

**Program Name:**

**Data Analytics (SQL Server 2019 Database Development, BI and Data Visualization)**

This program is designed to produce mid-level SQL Server Database Developers, Architects, BI developers and Data Analytics Personnel. It is composed of three courses (6 modules), course-based projects and one senior project

Total Duration: 100+ Hours Courses + project

Entry Criteria: At least Associate Degree (Diploma) in any field; or two years of College/University (higher education) study; At least of one-year professional experience in any field

While we assume candidates may have taken Introduction to IT course and are familiar with, Microsoft Office Word and/or Excel; have understanding of basics of Software, Application Architecture, the first course introduces the candidates to these same concepts.

**Course 1**

**Relational Database Management Fundamentals and Querying SQL Server 2019 (50hrs)**

At the end of the course trainees will be able to create and manipulate relational database objects using SQL Server 2019

- Overview of RDBMS, standard SQL Vs T-SQL, DDL, DML, DQL and DCL
- SQL Server Instances Vs Databases; other DBMSs
- SQL Server 2019 Quick Install
- Database Design Basics
  - The database design process
  - Requirements analysis: identifying the purpose of the database
  - Database structure: the building blocks of a database
  - Creating relationships between entities
  - Database normalization – 1NF, 2NF, 3NF
- Creating and Altering tables, relationships and constraints
  - Understanding Data Types
  - Creating Tables
  - Constraints – NOT NULL, PRIMARY KEY, FOREIGN KEY, DEFAULT, CHECK
  - Altering tables
    - Add, drop or modify Column and Constraint definitions
  - Advanced table relationship management – Cascading effect of FK definition for DELETE and UPDATE
- DML – Data Manipulation Language INSERT, DELETE, UPDATE
- Data retrieval – SELECT Statement

- Structure of SELECT statement
- Filter Conditions
- Grouping and Aggregate values
- Subqueries - Correlated and Uncorrelated Subqueries
- Retrieving data from multiple Tables
  - JOIN – CROSS JOIN, INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN
- Working with other database objects Stored Procedures, Views, Functions and Triggers
  - Advantages and basics Stored Procedures
  - Creating parametrized stored procedures for SELECT and DML
  - Views
  - Functions – User Defined Functions, Table Valued Vs Scalar Valued
  - DML Triggers
    - FOR/AFTER INSERT, DELETE, UPDATE
    - INSTEAD OF INSERT, DELETE, UPDATE

## **Course 2 (Microsoft Business Intelligence)**

### **Module 1: SSIS (SQL Server Integration Services) (16 hrs)**

- Import and Export data in SSMS and SSIS
- Introduction to SSIS
- Connection managers in SSIS
- Use of Control flow task
- Use of Data Flow task
- Use variables in the package
- Event handlers
- Package explorer
- Precedent constraints
- Use of Containers
- Introduction to data flow task
- Set different data flow sources
- Data Transformation
- Set Data flow destinations
- Control flow task
- Deployment of package
- Move package from one server to another, deployment methods and security
- Executing the package
- Different ways and places a package can be executed
- Configure a schedule for package execution

## **Module 2: SSRS (SQL Server Reporting Services) (14 hrs)**

- Introduction to BI concept
- Creating basic report using SSRS
- Creating report using Report server wizard and report server template
- Creating Tabular and matrix report
- Add filters and parameters to a report
- Adding cascading parameters to a report
- Difference between filters and parameters
- Difference between tabular and matrix report
- Explanation of Textbox properties
- List report, Sub report, Drill through report
- Use of Image, Rectangle and Charts in creating reports
- Use Expressions to dynamically design your reports
- Deploying reports
- Manage reports using report Manager

## **Course 3:**

### **Microsoft Power BI Fundamentals (16 hrs)**

- Introduction to Power BI
- Connect to Data Source
- Basic transformation
- Modeling data
- Data visualization in Power BI
- Power BI services
- Power BI Dashboard