**Course Content draft:**

**SQL Server Architecture and Installation**

* Microsoft SQL Server architecture and Concepts
* Physical and Logical Architecture of SQL Server Database
* Terminologies – Instance, Database
* Basics on SQL Server Security – Logins and server roles
* Query Processing Architecture of SQL Server
  + Parsing
  + Binding
  + Optimization
* Installing SQL Server Standalone
* Configuring Service Account
* Installing Management Studio

**Introduction to Query Tuning**

* Query Tuning Lifecycle
* Execution Plan Basics
* Various Execution Plan Types
* Common Logical and Physical Operators
  + Aggregates – Stream and Hash
  + Joins – Loop, Merge and Hash

**Query Execution and Query Plan Analysis**

* Query Execution and Query Optimizer Internals
* Query Execution Plans
* Analyzing Query Execution Plans
* Evaluating Query Costs and How they are calculated

**SQL Server Indexing**

* Architecture
* Clustered Index
* Non-clustered Index
* Index Seek vs Index Scan

**Indexed Views aka. Materialized View**

* What are Indexed Views
* Usage and Benefits
* Using Indexed views for query performance

**Backing Up SQL Server Databases**

* Backing Up Databases and Transaction Logs
* Full Backup using command and GUI

**Restoring SQL Server 2016 Databases**

* Restoring Databases
* Restoring Full backup devices using GUI and command

**Working with SQL Server Agent**

* Managing SQL Server Agent Jobs
* Create a SQL Server Agent Job
* Test a Job
* Schedule a Job

**Troubleshooting SQL Server**

* Resolving Service Related Issues
* Resolving Connectivity and Log-in issues
* Troubleshoot and Resolve a SQL Login Issue
* Troubleshoot and Resolve a Service Issue
* Troubleshoot and Resolve a Windows Login Issue
* Troubleshoot and Resolve a Job Execution Issue

**Using various Performance Tuning/Monitoring Tools**

* SQL Workloads
* Using SQL Server Profiler for monitoring workloads and problems
* SQL Traces
* Using SQL Server Extended Events for capturing statistics
  + Architecture
  + Event Sessions
  + Using the Extended Events Manager
  + Examining Execution Plans with Extended Events