

# **WSQ - Administering Microsoft Azure SQL Solutions (DP-300)**

## **About This Course**

WSQ Administering Microsoft Azure SQL Solutions (DP-300) provides comprehensive training on maintaining, securing, and optimizing SQL databases on Azure. Participants will develop efficient data processes, design secure environments, and implement robust data integration procedures tailored to business requirements.

The course covers a wide range of topics, including deploying SQL Server in Azure, migrating SQL workloads, configuring database security, monitoring performance, and automating database tasks. Additionally, it emphasizes high availability and disaster recovery strategies, ensuring participants are well-equipped to handle various database scenarios in Azure environments.

## **What You'll Learn**

By end of course, learners should be able to:

- Develop efficient processes and data warehouse process models for Azure SQ in accordance to business requirements.
- Design data validation and staging databases for Azure SQL.
- Design and verify an extraction process for Azure SQL that consolidates in accordance to business rules.
- Design a transformation and loading process for Azure SQL in accordance to business rules.
- Develop data integration procedure and translate business requirements into Azure SQL data structure.

## **Course Certificate**

Two e-certificates will be awarded to trainees who have passed the assessment.

### **1. Statement of Achievement**

**Data Engineering ICT-DIT-4005-1.1 TSC** under ICT Skills Framework issued by WSG/SSG.

### **2. Certification of Achievement** issued by Tertiary Infotech Pte Ltd.

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## **Course Outline:**

### **Topic 1: Prepare to maintain SQL databases on Azure**

Describe Microsoft Intelligent Data Platform roles  
Understand SQL Server in an Azure virtual machine  
Design Azure SQL Database for cloud-native applications  
Explore Azure SQL Database Managed Instance

### **Topic 2: Deploy IaaS solutions with Azure SQL**

Explain IaaS options to deploy SQL Server in Azure  
Understand hybrid scenarios  
Explore performance and security  
Explain high availability and disaster recovery options  
Exercise: Provision a SQL Server on an Azure Virtual Machine

### **Topic 3: Deploy PaaS solutions with Azure SQL**

Explain PaaS options for deploying SQL Server in Azure  
Explore single SQL database  
Deploy SQL database elastic pool  
Understand SQL database hyperscale  
Examine SQL managed instance  
Describe SQL Edge  
Exercise: Deploy an Azure SQL Database

### **Topic 4: Evaluate strategies for migrating to Azure SQL**

Understand compatibility level  
Understand Azure preview features  
Describe Azure database migration options

### **Topic 5: Migrate SQL Server workloads to Azure SQL Database**

Choose the right Azure SQL Database feature  
Use Azure SQL migration extension to migrate to Azure SQL Database  
Explore Data Migration Assistant to migrate to Azure SQL Database  
Migrate to Azure SQL Database using BACPAC  
Use an online method to migrate to Azure SQL Database  
Move data to Azure SQL Database  
Exercise: Migrate a SQL Server database to Azure SQL Database

## **Topic 6: Migrate SQL workloads to Azure Managed Instances**

Evaluate migration scenarios to SQL Database Managed Instance

Migrate to SQL Database Managed Instance

Load and Move data to SQL Database Managed Instance

## **Topic 7: Configure database authentication and authorization**

Describe Active Directory and Microsoft Entra ID

Describe authentication and identities

Describe Security Principals

Describe database and object permissions

Identify authentication and authorization failures

Exercise: Authorize Access to Azure SQL Database with Microsoft Entra ID

## **Topic 8: Protect data in-transit and at rest**

Explore Transparent Data Encryption

Configure server and database firewall rules

Explain object encryption and secure enclaves

Enable encrypted connections

Describe SQL injection

Understand Azure Key Vault

Exercise: Configure a server-based firewall rule using the Azure portal

## **Topic 9: Implement compliance controls for sensitive data**

Explore data classification

Explore server and database audit

Implement Dynamic Data Masking

Implement Row Level security

Understand Microsoft Defender for SQL

Explore Azure SQL Database Ledger

Implement Azure Purview

Exercise: Enable Microsoft Defender for SQL and Data Classification

## **Topic 10: Describe performance monitoring**

Describe performance monitoring tools

Describe critical performance metrics

Establish baseline metrics

Explore extended events

Describe Azure SQL Insights

Explore Query Performance Insight

Exercise: Isolate problems with monitoring

## **Topic 11: Configure SQL Server resources for optimal performance**

Explain how to optimize Azure storage for SQL Server virtual machines

Describe virtual machine resizing

Optimize database storage

Control SQL Server resources

## **Topic 12: Configure databases for optimal performance**

Explore database maintenance checks  
Describe database scoped configuration options  
Describe automatic tuning  
Describe intelligent query processing  
Exercise: Detect and correct fragmentation issues

## **Topic 13: Explore query performance optimization**

Understand query plans  
Explain estimated and actual query plans  
Describe dynamic management views and functions  
Explore Query Store  
Identify problematic query plans  
Describe blocking and locking  
Exercise: Identify and resolve blocking issues

## **Topic 14: Explore performance-based design**

Describe normalization  
Choose appropriate data types  
Design indexes  
Exercise: Identify database design issues

## **Topic 15: Evaluate performance improvements**

Describe wait statistics  
Tune and maintain indexes  
Understand query hints  
Exercise: Isolate problem areas in poorly performing queries

## **Topic 16: Automate deployment of database resources**

Describe deployment models in Azure  
Automate deployment by using Azure Resource Manager templates and Bicep  
Automate deployment by using PowerShell  
Automate deployment by using Azure CLI  
Exercise: Deploy an Azure SQL Database using an Azure Resource Manager template

## **Topic 17: Create and manage SQL Agent jobs**

Create a SQL Server maintenance plan  
Describe task status notifications  
Knowledge check  
Exercise: Create a CPU status alert for a SQL Server

## **Topic 18: Manage Azure PaaS tasks using automation**

Explore Elastic jobs  
Understand Azure Automation  
Build an automation runbook  
Automate database workflows by using Logic Apps  
Monitor automated tasks  
Exercise: Deploy an automation runbook to automatically rebuild indexes

### **Topic 19: Describe high availability and disaster recovery strategies**

Describe recovery time objective and recovery point objective  
Explore high availability and disaster recovery options  
Describe Azure high availability and disaster recovery features for Azure Virtual Machines  
Describe high availability and disaster recovery options for PaaS deployments  
Explore an IaaS high availability and disaster recovery solution  
Describe hybrid solutions

### **Topic 20: Explore IaaS and PaaS solutions for high availability and disaster recovery**

Describe failover clusters in Windows Server  
Configure Always-on availability groups  
Describe temporal tables in Azure SQL Database  
Describe active geo-replication for Azure SQL Database  
Explore auto-failover groups for Azure SQL Database and Azure SQL Managed Instance  
Exercise: Configure geo replication for Azure SQL Database

### **Topic 21: Back up and restore databases**

Back up and restore SQL Server running on Azure virtual machines  
Back up a SQL Server virtual machine  
Back up and restore a database using Azure SQL Database  
Exercise: Backup to URL

### **Final Assessment**

Written Assessment - Short Answer Questions (WA-SAQ)  
Practical Performance (PP)

## Course Information

**Course Code:** TGS-2024048319

**Skills Framework:** Data Engineering ICT-DIT-4005-1.1 TSC under ICT Skills Framework

**Course Fee (Before Funding):**

\$2,000.00 (Bef. GST)

\$2180.00 (Incl. GST)

**Time:** 9:30am-6:30pm

**Duration:** 32hrs (4 days)

**Tel:** +65 6100 0613

**Email:** [support@tertiaryinfotech.com](mailto:support@tertiaryinfotech.com)

**WhatsApp:** <https://wa.me/6561000613>

**Registration Link:**

<https://www.tertiarycourses.com.sg/wsq-administering-microsoft-azure-sql-solutions-dp-300.html>

## Enquiry

**Venue:** 12 Woodlands Square, #07-85/86/87,  
Woods Square Tower 1, Singapore 733715 (Disabled-Friendly)

## Minimum Entry Requirements

### Knowledge and Skills

- Able to operate using computer functions with minimum Computer Literacy Level 2 based on ICAS Computer Skills Assessment Framework.
- Minimum 3 GCE 'O' Levels Passes including English or WPL Level 5 (Average of Reading, Listening, Speaking & Writing Scores).

## WSQ Funding

WSQ funding is only applicable to Singaporeans/PRs. Subject to eligibility, the funding support is subjected to funding caps.

**Baseline:** Singaporean/PR age 21 and above

**MCES:** Singaporeans aged 40 years old and above

**SME:** Small and Medium Enterprises.

### SkillsFuture Enterprise Credit (SFEC):

Eligible Singapore-registered companies can claim up to \$10,000.

**Effective for Courses starting from 1 Jan 2024**

Full Fee	GST	Nett Fee after Funding (Inc. GST)	
		Baseline	MCES / SME
\$2,000	\$180.00	\$1,180.00	\$780.00

## UTAP Funding

Eligible NTUC members can apply for 50% of the unfunded fee from UTAP, capped at \$250 per year. NTUC members aged 40 and above will get increased funding support from \$250 to \$500.

## Absentee Payroll (AP) Funding

\$4.50 per hour, capped at \$100,000 per enterprise per calendar year.

AP funding will be computed based on the actual number of training hours attended by the trainee.

## Frequently Asked Questions

### \* **What are the prerequisites for WSQ Funding?**

1. You need to be a Singaporean Citizen or Permanent Resident, physically based in Singapore.
2. You must successfully complete the programme and pass the assessment in order to be eligible.
3. You must attend at least 75% of the training.

### \* **Can I club any other grant with this subsidy?**

No, you cannot claim any other grant if you are claiming this subsidy from SSG. You should not be claiming for any other grants, subsidies, or tax concessions, provided unless explicitly permitted.

### \* **Do I need to pay the full fee, and then claim the subsidy from WSQ Funding?**

The programme works on a Nett fee model, i.e. you only need to pay the difference between the fee, and the funding amount at the time of enrollment. The training provider (TP) will claim the funding amount from SSG on completion of the programme. In case you fail to complete the programme, or if the claim raised by TP is rejected by SSG then you are liable to pay the funding amount to TP.