

SQL Server DBA Course Content  
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**Module 1: Starting with SQL Server**

- Responsibilities of Database Administrator
- History of SQL Server
- Editions of SQL Server
- Differences between Standard and Enterprise editions
- Instances types in SQL Server
  - Default Instance
  - Named Instance
- SQL Server Services and Tools

**Module 2: Installing SQL Server**

- Pre-requisites
- Installation
- Post Installation verification Session

**Module 3: Functioning of Databases**

- Databases
- Types of Databases and Brief explanation
  - System Databases
  - User Database
- Database Architecture
  - Pages
  - Extents
  - File groups
  - Database
- Creating Database
- Altering Database properties
  - Adding Files
  - Moving and renaming the database files
- Transaction Log File Architecture

- Real time Scenario

**Module 4: Security**

- Authentication Types in SQL Server
- Types of Logins
  - Windows Logins
  - SQL Logins
- Creating Users and Logins
  - Server roles
  - Password policy
  - Understanding Database and Server Roles
  - Permissions
  - Working on access level issues
  - Orphan users Finding and Fixing
  - Important Queries

**Module 5: Database Backups and Restoration**

- Database Backups
  - Why we need backups
- Types of Backup
  - Full Backup
  - Differential Backup
  - Transaction Log Backup
- Copy-only, Mirrored, Split and Tail log Backups
- Differences between backups
- Backup Strategy
- Understanding how the data moving from Log to Data File, CHECKPOINT

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- Monitoring the space usage of Log File and fixing
- Checking the backup files VALID or CORRUPTED
- Backup storage tables
- Important Queries
- Performing Restorations
  - Types of Restoration
  - Attach and Detach
- Shrinking database files

**Module 6:** Recovery Models of Database

- Types of Recovery Models
  - Full
  - Bulk Logged
  - Simple
- Differences between Recovery Models
- Setting Recovery Models according to the Scenarios with examples

**Module 7:** Automation of SQL SERVER

- Working with SQL SERVER Agent
  - Creating Jobs
  - Managing Jobs and Resolving issues
  - Monitoring Jobs
  - Monitoring Tables

**Module 8:** DB Mail Configuration, DB Audit, Linked Servers and Error Logs

**HIGH AVAILABILITY CONCEPTS**

**Module 8:** Log Shipping

- Log Shipping
  - Working with Log Shipping
  - Terminology
  - Pre-requisites to implement Log Shipping
  - Different modes of Log Shipping
  - Configuring Log Shipping
  - Monitoring
  - Manually Performing Failover
  - Log Shipping Tables
  - Discussing Real Time Scenarios

**Module 9:** Database Mirroring

- Working with Database Mirroring
  - Terminology
  - Pre-requisites to implement Mirroring
  - Pre check mirroring ports ENABLED or DISABLED
  - Architecture
  - Operating Modes
  - Differences between Modes
  - Port numbers involved in Mirroring
  - Requirements for Mirroring
  - Configuring Mirroring
  - Mirroring failover
  - Issues on Mirroring

**Module 10:** Replication

- Working with Replication

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- Pre-requisites to implement to Replication
- Types of Replications
- Agents involved in Replication
- Configuring Replication
- Resolving Issues

**Module 11: Clustering**

- Introduction about clustering
- Clustering Architecture
- Importance of IP's involved in Clustering
- SAN importance
- Drive dependency
- Nodes in Clustering
- Implementation of 2-node cluster
- Installation and Configuration of Domain System
- Configuring the SAN Storage
- Installing SQL Server with Cluster features
- Adding Nodes to Clustering
- Monitoring and troubleshooting the Clustering

**Module 12: AlwaysOn Availability Groups**

- Introduction to AGA
- Configuration of AGA
- Setting the pre requisites like Domain setup
- Monitoring the AGA
- Discuss the Common Issues with AGA

- Setting up Database Backups on AGA servers

**Monitoring Tools**

- System Monitor
- SQL Server Profiler
- SQL Server and Windows Error Logs

**Query Performance Tuning**

- Locks and session blockings
- Deadlock situations and troubleshooting them
- Using DMV's and DMF's to analyze the Query Performance
- Learn how to troubleshoot query performance by analyzing execution plans
- Types of indexes
- Fragmentation in Indexes
- Table Statistics
- How the compressions helps to improve the query performance
- Table partitions
- Database Tuning Adviser to trouble shoot long running queries
- Identify and Troubleshoot IO, CPU, Tempdb & Network bottlenecks

**Managing the SQL Server and Databases**

- Starting SQL Server in Single user mode
- Modifying the Logical and Physical names of database files
- Rebuilding System databases