



Enterprise Computing Solutions - Education Services

## OFERTA FORMATIVA

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# Administering Relational Databases on Microsoft Azure

<b>CÓDIGO:</b>	<b>DURACIÓN:</b>	<b>Precio:</b>
MCS_DP-300T00	32 Hours (4 días)	€750.00

## Description

This course provides students with the knowledge and skills to administer a SQL Server database infrastructure for cloud, on-premises and hybrid relational databases and who work with the Microsoft PaaS relational database offerings. Additionally, it will be of use to individuals who develop applications that deliver content from SQL-based relational databases.

### Audience profile

The audience for this course is data professionals managing data and databases who want to learn about administering the data platform technologies that are available on Microsoft Azure. This course is also valuable for data architects and application developers who need to understand what technologies are available for the data platform with Azure and how to work with those technologies through applications.

## Objetivos

After completing this course, students will be able to:

- Plan, deploy and configure Azure SQL offerings
- Monitor database performance and tune a database and queries for optimum performance
- Plan and configure a High Availability Solution

## Público

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## Programa

### Module 1: The Role of the Azure Database Administrator

This module explores the role of a database administrator in the world of Azure. It also provides some foundational information relevant to the overall content. This includes a review of the various SQL Server-based options (SQL Server in a VM, Managed Instances, and Azure SQL Database.) Students will learn why compatibility level is a crucial concept when working with SQL databases in Azure. Students are also introduced to other database platforms available on Azure in addition to those based on SQL Server, in particular PostgreSQL and MySQL

Azure Data Platform Roles

Azure Database Platforms and Options

SQL Server Compatibility Levels

Azure Preview Features

Lab : Using the Azure Portal and SQL Server Management Studio

Provision a SQL Server on an Azure Virtual Machine

Connect to SQL Server and Restore a Backup

After completing this module, students will:

Understand the role of Azure Database Administrator as it fits in with other data platform roles

Be able to describe the key differences between the SQL Server-based database op

Be able to describe the difference between versions and compatibility levels

Know how to enable and disable preview features

Module 2: Plan and Implement Data Platform Resources

This module introduces methods for deploying data platform resources in Azure. You will learn about options for both upgrading and migrating existing SQL databases to Azure. You will learn how to set up Azure resources to host SQL Server on a Virtual Machine, a Managed Instance, Azure SQL Database and either PostgreSQL or MySQL. You will learn how to determine which options are best based on specific requirements including the High Availability and Disaster Recovery (HADR) needs. They will learn to calculate resource requirements and create templates for their deployments.

Deploying SQL Server using IaaS

Deploying SQL Server using PaaS

Deploying Open Source Database Solutions on Azure

Lab : Deploying Azure SQL Database

Deploy a VM using an ARM template

Configure resources needed prior to creating a database

Deploy an Azure SQL Database

Register the Azure SQL Database instance in Azure Data Studio and validate connectivity

Deploy PostgreSQL or MySQL using a client tool to validate connectivity

After completing this module, students will:

Deploy resources using manual methods

Recommend an appropriate database offering based on requirements

Configure database resources

Evaluate and implement a strategy for moving a database to Azure

Module 3: Implement a Secure Environment

This module explores the practices of securing your SQL Server Database as well as an Azure SQL database. This includes a review of the various SQL Server-based options as well as the various Azure options for securing Azure SQL Database as well as the databases with reside within Azure SQL Database. Students will learn why security is crucial when working with databases. Students are also introduced to other database platforms available on Azure in addition to those based on SQL Server, in particular, Azure Database for MariaDB/MySQL/PostgreSQL

Configure Database Authentication

Configure Database Authorization

Implement Security for Data at Rest

Implement Security for Data in Transit

Implement Compliance Controls for Sensitive Data

Lab : Implement a Secure Environment

Configure a server-based firewall rule using the Azure Portal

Authorize Access to Azure SQL Database with Azure Active Directory

Enable Advanced Data Security and Data Classification

Manage access to database objects

After completing this module, students will:

Understand the differences between Windows, SQL Server and Azure Active Directory Authentication

Describe and configure both data-at-rest encryption solutions as well as data-in-transit encryption

Implement a data sensitivity solution

Module 4: Monitor and Optimize Operational Resources

This module will teach you about resource optimization for your databases created using either IaaS or PaaS services. The module also covers monitoring server and hardware resources. It will familiarize you with the various tools available for monitoring performance and establishing a baseline. You will learn how to interpret performance metrics for the most critical resources. You will also learn how to troubleshoot database performance using Azure SQL Database Intelligent Insights.

Baselines and Performance Monitoring  
Major Causes of Performance Issues  
Configuring Resources for Optimal Performance  
User Database Configuration  
Performance-related Maintenance Tasks  
Lab : Monitor and Optimize Resources  
Isolate CPU Problems

Use Query Store observe blocking problems

Detect and correct fragmentation issues

After completing this module, students will:

Monitor activity and compare to a baseline

Define maintenance tasks related to performance

Identify major causes of performance problems

Configure resources for optimal performance

Configure a user database for optimal performance

Module 5: Optimize Query Performance

Query execution plans are potentially the most important aspect of database performance. Improving bad plans is certainly an area where a small amount of effort can bring huge improvements. While hardware issues can limit query performance, improving hardware usually yields performance improvements in the 10-20% range, at most. More commonly database administrators encounter queries that are not optimized, have stale or missing statistics, have missing indexes, or poor database design choices that lead to the database engine doing more work than is necessary to return results for a given query.

Improving the plans can sometimes yield performance improvements in the 100-200% range or even more, meaning that after improving a plan with better indexes or statistics, a query could run twice or three times as fast! This module provides details on how to analyze individual query performance and determine where improvements can be made.

Understanding SQL Server Query Plans

Explore Performance-based Database Design

Evaluate Performance Improvements

Lab : Query Performance Troubleshooting

Identify issues with database design AdventureWorks2017

Isolate problem areas in poorly performing queries in AdventureWorks2017

Use Query Store to detect and handle regression in AdventureWorks2017

Use query hints to impact performance in AdventureWorks2017

After completing this module, students will:

Analyze query plans and identify problem areas

Evaluate potential query improvements

Review table and index design

Determine whether query or design changes have had a positive effect

Module 6: Automation of Tasks

A common goal for database administrators in many environments is to automate as many of their repetitive tasks. This can be as simple as using scripting to automate a backup process, and as complex as building a fully automated alerting system. This module provides details of automating tasks to simplify the DBA's job. Methods include scheduling tasks for regular maintenance jobs, as well as multi-instance administration and configuration of notifications for task success or failure or non-completion.

Setting up Automatic Deployment

Defining Scheduled Tasks

Configuring Extended Events

Managing Azure PaaS resources Using Automated Methods

Lab : Automating Tasks

Deploy an Azure template from a Quickstart template on GitHub

Configure notifications based on performance metrics

Deploy an Azure Automation Runbook (or elastic job) to rebuild indexes on an Azure SQL Database

After completing this module, students will:

Deploy resources using automated deployment scripts

Create scheduled tasks

Create notifications and alerts

Configure automation for PaaS services

Module 7: Plan and Implement a High Availability and Disaster Recovery Environment

Data must be available when the business needs it. That means the solutions hosting the data must be designed with availability and recoverability in mind. Suppose you work for a company that sells widgets both in stores and online. Your main application uses a highly transactional database for orders. What would happen if the server or platform hosting the transactional database had a problem that made it unavailable or inaccessible for some reason? What impact would it have on the business?

If the right solution is put in place, the database would come online in a reasonable timeframe with minimal effort, thus allowing business to continue with little-to-no impact. This module and its associated lab cover configuring, testing, and managing a solution for high availability and disaster recovery (HADR) in Azure, for both Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) deployments. This module will not only cover basic requirements, but also the various options available to achieve HADR.

High Availability and Disaster Recovery Strategies

IaaS Platform and Database Tools for HADR

PaaS Platform and Database Tools for HADR

Database Backup and Recovery

Lab : Plan and Implement a High Availability and Disaster Recovery Environment

Create an Always On Availability Group

Enable Geo-Replication for Azure SQL Database

Backup to URL and Restore from URL

After completing this module, students will understand:

The difference between recovery time and recovery point objectives

The available HADR options for both IaaS and PaaS

The considerations for planning and configuring HADR solutions including how backup and restore fi

The factors that comprise a HADR strategy

How to configure a high availability solution via a hands-on lab

## **Fechas Programadas**

A petición. Gracias por [contactarnos](#).

## **Información Adicional**

[Esta formación también está disponible en modalidad presencial. Por favor contáctenos para más información.](#)