# Azure Developer | Developing Solutions for Microsoft Azure
# Course Code: 20740

**Duration: 5 days**

About course;

This course is engages communication between apps and services. Students will gain insight into various Azure services and features which can be implemented in their development solutions. Specifically, students will obtain the knowledge and skills needed to:

- Implement Azure IaaS services and features
- Implement Azure Platform as a Service
- Leverage Azure storage
- Apply Azure authentication and authorization services
- Ensure applications hosted in Azure are operating efficiently and as intended

Prerequisites

- Students should have 1-2 years experience as a developer. This course assumes students know how to code and have a fundamental knowledge of Azure.

- It is recommended that students have some experience with PowerShell or Azure CLI, working in the Azure portal, and with at least one Azure-supported programming language. Most of the examples in this course are presented in C\# .NET.

**Course Outline**

| AZ-203T01: Develop Azure Infrastructure as a Service compute solutions | AZ-203T02: Develop Azure Platform as a Service compute solution |
|---|---|
| **Module 1: Implement solutions that use virtual machines**<br><br>Students will learn how to properly plan for VM deployment. It covers VM creation by using the Azure Portal, PowerShell, and through code. It also covers creating and using ARM templates for repeatable deployments and how to use Azure Disk Encryption to secure information on the VM.<br><br>**Lessons**<br><br>Provision VMs<br><br>Create ARM templates<br><br>Configure Azure Disk Encryption for VMs | **Module 1: Create App Service web apps**<br><br>Azure App Service Web Apps (or just Web Apps) is a service for hosting web applications, REST APIs, and mobile back ends. Web Apps not only adds the power of Microsoft Azure to your application, such as security, load balancing, autoscaling, and automated management.<br><br>**Lessons**<br><br>Azure App Service core concepts<br><br>Creating an Azure App Service web app<br><br>Creating background tasks by using WebJobs in Azure App Service |
| **Module 2: Implement batch jobs by using Azure Batch Services**<br><br>Azure Batch creates and manages a pool of compute nodes (virtual machines), installs the applications you want to run, and schedules jobs to run on the nodes.<br><br>**Lessons**<br><br>Azure Batch overview<br><br>Run a batch job by using the Azure CLI and Azure Portal<br><br>Run batch jobs by using code | **Module 2: Creating Azure App Service mobile apps**<br><br>The Mobile Apps feature of Azure App Service gives enterprise developers and system integrators a mobile-application development platform that's highly scalable and globally available.<br><br>**Lessons**<br><br>Getting started with mobile apps in App Service<br><br>Enable push notifications for your app<br><br>Enable offline sync for your app |
| **Module 3: Create containerized solutions** | |

You can build and run modern, portable, microservices-based applications that benefit from Kubernetes orchestrating and managing the availability of those application components. Kubernetes supports both stateless and stateful applications as teams progress through the adoption of microservices-based applications.

**Lessons**

Create an Azure Managed Kubernetes Service (AKS) cluster

Create container images for solutions

Publish an image to the Azure Container Registry

Run containers by using Azure Container Instance or AKS

**Module 3: Create Azure App Service API apps**

This module covers how to create and document an Azure App Service API.

**Lessons**

Creating APIs

Using Swagger to document an API

**Module 4: Implement Azure Functions**

Azure Functions is a solution for easily running small pieces of code, or "functions," in the cloud. You can write just the code you need for the problem at hand, without worrying about a whole application or the infrastructure to run it.

**Lessons**

Azure Functions overview

Develop Azure Functions using Visual Studio

Implement durable functions

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**AZ-203T03:  Develop for Azure Storage**

**Module 1: Develop solutions that use Azure Table storage**

Azure Table storage is a service that stores structured NoSQL data in the cloud, providing a key/attribute store with a schemaless design. Because Table storage is schemaless, it's easy to adapt your data as the needs of your application evolve.

**Lessons**

Azure Table storage overview

Authorization in Table storage

Table service REST API

**Module 2: Develop solutions that use Azure Cosmos DB storage**

This module covers Azure Cosmos DB storage. It instructs students on how it works, how to manage containers and items, and create and update documents by using code.

**Lessons**

Azure Cosmos DB overview

Managing containers and items

Create and update documents by using code

**Module 3: Develop solutions that use a relational database**

SQL Database is a general-purpose relational database managed service in Microsoft Azure that supports structures such as relational data, JSON, spatial, and XML.

**AZ-203T04:  Implement Azure security**

**Module 1: Implement authentication**

Microsoft identity platform is an evolution of the Azure Active Directory (Azure AD) identity service and developer platform. It allows developers to build applications that sign in all Microsoft identities, get tokens to call Microsoft Graph, other Microsoft APIs, or APIs that developers have built.

**Lessons**

Microsoft identity platform

Implement OAuth2 authentication

Implement managed identities for Azure resources

Implement authentication by using certificates, forms-based authentication, or tokens

Implement multi-factor authentication

**Module 2: Implement access control**

This module covers claims-based and role-based access control.

**Lessons**

Claims-based authorization

Role-based access control (RBAC) authorization

**Module 3: Implement secure data solutions**

This module covers securing data at rest and during transmission.

**Lessons**

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| Lessons | Encryption options |
|---|---|
| Azure SQL overview | End-to-end encryption |
| Create, read, update, and delete database tables by using code | Implement Azure confidential computing |
| **Module 4: Develop solutions that use Microsoft Azure Blob storage** | Manage cryptographic keys in Azure Key Vault |

**Module 4: Develop solutions that use Microsoft Azure Blob storage**

Azure Blob storage is Microsoft's object storage solution for the cloud. Blob storage is optimized for storing massive amounts of unstructured data. Unstructured data is data that does not adhere to a particular data model or definition, such as text or binary data.

**Lessons**

Azure Blob storage overview

Working with Azure Blob storage

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**AZ-203T05: Monitor, troubleshoot, and optimize Azure solutions**

**Module 1: Introduction to Azure Monitor**

Azure Monitor is the central service that includes all of tools you need to monitor and optimize your solution.

**Lessons**

Overview of Azure Monitor

**Module 2: Develop code to support scalability of apps and services**

This module covers how applications scale and how to handle some troubleshooting.

**Lessons**

Implement autoscale

Implement code that addresses singleton application instances

Implement code that handles transient faults

**Module 3: Instrument solutions to support monitoring and logging**

This module covers adding code to your app to send the data to Azure Monitor.

**Lessons**

Configure instrumentation in an app or server by using Application Insights

Analyze and troubleshoot solutions by using Azure Monitor

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**AZ-203T06: Connect to and consume Azure, and third-party, services**

**Module 1: Develop an App Service Logic App**

Logic Apps helps you build solutions that integrate apps, data, systems, and services across enterprises or organizations by automating tasks and business processes as workflows. This module covers what they are and how to create them.

**Lessons**

Azure Logic Apps overview

Create Logic Apps by using Visual Studio

Create custom connectors for Logic Apps

Create custom templates for Logic Apps

Students will understand how to create and manage Azure Logic Apps.

**Module 2: Integrate Azure Search within solutions**

Azure Search is a search-as-a-service cloud solution that gives developers APIs and tools for adding a rich search experience over private, heterogenous content in web, mobile, and enterprise applications. In this module students will learn how to integrate Azure Search in to their solutions.

**Lessons**

Create and query an Azure Search Index

Full text search in Azure Search

Students will know how to provision the service, create an index, load data, and execute searches.

**Module 3: API Management**

API Management (APIM) helps organizations publish APIs to external, partner, and internal developers to unlock the potential of their data and services.

**Module 4: Integrate caching and content delivery within solutions**

This module shows students how to leverage Azure Cache for Redis and Azure CDNs to deliver assets to users more quickly.

**Lessons**

Azure Cache for Redis

Develop for storage on CDNs

**Lessons**

Introduction to the API Management service

Securing your APIs

Defining API policies

Students will know how to provision the APIM service using the Azure Portal, secure APIs with subscriptions and client certificates, and use API policies to modify the behavior of an API.

**Module 4: Develop event-based solutions**

This module covers developing event-based solutions in Azure by integrating Azure Event Grid, Event Hubs, and Notification Hubs in your applications.

**Lessons**

Implement solutions that use Azure Event Grid

Implement solutions that use Azure Event Hubs

Implement solutions that use Azure Notification Hubs

Students will know how the services work and how to integrate them in to their solutions.

**Module 5: Develop message-based solutions**

Microsoft Azure Service Bus is a fully managed enterprise integration message broker. Service Bus is most commonly used to decouple applications and services from each other, and is a reliable and secure platform for asynchronous data and state transfer. Azure Queue storage is a service for storing large numbers of messages that can be accessed from anywhere in the world via authenticated calls using HTTP or HTTPS.

**Lessons**

Implement solutions that use Azure Service Bus

Implement solutions that use Azure Queue Storage queues

Students will understand how to leverage Azure message-based services in their solutions.

Contacts us: