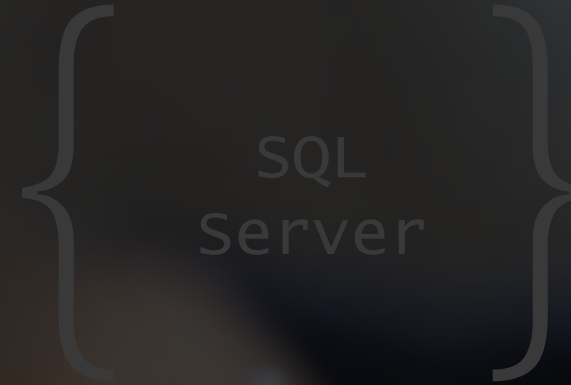




# WorkshopPLUS – SQL Server: Performance Tuning and Optimization

Microsoft Open  
June 6<sup>th</sup> – 9<sup>th</sup>, 2023  
10:00 am – 6:00 pm ET





# John Deardurff

Cloud Solution Architect (Data & AI)

Microsoft Certified Trainer (Regional Lead)

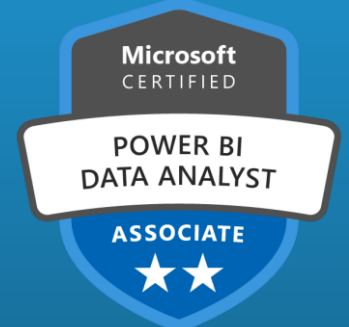
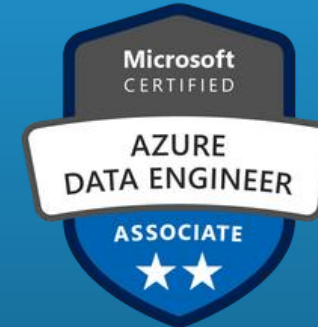
MVP: Data Platform (2016 – 2018)

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# Agenda Day 1

## Module 1: SQL Server Architecture, Scheduling and Waits

SQL OS

Task Scheduling

Waits and Queues



## Module 2: SQL Server I/O and Database Structure

Disk I/O

Page Structure

Data File Structure



# Agenda Day 2

## Module 2: SQL Server I/O and Database Structure

Log File Structure

TempDB File Structure



## Module 3: SQL Server Memory

Windows Memory  
Management

SQL Server Memory  
Management

Troubleshooting SQL Server  
Memory



## Module 4: SQL Server Concurrency and Transactions

SQL Server Transactions

Transaction Isolation Levels



# Agenda Day 3

## Module 4: SQL Server Concurrency and Transactions

SQL Server Locking

Blocking and Deadlocking



## Module 5: SQL Server Index Structure

Index Internals

Indexing Strategies

Index Monitoring and  
Fragmentation

Partitioned Tables and  
Indexes



# Agenda Day 4

## Module 6: SQL Server Statistics Structure

SQL Server Statistics Internals

SQL Server Statistics Maintenance



## Module 7: SQL Server Query Execution and Plans

SQL Server Query Execution

SQL Server Query Plan Analysis



## Module 8: SQL Server Plan Caching and Query Store

SQL Server Plan Cache  
Internals

Query Store

Query Store Troubleshooting



# Additional Review

Module 9: SQL Server Query Tuning



Sargable expressions



Query Hints



Query Troubleshooting

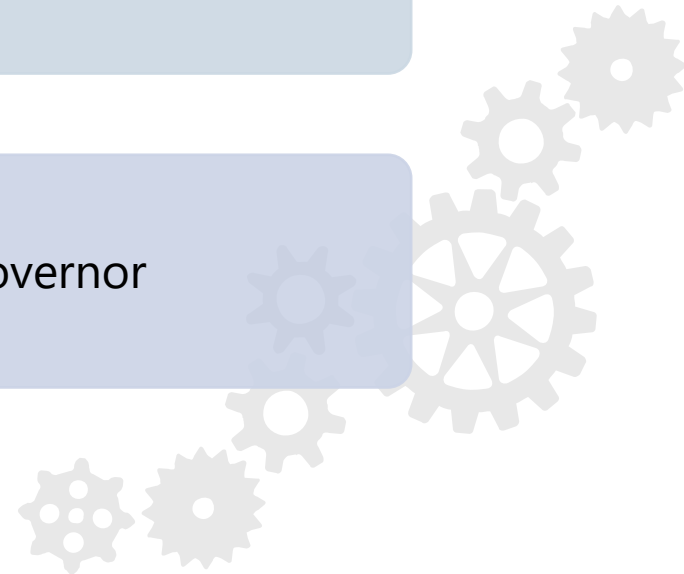
Module 10: SQL Server Performance Tools



Extended Events



Resource Governor



# Lab Times - (Minutes)

M01L03Lab01 - Waits and Queues (30)

M02L02Lab01 - Use DiskSpd to run storage performance tests (30)

M02L03Lab01 - Disk I/O monitoring and troubleshooting (30)

M02L08Lab01 - Monitoring and troubleshooting TempDB (30)

M03L03Lab01 - Memory Troubleshooting (45)

M04L02Lab01 - SQL Server Isolation Levels (30)

M04L05Lab01 - Troubleshooting Concurrency Performance (40)

M05L03Lab01 - SQL Server Partitioning (30)

M05L04Lab01 - Columnstore Index Performance (20)

M05L05Lab01 - Index Maintenance (30)

M06L03Lab01 - Statistics Update (25)



# Lab Times - (Minutes)

M07L02Lab01 - Constraint Optimization (25)

M07L03Lab01 - Query Plan Analysis (30)

M07L04Lab01 - Intelligent query processing (25)

M08L03Lab01 - Troubleshooting Using the Query Store (30)

M09L01Lab01 - Query Tuning Sargability (20)

M09L03Lab01 - Query Troubleshooting (20)

M10L01Lab01 - Lightweight Query Profiler (10)


M10L02Lab01 - Extended Events (30)

# Class Resources

Virtual Lab Environment, Slides  
Decks, Lab Manuals, and Demo  
Files

### Labs


1

 **WorkshopPLUS - SQL Server: Performance Tuning and Optimization**  
WorkshopPLUS - SQL Server: Performance Tuning and Optimization, All Modules

Launch


### Additional Resources

1

 **PowerPoint Slide Decks**


Launch

2

 **Lab Manuals**

Launch

3

 **Demo Files**

Launch

Dankie Faleminderit **Shukran** Chnorakaloutioun Hvala Blagodaria

Děkuji **Tak** Dank u Tānan Kiitos **Merci** Danke Ευχαριστώ A dank

Mahalo מודה. **Dhanyavād** Köszönöm Takk Terima kasih **Grazie** Grazzi

**Thank you!**

감사합니다 Paldies Choukrane Ačiū **Благодарам** ありがとうございます

谢谢 Баярлалаа **Dziękuję** Obrigado Mulțumesc **Спасибо** Ngiyabonga

Ďakujem Tack Nandri Kop khun **Teşekkür ederim** Дякую Хвала Diolch

