

Exams and Certifications

A Certificate of completion is issued at the end of the Course.

Schedule your Microsoft exam here: [Microsoft : Pearson VUE](#)

Follow on Course

[Schedules | Netcampus Group](#)
