SQL Server PerformanceTuning Course Content:

1.SQL Server Performance Tuning

2.Introduction to SQL Server Performance Tuning:

3.Introduction: Houston, do you have a problem?

- Resource bottlenecks
- Identifying issues
- Prioritizing issues
- Continuous process
- SQL Server Query Basics
- How does a query process?
- Query Optimizer
- Plan Cache
- Execution plans
- Baselines and Statistics
- Value in knowing whats good
- Performance metrics
- SQL Server Statistics (DMOs)
- SQL Server Load Testing
- Scripts & third party tools
- Hands-on lab: Perform SQL Server load testing using PowerShell
- Configuring a SQL Server for Optimal Performance:
- Hardware Environment and Configuration
- Memory
- Storage Platform
- Software Environment and Configuration
- Windows Operating System
- SQL Server Best Practices

4.SQL Server Performance Tuning Methodology:

- Waits and Queues Methodology
- Basics of methodology
- Cashier example
- Value of methodology
- How to monitor Wait and Queues
- Hands-on lab: Querying DMVs to monitor waits and queues
- Index Tuning

5.Index Types:

- Clustered Indexes
- Heaps
- Non-Clustered Indexes
- ColumnStore Indexes
- Index Maintenance
- Missing indexes
- Database Engine Tuning Advisor
- Duplicate Indexes
- Hands-on lab: Perform various index tuning exercises (2 – 3)
- Query Tuning
- Watching selectivity
- Order of operations
- Blocking
- Deadlocks
- Locking
- Consistency
- Complex solutions
- Best Practices
- Hands-on lab: Perform various query tuning exercises (3 – 4)

6.SQL Server Monitoring and Tools:

- Monitoring, Alerting and Tools
- Perfmon
- SQL Trace
- Profiler
- Extended Events
- sp_ServerDiagnostic
- sp_WhoIsActive
- sp_Blitz
- sp_BlitzIndex
- SQLIO
- Alerting
- Hands-on lab: Create an XEvent session to track wait resources
- BI performance monitoring
- Making it real
- Phase I: Taking over a SQL Server environment

- phase II: Identifying your problem children
- Phase III: Achieving an acceptable level of stability & reliability