

# SQL School <sup>TM</sup>

## Quality Training Assured

Complete Practical; Real-time Job Oriented Training

### SQL Server T-SQL Training

	Plan A	Plan B	Plan C
Description	SQL Server TSQL	SQL Server TSQL Query Tuning	SQL Server TSQL Query Tuning Azure SQL
Course Curriculum	Ch 1 to 20	Ch 1 to 26	Ch 1 to 38
<b>Completely Practical, Real-time</b>	✓	✓	✓
Mock Interviews, Case Studies	✓	✓	✓
SQL Basics and Query Writing	✓	✓	✓
SQL DB Design, Table Design	✓	✓	✓
Normal Forms, Joins and Queries	✓	✓	✓
Indexes Basics and Stored Procedures	✓	✓	✓
Excel Integration and Pivot Charts	✓	✓	✓
Advanced Stored Procedures, TVP	✓	✓	✓
CTE, XML, Triggers, PIVOT, Cursors	✓	✓	✓
<b>Real-time Project [Banking]</b>	✓	✓	✓
In-depth Query Tuning, Exec" Plans	X	✓	✓
Index Management & Partitions	X	✓	✓
Profiler, Perfmon, AM, DTA Tools	X	✓	✓
Locks, Deadlocks, Isolation Levels	X	✓	✓
Memory Tables, Temporal Tables	X	✓	✓
Azure SQL Database (Cloud)	X	X	✓
Azure Storage, Database Migrations	X	X	✓
Stretch Databases & Elastic Queries	X	X	✓
Elastic Query Processing, Shard Maps	X	X	✓
Azure Tuning and Azure Search	X	X	✓
XEL Graphs, Traces, Audits, SP's	X	X	✓
<b>Real-time Project [Banking]</b>	X	X	✓
<b>NO OF VIDEOS</b>	20 Videos	26 Videos	38 Videos

**Trainer:** Mr. Sai Phanindra T [17+ Yrs of Real-time Exp]. Profile @ [linkedin.com/in/saiphanindra](https://www.linkedin.com/in/saiphanindra)

# Query Tuning Training

Training Module		No of Videos	Plan A	Plan B	Plan C
Module 1	SQL Server & T-SQL	20 Videos	✓	✓	✓
Module 2	Query (Performance) Tuning	6 Videos	X	✓	✓
Module 3	Azure SQL Dev	12 Videos	X	X	✓
<b>TOTAL DURATION</b>			<b>20 Videos</b>	<b>26 Videos</b>	<b>38 Videos</b>

## Module 1: SQL, T-SQL, Programming with Stored Procedures

Applicable for SQL Server TSQL Plan A, B, C

### Video 1: SQL SERVER INTRODUCTION

Data, Databases and RDBMS Software; Database Types : OLTP, DWH, OLAP; Microsoft SQL Server Advantages, Use; Versions and Editions of SQL Server; SQL : Purpose, Real-time Usage Options; SQL Versus Microsoft T-SQL [MSSQL]; Microsoft SQL Server - Career Options; Database Engine Component and OLTP; BI Components, Data Science Components; ETL, MSBI and Power BI Components; Course Plan, Resume, Project; 24 x 7 Lab; Software Installation Pre-Requisites;

### Video 2: SQL SERVER INSTALLATIONS

System Configuration Checker Tool; Versions and Editions of SQL Server; SQL Server Pre-requisites : S/W, H/W; SQL Server 2016 / 2017 Installation; SQL Server 2019 Installation; Instance Name; Instances : Types; Default Instance, Named Instances; Port Numbers; Service and Service Account; Authentication Modes and Logins; File Stream, Collation Properties;

### Video 3: SSMS Tool, SQL BASICS - 1

SQL Server Management Studio; Local and Remote Connections; System Databases: Master and Model; MSDB, Temp DB, Resource Databases; Creating Databases: Files [MDF, LDF]; Creating Tables in GUI; Data Insertion & Storage; SQL: Real-time Usage; DDL, DML, SELECT, DCL and TCL Statements; Data Storage, Inserts - Basic Level; SELECT; Table Data Retrieval;

### Video 4: SQL BASICS - 2

Creating Databases & Tables in SSMS; Single Row Inserts, Multi Row Inserts; Rules for Data Insertion Statements; SELECT Statement @ Data Retrieval; SELECT with WHERE Conditions; AND and OR; IN and NOT IN; Between, Not Between; LIKE and NOT LIKE; UPDATE Statement; DELETE & TRUNCATE; Logged and Non-Logged Operations; ADD, ALTER and DROP Statements;

### Video 5: SQL BASICS - 3, T-SQL Introduction

Schemas : Group Tables in Database; Using Schemas for Table Creation; Using Schemas in Table Relations; Table Migrations across Schemas; Default Schema : "dbo"; Import and Export Wizard; Bulk Operations; Excel File Imports / Exports; SQL Server Native Client; Executing SSIS Packages, Data Loads; Local and Global Temporary Tables; # & ## Prefix; Temporary Vs Permanent Tables;

### **Video 6: CONSTRAINTS & INDEXES BASICS**

Constraints and Keys - Data Integrity; NULL, NOT NULL Property on Tables; UNIQUE KEY Constraint; PRIMARY KEY Constraint; FOREIGN KEY Constraint, References; CHECK Constraint; DEFAULT Constraint; Identity Property : Seed & Increment; Database Diagrams and ER Models; Relationships Verification and Links; Indexes : Basic Types and Creation; Index Sort Options, Search Advantages; Clustered and Non Clustered Indexes; Primary Key and Unique Key Indexes;

### **REAL-TIME CASE STUDY - 1 (SALES & RETAIL)**

### **Video 7: JOINS and TSQL Queries : Level 1**

JOINS - Table Comparisons; INNER JOINS For Matching Data; OUTER JOINS For (non) Match Data; Left Outer Joins; Right Outer Joins - Example Queries; FULL Outer Joins; One-way and Two Way Comparisons;"ON" Conditions; Join Unrelated Tables; NULL, IS NULL in Joins; CROSS JOIN and CROSS APPLY; Join Options: Merge, Loop and Hash Joins; Performance Advantages;

### **Video 8: GROUP BY, T-SQL Queries : Level 2**

GROUP BY Queries and Aggregations; Group By Queries with Having Clause; Group By Queries with Where Clause; Using WHERE and HAVING in T-SQL; Rollup : Usage and T-SQL Queries; Cube : Usage and T-SQL Queries; UNION and UNION ALL Operator; EXISTS Operator, Query Conditions; Sub Queries; Joins with Group By Queries; Nested Sub Queries; UNION and UNION ALL; Nested Sub Queries with Group By, Joins; Comparing WHERE, HAVING Conditions;

### **Video 9: JOINS & T-SQL Queries : Level 3**

GetDate, Year, Month, Day Functions; Date & Time Styles, Data Formatting; Date Add and Date Diff Functions; Cast and, Convert Functions in Queries; String Functions: SubString, Replicate; Len, Upper, Lower, Left and Right; LTrim, RTrim, CharIndex Functions; MERGE Statement - Comparing Tables; WHEN MATCHED and NOT MATCHED; Incremental Load with MERGE Statement; IIF() Function for Value Compares; CASE Statement : WHEN, ELSE, END; ROW\_NUMBER() and RANK() Queries; Dense Rank and Partition By Queries;

### **Video 10: View, Procedure, Function Basics**

Views : Types, Usage in Real-time; System Predefined Views and Audits; Listing Databases, Tables, Schemas; Functions : Types, Usage in Real-time; Scalar, Inline and Multi-Line Functions; System Predefined Functions, Audits; DBId, DBName, ObjectID, ObjectName; Variables & Parameters; User & System Predefined Procedures; Parameters; Sp\_help, Sp\_helpdb and sp\_helptext; sp\_pkeys, sp\_rename and sp\_help; When to use Which Database Objects;

### **Video 11: Triggers & Transactions**

Triggers - Purpose, Real-world Usage; FOR/AFTER Triggers; INSTEAD OF Triggers; INSERTED, DELETED Memory Tables; DML Automations using Memory Tables; Read Only Tables using DML Triggers; Enable Triggers and Disable Triggers; Database Level, Server Level Triggers; Transactions & ACID Properties; Auto Commit; EXPLICIT & IMPLICIT; COMMIT and ROLLBACK; Open Transaction; Query Blocking Scenarios @ Real-time; NOLOCK and READPAST Lock Hints;

### **Video 12: ER MODELS, NORMAL FORMS**

Normal Forms for Entity Relationships; First, Second, Third Normal Forms Usage; Boycee-Codd Normal Form: BNCF : Usage; 4 NF, EKNF, ETNF. Functional Dependency; Multi-Valued, Transitive Dependencies; Composite Keys and Composite Indexes; 1:1, 1:M, M:1, M:M Relationship Types; SQL Queries Access in Reporting Tools; Storing SQL Queries into Views; Creating Office Data Connection Files; Excel Pivot Reports and Reports; SQL Queries (Auto Generated) in BI Tools; FETCH OFFSET, NEXT ROWS; Data Refresh (Manual, Automated);

### **REAL-TIME CASE STUDY - 2(Sales & Retail), EXCEL INTEGRATION**

#### **Video 13: STORED PROCEDURES - Level 2**

Table Valued Parameters (TVP); READONLY Parameters - Stored Procs; OUTPUT Parameters - Stored Procedures; User Data Types & Real-time Use; Dynamic Data Insertions with SPs; Table Cloning, Inserts @ Table Variables; SQL Injection Attacks - Precautions; CTE : Common Table Expressions; Real-time Scenarios with CTEs; Recursive and Non-Recursive CTEs; CTEs for Avoiding Self Joins& Sub Queries; Recursive CTEs and ANCHOR Element; Termination Checks in Recursive CTEs; Loops with Recursive CTEs; Date, Time in CTEs; Disadvantages with CTEs;

#### **Video 14: STORED PROCEDURES - Level 3**

DML Triggers and DDL Triggers; FOR and INSTEAD OF Triggers; Magic Tables : Inserted, Deleted; Views on Tables - SCHEMABINDING; ENCRYPTION and CHECK OPTION; Cascaded Views, Encrypted Views; Updatable Views, Joins with Triggers; Cursors in SProcs; ForwardOnly, Scroll & Local Cursors; Static, Dynamic & Global Cursors; Keyset Cursors and @@FetchStatus; Nested Stored Procedures; Formatting and WHILE Loops; Temporary Tables for Formatting;

#### **Video 15: XML, BLOB, FUNCTIONS - Level 2**

Functions : Types, Real-world Usage; Scalar Value Returning Functions; Inline Table Value Functions; Multi-Line Table Value Functions; WHILE Loops and Iterations in T-SQL; Table Variables in T-SQL; Data Type Conversions; Composite Keys , Computed Columns; Self Referencing Keys, Self Joins; Adding Keys to Existing Tables; XML AUTO, XML RAW and XML PATH;BULK INSER, BULKCOLUMN & JSON; OPENROWSET; JSON, PIVOT and UNPIVOT Functions;

#### **Video 16: SQL SERVER & DATABASE ARCHITECTURE**

Server Architecture and Protocols; Database Engine and Query Processor; Parser, Optimizer, SQL & DB Manager; Storage Engine Components, SQL OS; File Manager and Database Files; Transaction Services, Buffer Manager; Lock Manager, IO Manager, MDAC; CLR, WAL, Lazy Writer, Checkpoint; Database Architecture - Data Files; Database Architecture - Log Files; Primary (mdf), Secondary Files (ndf); Filegroups Usage, ReadOnly Filegroups; Database Files : Size and Location; Pages, Extents. Uniform, Mixed Extents; Transaction Log File [LDF], LSN, VLF;

#### **Video 17 - 20: REAL-TIME PROJECT (BANKING)[Includes 2000 Lines of Code]**

##### **Phase 1: DATABASE DESIGN**

End to End Project Work Flow; Naming Conventions in Real-time; Implementing Normal Forms (OLTP); Computed Columns; SQL\_Variant, Bit, sysname; Email & Phone Number Validations;

##### **Phase 2: QUERY DESIGN**

Joining Tables for Reports; Views with JOIN Options; Implementing Indexed Views; Using PIVOT Tables in Queries; PIVOT and UNPIVOT in T-SQL Queries; Dynamic Conditions in Queries;

### **Phase 3: PROGRAMMING**

Event Handling , Error Handling; Stored Procedures with Transactions; Error Handling, Event Handling; Transaction Nesting, Save Points; Stored Procedures with Tables, Views and Functions; Automating DML with Triggers; Project Deployments, Project FAQs;

## **Module 2: Performance Tuning**

Applicable for **SQL Server TSQL Plan B, C**

### **Video 21: BASIC TUNING & AUDITING**

Audit Long Running Queries : DMV, DMF; Activity Monitor Tool, Server Dashboards; Logical I/O, Physical I/O, Database I/O; Recent Expensive Queries, Wait Time; Active Expensive Queries, Statistics; Plan Handle, Execution Time - Audits; CPU, IO, Memory Consumption Reports; Server Dashboards and Usage; Database Settings, Performance; Query Store - Settings and Advantages; In Memory Data Store and Query Audits;

### **Video 22: INDEXES & QUERY TUNING**

Indexes: Architecture and Index Types; Database Architecture: Data Files; Database Architecture: Log Files; Data Pages and Index Pages; B Tree Structure, IAM Page [Root]; Clustered & NonClustered Indexes; Included, Columnstore, Online; Filtered, Covering, Indexed Views; Fill Factor and Pad Index Options; Index Selectivity with T-SQL Joins; Index Selectivity with Parameters;

### **Video 23: STATISTICS AND PARTITIONS FTS**

PARTITIONS: Performance Tuning; Partition Functions & Partition Schemes; Partitioning Un-partitioned Tables: GUI; Partition Compression : ROW & PAGE; Auditing Table Partitioned Structures; Statistics : Auto Creation, Updates; Index Rebuilding Process and Audits; Index Page Count and Index Condition; Degree Of Parallelism [DOP] Settings; Resumable Indexes: ONLINE, RESUME; PAUSE & RESUME in Index Rebuilds;

### **Video 24: FULL TEXT SEARCH INDEXES, TABLES**

Introduction to Full Text Search (FTS); Stop Words, Stemmer and Thesaurus; Indexer Program, Query Processor; Database Catalogs (FTC), FDHost.exe; Creating Full Text Catalogs (FTCs); CONTAINS() & FREETEXT() Queries; Query Performance Impact with FTS; Resumable Indexes with SQL Server; ONLINE, RESUME, PAUSE Options; In-Memory Tables: Creation & Usage; Memory Snapshots at Database; File Stream Files in SQL Server; Temporal Tables; Using Temporal Tables for Data Audits;

### **Video 25: TUNING TOOLS & QUERY OPTIMIZATION**

Tuning Tools: Workload Files, .trc Files; Profiler Tuning Template, SP Events; DTA, Profiler Trace : Recommendations; PDS: Physical Design Structures; Index, Stats, Partition Recommendations; DTA with Query Execution Cache; Perfmon Tool : Usage, Permon Counters; Real-time Tracking: CPU, Memory, IO; Execution Plan Analysis and Internals; Query Costs: IO Cost and CPU Cost; Query Costs: SubTree

&Operator Cost; NUMA Nodes, Processor, IO Affinity; Thread Count, Degree of Parallelism; Table Scan, Index Scan, Index Seek;

### **Video 26: LOCKS & ISOLATION LEVELS**

LOCKS : Types and Isolation Levels; S, X, IX,U, MD, Sch-M and Sch-S; Lock Audits : SP\_WHO2 & SP\_LOCK; sysprocesses and Lock Waits : Audits; Open Transactions, Query Blocking; Lock Hints and Isolation Levels; Read Committed, Read Uncommitted; Serializable and Repeatable Read; Snapshot Isolation, Page Versioning; Read Committed Snapshot Row Version; Choosing Correct Isolation Level; Profiler Tool and Lock Templates; Profiler Filters, Column Selections; XDL Files and Deadlocks Prevention;

## **Module 3: Azure SQL Database Development**

Applicable for **SQL Server TSQL Plans C**

### **Video 27: Cloud Introduction & Azure**

Introduction to Cloud Components; Cloud Implementation Concepts; SaaS: Software as a Service; PaaS: Platform as a Service; IaaS: Infrastructure as a Service; Public, Private and Hybrid Cloud; Introduction to Microsoft Cloud; Introduction to Azure Cloud; Advantages; Azure Cloud Benefits and Pricing; Shared Responsibility Model; Cloud Computing Options with Azure; Azure Implementation of Cloud Services; Azure Storage and ETL Resources;

### **Video 28: Azure Cloud Concepts**

Azure Cloud Account Registration; Tenant ID and Account ID Concepts; Subscriptions: Types and Importance; Resource Providers: Types, Importance; Resources: Storage, ETL & Analytics, Apps; Resource Groups: Advantages and Usage; Azure Services Versus Azure Resources; Azure Resources and Service Lines; Geography Locations in Azure; Azure Regions and Availability Zones; Azure Data Centers with Zones; Azure Locations Versus Regions; Azure Regional Pairs, Sovereign Regions;

### **Video 29: Azure Storage & Explorer Tool**

Azure Storage Resource: Importance; Azure Storage Services: BLOB Data; Azure Tables, File Shares, Azure Queues; Azure Data Lake Storage Gen 2 (ADLS); Service End Points and App Access; Storage Browser: Uploads, Downloads; Azure Storage Explorer Tool: Importance; Installing and Using Azure Storage Explorer; Generating SAS [Shared Access Signature]; Access Keys and Security Options; Data Redundancy Options: LRS, GRS, ZRS; Pricing Impact with ADLS Gen 2; Pricing Impact with Geo Replication;

### **Video 30: Azure Active Directory & Pricing**

Azure Active Directory (AD) Concepts; Creating Azure AD Users; Creating Azure AD Groups; Tenants and Zero Trust Defenders; IAM: Identity and Access Management; RBAC Roles: Owner and Contributor; Azure Resources and Pricing Units; Azure Pricing Calculator, Billing Tools; Pricing with Region, Availability Zone; Local and Geo Options & Cost Management; Azure Product Categories, Pricing Units; Pricing Estimates: Hourly / Monthly; Compute Cost and Storage Cost;

### **Video 31: Azure Monitor & Metrics**



Azure Resource Manager (ARM); Azure Monitor Components, Metrics; Azure Metric Charts and Timelines; Chart Components; Azure Insights; Monitor Dashboards and Auditing; Azure Advisor Options and Service Health; Azure Alerts and Signal Logic; Conditions & Thresholds; Evaluation Timelines & Frequency; Signal Logic Condition Frequency; Action Rules and their Usage; Notification Settings; Alert Monitoring and Verifications;

### **Video 32: Azure Virtual Machine (VM)**

Azure Virtual Machines, Container Instance; Advantages of Azure Virtual Machines; Deploying Azure VMs Using Portal; VM Types and Sizing Parameters; Disk Types, CPU and Memory; Scale Sets; Network Concepts; Firewalls; Availability; RDP with Azure VM; Azure Virtual Desktop; Availability Sets and Availability Zones; Public and Private End Points; Application Hosting Options with VM; Web Apps Features & Containers; Virtual Networking; Subnets & Masks; Peering, Azure DNS, Gateways, Express Route;

### **Video 33: Azure SQL Server, Database**

SQL Server Implementation in Azure; Azure SQL Server: PaaS and IaaS; Logical SQL Server Creation; Resource Name, Resource Group; Azure SQL Server Region, Credentials; Firewall Settings, Password Reset; SSMS Tool and ADS Tool Installation; Connections with SSMS Tool; Connections with ADS Tool; System Databases and Metadata; Database Connections and Sessions; Versions and Editions with Azure SQL; Limitations with Azure SQL Databases;

### **Video 34: TSQL Differences with Azure**

TSQL Differences with On-Premise; Database Connections; Linked Servers and Remote Joins; Schemas, Indexes and Statistics; System Metadata Objects, Audits; CTEs and Memory Tables in Azure; Azure SQL Databases & Pricing Tiers; Elastic Scaling with Azure Databases; General Purpose and Business Critical; Basic, Standard and Premium Plans; vCore Based Purchasing : Gen 4, Gen 5; Elastic DTU (eDTU) and Performance; Edition Upgrade @ Azure SQL Database;

### **Video 35: Azure SQL DB Migration**

Azure SQL DB Migration Options; Using bacpac Method and DMA Tool; DMA: Data Migration Assistant; Scripting Database: Objects; Scripting Objects and Relations; Migration Schemas and Data; Azure Storage Account: Creation; Azure Storage Container For BOLB; Generating Access Key for SSMS; Onpremise Database Exports; Generating bacpac Files, Uploads; Importing bacpac Files to Azure SQL; Verifying SQL Database Migrations;

### **Video 36: Azure SQL DB Tuning**

Azure SQL Server Level Tuning Options; Azure SQL Database Tuning Options; Automated Tuning and Peak-Loads; Force Plan, Create Index and Drop Index; Query Insight and Recommendations; IO Metrics, CPU & Query Statistics; Data File IO, Log File IO, Custom Reports; Query Audits with Query IDs, Dashboards; Query Recommendations, Query Costs; Azure Search Service and Pricing Tiers; Suggester and Analyzer Modes for Tuning; Retrievable, Facetable, Facetable Indexes; Change Tracking & Watermark Columns;

### **Video 37: Azure SQL Server in VM**

Azure Virtual Machines (VMs); SQL Server with Azure VMs; Size, Networking and Authentication; SQL Server Connection Settings; Deployment and VM Verifications; VM Verification Options; SQL Server Verification Options; SQL Server Connections inside VM; Database Operations with SSMS; Onpremise to

AzureVM Migration; Azure Logical Server to VM Migrations; Working with Security Logins, Users; Comparing IaaS and PaaS;

**Video 38: Real-time Project @ Banking**

**Phase 1: DATABASE MIGRATIONS**

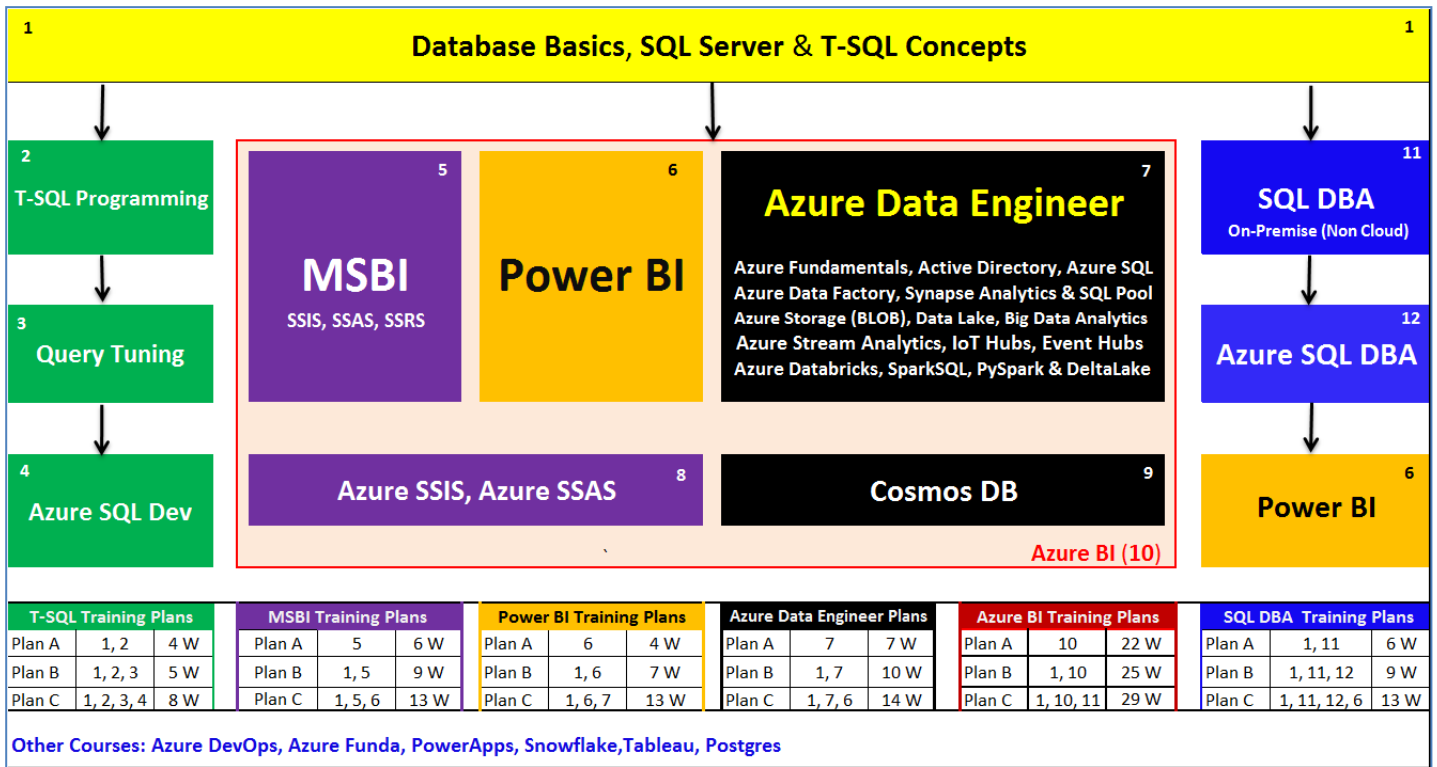
Database Preparations for Migrations; DMA & bacpac Methods Implementation; Schema Migrations; Data Migrations;

**Phase 2: POST MIGRATION ACTIVITIES**

Big Data Loads, Monitoring, Tuning and Stored Procedure Recompilations. Event Handling , Error Handling; Stored Procedures with Transactions; Error Handling, Event Handling; Transaction Nesting, Save Points; Stored Procedures with Tables, Views and Functions; Automating DML with Triggers; Project Deployments, Project FAQs;

<b>Email :</b> contact@sqlschool.com <b>Skype:</b> SQL School Training Institute <b>Website:</b> www.sqlschool.com	<b>Call Us (India) : 24 x 7</b> +91 9666 44 0801
<b>Trainer Contact:</b> saiphanindrait@gmail.com +91 9030040801	<b>Call Us (USA / Canada) : 24 x 7</b> +1 956.825.0401

**Courses From SQL School:**





**Trainer Profile :**

<http://linkedin.com/in/saiphanindra>

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