COURSE OUTLINE

# MS-AI102T00: DESIGN AND IMPLEMENT A MICROSOFT AZURE AI SOLUTION

| DURATION | LEVEL | TECHNOLOGY | DELIVERY METHOD | TRAINING CREDITS |
|---|---|---|---|---|
| 5 Days | Intermediate | Azure AI | Instructor-led | NA |

## INTRODUCTION

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

## AUDIENCE PROFILE

This course is designed for individuals who want to build, manage, and deploy AI solutions using Azure AI services.

The primary audience for this course includes:

- Software Engineers: Those who are focused on developing AI-infused applications leveraging Azure AI Services, Azure AI Search, and Azure OpenAI.
- AI Engineers: Professionals responsible for creating and maintaining AI solutions, including computer vision, language analysis, knowledge mining, intelligent search, and generative AI.
- Developers: Individuals with experience in programming languages like C# or Python and familiarity with REST-based APIs.

## 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: 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 involves identifying the services you'll use and creating an optimal working environment for your development team.

Lessons

- Introduction
- What is AI?
- Azure AI services
- Azure AI Foundry
- Developer tools and SDKs
- Responsible AI
- Exercise - Prepare for an AI development project
- Module assessment
- Summary

After completing this module, you'll be able to:

- Identify common AI capabilities that you can implement in applications
- Describe Azure AI Services and considerations for using them
- Describe Azure AI Foundry and considerations for using it
- Identify appropriate developer tools and SDKs for an AI project
- Describe considerations for responsible AI

**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.

Lessons

- Introduction.
- Provision an Azure AI Services resource.
- Identify endpoints and keys.
- Use a REST API.
- Use an SDK.
- Exercise - Use Azure AI Services.
- Knowledge check.
- Summary.

After completing this module, you will be able to:

- Create Azure AI services resources in an Azure subscription.
- Identify endpoints, keys, and locations required to consume

an Azure AI Services resource.
- Use a REST API 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.

Lessons
- Introduction.
- Consider authentication
- Implement network security.
- Exercise - Manage Azure AI Services Security.
- Knowledge check.
- Summary.

After completing this module, you will be able to:
- 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's important to be able to monitor Azure AI Services to track utilization, determine trends, and detect and troubleshoot issues.

Lessons
- Introduction.
- Monitor cost.
- Create alerts.
- View metrics.
- Manage diagnostic logging.
- Exercise - Monitor Azure AI Services.
- Module assessment.
- Summary.

After completing this module, you will be able to:
- Monitor Azure AI services costs.
- Create alerts and view metrics for Azure AI services.
- Manage Azure AI services 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.

Lessons
- Introduction.
- Understand containers.
- Use Azure AI Services containers.
- Exercise - Use a container.
- Knowledge check.
- Summary.

After completing this module, you will be able to:
- Create containers for reuse
- Deploy to a container and secure a container
- Consume Azure AI services from a container

**Module 6: Use AI responsibly with Azure AI Content Safety**

Azure AI Content Safety is a comprehensive tool designed to detect and manage harmful content in both user-generated and AI-generated materials. Learn how Azure AI Content Safety uses text and image APIs to help identify and filter out content related to violence, hate, sexual content, and self-harm.

Lessons
- Introduction
- What is Content Safety
- How does Azure AI Content Safety work?
- When to use Azure AI Content Safety
- Exercise - Implementing Azure AI Content Safety
- Module assessment
- Summary

After completing this module, you will be able to:
- Describe Azure AI Content Safety.
- Describe how Azure AI Content Safety operates.
- Describe when to use Azure AI Content Safety.

**Module 7: Choose and deploy models from the model catalog 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.

Lessons
- Introduction
- Explore the model catalog
- Deploy a model to an endpoint
- Optimize model performance
- Exercise - Explore, deploy, and chat with language models
- Module assessment
- Summary

After completing this module, you will be able to:
- Select a language model from the model catalog.
- Deploy a model to an endpoint.
- Test a model and improve the performance of the model.

**Module 8: 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.

Lessons
- Introduction
- What is the Azure AI Foundry SDK?
- Work with project connections
- Create a chat client
- Exercise - Create a generative AI chat app
- Module assessment
- Summary

After completing this module, you will be able to:
- Describe capabilities of the Azure AI Foundry SDK.
- Use the Azure AI Foundry SDK to work with connections in projects.
- Use the Azure AI Foundry SDK to develop an AI chat app.

**Module 9: 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.

Lessons
- Introduction
- Understand the development lifecycle of a large language model (LLM) app
- Understand core components and explore flow types
- Explore connections and runtimes
- Explore variants and monitoring options
- Exercise - Get started with prompt flow
- Module assessment
- Summary

After completing this module, you will be able to:
- Understand the development lifecycle when creating language model applications.
- Understand what a flow is in prompt flow.
- Explore the core components when working with prompt flow.

**Module 10: 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.

Lessons
- Introduction
- Understand how to ground your language model
- Make your data searchable
- Create a RAG-based client application

- Implement RAG in a prompt flow
- Exercise - Create a generative AI app that uses your own data
- Module assessment
- Summary

After completing this module, you will be able to:

- Identify the need to ground your language model with Retrieval Augmented Generation (RAG)
- Index your data with Azure AI Search to make it searchable for language models
- Build an agent using RAG on your own data in the Azure AI Foundry portal

**Module 11: 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.

Lessons

- Introduction
- Understand when to fine-tune a language model
- Prepare your data to fine-tune a chat completion model
- Explore fine-tuning language models in Azure AI Studio
- Exercise - Fine-tune a language model
- Module assessment
- Summary

After completing this module, you will be able to use the Azure AI Language service to:

- Understand when to fine-tune a model.
- Prepare your data to fine-tune a chat completion model.
- Fine-tune a base model in the Azure AI Foundry portal.

**Module 12: 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, 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.

Lessons

- Introduction
- Assess the model performance
- Manually evaluate the performance of a model
- Automated evaluations
- Assess the performance of your generative AI apps
- Exercise - Evaluate generative AI model performance
- Module assessment
- Summary

After completing this module, you will be able to:

- Understand model benchmarks.
- Perform manual evaluations.
- Assess your generative AI apps with AI-assisted metrics.
- Configure evaluation flows in the Azure AI Foundry portal.

**Module 13: Develop applications with Azure OpenAI Service**

This module provides engineers with the skills to begin building an Azure OpenAI Service solution.

Lessons

- Introduction
- Access Azure OpenAI Service
- Integrate OpenAI into an app
- OpenAI prompt engineering
- Provide context with prompt engineering
- Construct code from natural language
- Exercise - Get started with Azure OpenAI Service
- Module assessment
- Summary

After completing this module, you will be able to:

- Create an Azure OpenAI Service resource and understand types of Azure OpenAI base models.
- Build natural language solutions with Azure OpenAI Service
- Apply prompt engineering with Azure OpenAI Service
- Build code-generation solutions with Azure OpenAI Service

**Module 14: Implement Retrieval Augmented Generation (RAG) with Azure OpenAI Service**

Azure OpenAI on your data allows developers to implement RAG with supported AI chat models to reference specific sources of data to ground the response.

Lessons

- Introduction
- Understand Retrieval Augmented Generation (RAG) with Azure OpenAI Service
- Add your own data source
- Chat with your model using your own data
- Exercise - Add your data for RAG with Azure OpenAI Service
- Module assessment
- Summary

After completing this module, you'll be able to:

- Describe the capabilities of Azure OpenAI on your data
- Configure Azure OpenAI to use your own data
- Use Azure OpenAI API to generate responses based on your own data

**Module 15: Generate images with AI**

In Azure AI Foundry, you can use the OpenAI DALL-E model to generate original images based on natural language prompts.

Lessons

- Introduction
- What is DALL-E?
- Explore DALL-E in Azure AI Foundry portal
- Use the Azure OpenAI REST API to consume DALL-E models
- Exercise - Generate images with a DALL-E model
- Module assessment
- Summary

After completing this module, you'll be able to:

- Describe the capabilities of DALL-E models
- Use the Images playground in Azure AI Foundry portal
- Integrate DALL-E model image generation into your apps

**Module 16: 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.

Lessons

- Introduction
- What are AI agents?
- Options for agent development
- Azure AI Agent Service
- Exercise - Explore AI Agent development
- Module assessment
- Summary

After completing this module, you will be able to:

- Describe core concepts related to AI agents
- Describe options for agent development
- Create and test an agent in the Azure AI Foundry portal

**Module 17: Develop an AI agent with Azure AI Agent Service**

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

Lessons

- Introduction
- What is an AI agent
- How to use Azure AI Agent Service

- Develop agents with the Azure AI Agent Service
- Exercise - Build an AI agent
- Module assessment
- Summary

After completing this module, you will be able to:

- Describe the purpose of AI agents
- Explain the key features of Azure AI Agent Service
- Build an agent using the Azure AI Agent Service
- Integrate an agent in the Azure AI Agent Service into your own application

**Module 18: 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.

Lessons

- Introduction
- Why use custom tools
- Options for implementing custom tools
- How to integrate custom tools
- Exercise - Build an agent with custom tools
- Module assessment
- Summary

After completing this module, you will be able to:

- Describe the benefits of using custom tools with your agent.
- Explore the different options for custom tools.
- Build an agent that integrates custom tools using the Azure AI Agent Service.

**Module 19: Develop an AI agent with Semantic Kernel**

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

Lessons

- Introduction
- Understand Semantic Kernel AI agents
- Create an Azure AI agent with Semantic Kernel
- Add plugins to Azure AI agent
- Exercise - Develop an Azure AI agent with the Semantic Kernel SDK
- Knowledge check
- Summary

After completing this module, you'll be able to:

- Use Semantic Kernel to connect to an Azure AI Foundry project
- Create Azure AI Agent Service agents using the Semantic Kernel SDK
- Integrate plugin functions with your AI agent

**Module 20: Orchestrate a multi-agent solution using Semantic Kernel**

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

Lessons

- Introduction
- Understand the Semantic Kernel Agent Framework
- Create an agent group chat
- Design an agent selection strategy
- Define a chat termination strategy
- Exercise - Develop a multi-agent solution
- Knowledge check
- Summary

After completing this module, you'll be able to:

- Build AI agents using the Semantic Kernel SDK
- Develop multi-agent solutions
- Create custom selection and termination strategies for agent collaboration

**Module 21: 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.

Lessons

- Introduction
- Provision an Azure AI Language resource
- Detect language
- Extract key phrases
- Analyze sentiment
- Extract entities
- Extract linked entities
- Exercise - Analyze text
- Module assessment
- Summary

After completing this module, you will be able to:

- Detect language from text
- Analyze text sentiment
- Extract key phrases, entities, and linked entities

**Module 22: 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.

Lessons

- Introduction
- Understand question answering
- Compare question answering to Azure AI Language understanding
- Create a knowledge base
- Implement multi-turn conversation
- Test and publish a knowledge base
- Use a knowledge base
- Improve question answering performance
- Exercise - Create a question answering solution
- Module assessment
- Summary

After completing this module, you will be able to:

- Understand question answering and how it compares to language understanding.
- Create, test, publish, and consume a knowledge base.
- Implement multi-turn conversation and active learning.
- Create a question answering bot to interact with using natural language.

**Module 23: 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.

Lessons

- Introduction
- Understand prebuilt capabilities of the Azure AI Language service
- Understand resources for building a conversational language understanding model
- Define intents, utterances, and entities
- Use patterns to differentiate similar utterances
- Use pre-built entity components
- Train, test, publish, and review a conversational language understanding model
- Exercise - Build an Azure AI services conversational language understanding model
- Module assessment
- Summary

After completing this module, you will be able to:

- 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 24: 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.

Lessons

- Introduction
- Understand types of classification projects
- Understand how to build text classification projects
- Exercise - Classify text
- Module assessment
- Summary

After completing this module, you will be able to:

- Understand types of classification projects
- Build a custom text classification project
- Tag data, train, and deploy a model
- Submit classification tasks from your own app

**Module 25: Custom named entity recognition**

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

Lessons

- Introduction
- Understand custom named entity recognition
- Label your data
- Train and evaluate your model
- Exercise - Extract custom entities
- Module assessment
- Summary

After completing this module, you will be able to:

- Understand tagging entities in extraction projects
- Understand how to build entity recognition projects

**Module 26: Translate text with Azure AI Translator service**

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

Lessons

- Introduction
- Provision an Azure AI Translator resource
- Understand language detection, translation, and transliteration
- Specify translation options
- Define custom translations
- Exercise - Translate text with the Azure AI Translator service
- Module assessment
- Summary

After completing this module, you will be able to:

- Provision a Translator resource
- Understand language detection, translation, and transliteration
- Specify translation options
- Define custom translations

**Module 27: 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.

Lessons

- Introduction
- Provision an Azure resource for speech
- Use the Azure AI Speech to Text API
- Use the text to speech API
- Configure audio format and voices
- Use Speech Synthesis Markup Language
- Exercise - Create a speech-enabled app
- Module assessment
- Summary

After completing this module, you will be able to:

- Provision a Translator resource
- Understand language detection, translation, and transliteration
- Specify translation options
- Define custom translations

**Module 28: 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.

Lessons

- Introduction
- Provision an Azure resource for speech translation
- Translate speech to text
- Synthesize translations
- Exercise - Translate speech
- Module assessment
- Summary

After completing this module, you will be able to:

- Provision a Translator resource
- Understand language detection, translation, and transliteration
- Specify translation options
- Define custom translations

**Module 29: Analyze images**

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

Lessons

- Introduction
- Provision an Azure AI Vision resource
- Analyze an image
- Exercise - Analyze images with Azure AI Vision
- Module assessment
- Summary

After completing this module, you will be able to:

- Provision an Azure AI Vision resource.
- Use the Azure AI Vision SDK to connect to your resource.
- Write code to analyze an image.

**Module 30: Read text in images and documents with the Azure AI Vision Service**

Azure's AI Vision 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).

Lessons

- Introduction
- Explore Azure AI options for reading text
- Use the Read API
- Exercise - Read text in images
- Module assessment
- Summary

After completing this module, you will be able to:

- Describe the OCR capabilities of Azure AI Vision's Image Analysis API.
- Use the Azure AI Vision service Image Analysis API to extract text from images.

**Module 31: 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.

Lessons

- Introduction
- 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

- Exercise - Detect, analyze, and identify faces
- Module assessment
- Summary

After completing this module, you will be able to:

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

**Module 32: 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.

Lessons

- Introduction
- Provision Azure resources for Azure AI Custom Vision
- Understand image classification
- Train an image classifier
- Exercise - Classify images with Azure AI Custom Vision
- Module assessment
- Summary

After completing this module, you will be able to:

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

**Module 33: 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.

Lessons

- Introduction
- Understand object detection
- Train an object detector
- Consider options for labeling images
- Exercise - Detect objects in images with Azure AI Custom Vision
- Module assessment
- Summary

After completing this module, you will be able to:

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

**Module 34: Analyze video**

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

Lessons

- Introduction
- Understand Azure Video Indexer capabilities
- Extract custom insights
- Use Video Analyzer widgets and APIs
- Exercise - Analyze video
- Module assessment
- Summary

After completing this module, you will be able to:

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

**Module 35: 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.

Lessons

- Introduction
- Deploy a multimodal model
- Develop a vision-based chat app
- Exercise - Develop a vision-enabled chat app
- Module assessment
- Summary

After completing this module, you will be able to:

- Deploy a vision-enabled generative AI model in Azure AI Foundry.
- Test an image-based prompt in the chat playground.
- Create a chat app that submits image-based prompts.

**Module 36: Create an Azure AI Search solution**

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

Lessons

- Introduction
- Manage capacity
- Understand search components
- Understand the indexing process
- Search an index
- Apply filtering and sorting
- Enhance the index
- Exercise - Create a search solution
- Module assessment
- Summary

After completing this module, you will be able to:

- Create an Azure AI Search solution
- Develop a search application

**Module 37: Create a custom skill for Azure AI Search**

Use the power of artificial intelligence to enrich your data and find new insights with custom skills in Azure AI Search.

Lessons

- Introduction
- Define the custom skill schema
- Add a custom skill
- Custom text classification skill
- Machine learning custom skill
- Exercise - Create a Custom Skill for Azure AI Sear
- Module assessment
- Summary

After completing this module, you will be able to:

- Implement a custom skill for Azure AI Search
- Create a custom text classification skill
- Create a machine learning custom skill

**Module 38: Create a knowledge store with Azure AI Search**

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

Lessons

- Introduction
- Define projections
- Define a knowledge store
- Exercise - Create a knowledge store
- Module assessment
- Summary

After completing this module, you will be able to:

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

**Module 39: Implement advanced search features in Azure AI Search**

Use more advanced features of Azure AI Search to improve your existing search solutions. Learn how to change the ranking on documents, boost terms, and allow searching in multiple languages.

Lessons

- Introduction
- Improve the ranking of a document with term boosting
- Improve the relevance of results by adding scoring profiles
- Improve an index with analyzers and tokenized terms
- Enhance an index to include multiple languages

- Improve search experience by ordering results by distance from a given reference point
- Exercise: Implement enhancements to search results
- Module assessment
- Summary

After completing this module, you will be able to:

- Improve the ranking of a document with term boosting
- Improve the relevance of results by adding scoring profiles
- Improve an index with analyzers and tokenized terms
- Enhance an index to include multiple languages
- Improve search experience by ordering results by distance from a given reference point

**Module 40: Search data outside the Azure platform in Azure AI Search using Azure Data Factory**

Use Azure Data Factory to add data that resides inside or outside the Azure platform into your search indexes.

Lessons

- Introduction
- Index data from external data sources using Azure Data Factory
- Index any data using the Azure AI Search push API
- Exercise: Add to an index using the push API
- Module assessment
- Summary

After completing this module, you will be able to:

- Use Azure Data Factory to copy data into an Azure AI Search Index
- Use the Azure AI Search push API to add to an index from any external data source

**Module 41: Maintain an Azure AI Search solution**

Maintain the performance, cost, and reliability of your Azure AI Search solutions.

Lessons

- Introduction
- Manage security of an Azure AI Search solution
- Optimize performance of an Azure AI Search solution
- Manage costs of an Azure AI Search solution
- Improve reliability of an Azure AI Search solution
- Monitor an Azure AI Search solution
- Debug search issues using the Azure portal
- Exercise - Debug search issues
- Module assessment
- Summary

After completing this module, you will be able to:

- Use Language Studio to enrich Azure AI Search indexes
- Enrich an AI Search index with custom classes

**Module 42: Perform search reranking with semantic ranking in Azure AI Search**

Learn how to perform L2 ranking with semantic ranker in Azure AI Search.

Lessons

- Introduction
- What is semantic ranking?
- Set up semantic ranking
- Exercise - Use semantic ranking on an index
- Module assessment
- Summary

After completing this module, you will be able to:

- Describe semantic ranking
- Set up semantic ranking
- Perform semantic ranking on an index

**Module 43: Perform vector search and retrieval in Azure AI Search**

Learn how to perform vector search and retrieval in Azure AI Search.

Lessons

- Introduction
- What is vector search?
- Prepare your search
- Understand embedding
- Exercise - Use the REST API to run vector search queries
- Module assessment
- Summary

After completing this module, you will be able to:

- Describe vector search
- Describe embeddings
- Run vector search queries using the REST API

**Module 44: Plan an Azure AI Document Intelligence solution**

Learn how to use Azure AI Document Intelligence to build solutions that analyze forms and output data for storage or further processing.

Lessons

- Introduction
- Understand AI Document Intelligence
- Plan Azure AI Document Intelligence resources
- Choose a model type
- Module assessment
- Summary

After completing this module, you will be able to:

- Describe the components of an Azure AI Document Intelligence solution.
- Create and connect to Azure AI Document Intelligence resources in Azure.
- Choose whether to use a prebuilt, custom, or composed model.

**Module 45: 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.

Lessons

- Introduction
- Understand prebuilt models
- Use the General Document, Read, and Layout models
- Use financial, ID, and tax models
- Exercise - Analyze a document using Azure AI Document Intelligence
- Module assessment
- Summary

After completing this module, you will be able to:

- Identify business problems that you can solve by using prebuilt models in Forms Analyzer.
- Analyze forms by using the General Document, Read, and Layout models.
- Analyze forms by using financial, ID, and tax prebuilt models.

**Module 46: 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.

Lessons

- Introduction
- What is Azure Document Intelligence?
- Get started with Azure Document Intelligence
- Train custom models
- Use Azure Document Intelligence models
- Use the Azure Document Intelligence Studio
- Exercise - Extract data from custom forms
- Module assessment
- Summary

After completing this module, you will be able to:

- Identify how Document intelligence's layout service,

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| prebuilt models, and custom models can automate processes.<br>– Use Document intelligence's capabilities with SDKs, REST API, and Document Intelligence Studio.<br>– Develop and test custom models. | Learn how to assemble custom models into composed solutions that can analyze different types of your own documents.<br>Lessons<br>– Introduction<br>– Understand composed models<br>– Assemble composed models<br>– Exercise: Create a composed model<br>– Module assessment<br>– Summary | After completing this module, you will be able to:<br>– Describe business problems that you would use custom models and composed models to solve.<br>– Train a custom model to obtain data from forms with unusual structures.<br>– Create a composed model that can analyze forms in multiple formats. |
| **Module 47: Create a composed Document intelligence model** | | |

## ASSOCIATED CERTIFICATIONS & EXAM

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