



MSBI and SQL Certification Training

In Collaboration with **Microsoft**



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About the Program

Our MSBI and SQL certification master's program lets you gain proficiency in Microsoft Business Intelligence. You will work on real-world industry projects in the three components of MSBI: SSIS for ETL, SSAS for analysis, and SSRS for reporting, and you will learn about data mining queries, Visual Studio, SQL Server, OLAP, generating cubes, data sources, and converting raw data into business insights. As part of this online training, you will also receive the official course material issued by Microsoft for Analyzing Data with SQL Server Reporting Services and Querying Data with Transact-SQL.



Collaborating with Microsoft

Microsoft is one of the largest organizations in terms of inventing creative tools for various purposes. Experts from Microsoft and other top MNCs will offer you their understanding and knowledge in the field through this online certification. Moreover, you will also get deep insights into the concepts and gain hands-on experience by working on industry-specified assignments.

Benefits for students from Microsoft:

- Industry-recognized Microsoft certification
- Real-time projects and exercises

About Intellipaate

Intellipaate is one of the leading e-learning training providers with more than 600,000 learners across 55+ countries. We are on a mission to democratize education as we believe that everyone has the right to quality education. Our courses are delivered by subject matter experts from top MNCs, and our world-class pedagogy enables learners to quickly learn difficult topics in no time. Our 24/7 technical support and career services will help them jump-start their careers in their dream companies.

Key Features



**46 HRS INSTRUCTOR-LED
TRAINING**



46 HRS SELF-PACED TRAINING



**92 HRS REAL-TIME
PROJECT WORK**



LIFETIME ACCESS



24/7 TECHNICAL SUPPORT



**INDUSTRY-RECOGNIZED
CERTIFICATION**



**JOB ASSISTANCE THROUGH
80+ CORPORATE TIE-UPS**



FLEXIBLE SCHEDULING

Career Support



SESSIONS WITH INDUSTRY MENTORS

Attend sessions from top industry experts and get guidance on how to boost your career growth



MOCK INTERVIEWS

Mock interviews to make you prepare for cracking interviews by top employers



GUARANTEED INTERVIEWS & JOB SUPPORT

Get interviewed by our 400+ hiring partners



RESUME PREPARATION

Get assistance in creating a world-class resume from our career services team



Why take up this course?

MSBI is a powerful Business Intelligence tool that is used by enterprises across the world for quick decision-making, coming up with in-depth reporting, and deriving meaningful insights. This combo training course will provide you the right set of skills to work on critical projects that need extensive knowledge of SSAS, SSIS, and SSRS. This will open up the doors for you to the high-paying jobs in the best companies.

Who should take up this course?

- Software Developers and ETL and Data Analysts
- Project Managers and Business Intelligence Professionals

Program Curriculum

MSBI Course Content

MSBI SSIS Course Content

- **WHAT IS BI?**

Introduction to Business Intelligence and understanding the concepts of data modeling, data cleaning, data analysis, data representation, and data transformation

- **ETL OVERVIEW**

Introduction to ETL, various steps involved (Extract, Transform, and Load), using a user's email ID to read a flat file, extracting the User ID from the email ID, and loading the data into a database table

- **WORKING WITH CONNECTION MANAGERS**

Introduction to Connection Managers, logical representation of a connection, various types of Connection Managers, flat file, database, understanding how to load faster with OLE DB, comparing the performance of OLE DB and ADO.net, learning about bulk insert, working with Excel Connection Managers, and identifying problems

- **DATA TRANSFORMATIONS**

What is data transformation? Converting data from one format to another, understanding the concepts of character map, data column and copy column transformation, import and export column transformation, script and OLEDB command transformation, aggregate and sort transformation, and percentage and row sampling

- **ADVANCED DATA TRANSFORMATION**

Pivot and unpivot transformation, audit and row count transformation, split and join transformation, lookup and cache transformation, integrating with Azure

Analysis Services, elastic nature of MSBI to integrate with the Azure cloud service, the scale out deployment option for MSBI, working with cloud-borne data sources and query analysis, scaling out the SSIS package, deploying for tighter windows, working with larger amount of data sources, SQL Server vNext for enhancing SQL Server features, more choice of development languages, and data types both on-premises and in the cloud

- **SLOWLY CHANGING DIMENSIONS**

Understanding data that slowly changes over time, learning the process of how new data is written over the old data, best practices, detailed explanation of three types of SCDs: Type1, Type2 and Type3, and their differences

- **OVERVIEW OF FUZZY LOOK-UP TRANSFORMATION & LOOKUP & TERM EXTRACTION**

Understanding how fuzzy lookup transformation varies from lookup transformation and the concept of Fuzzy matching

- **CONCEPTS OF LOGGING & CONFIGURATION**

Learning about error rows configuration, package logging, defining package configuration, and understanding constraints and event handlers

MSBI SSRS Course Content

- **INTRODUCTION TO SSRS**

Get introduced to the SSRS architecture, components of the SSRS Report Building tool, and learning about the data flow in different components

- **MATRIX & TABLIX OVERVIEW**

Understanding the concepts of Matrix and Tablix, working with Text Box, learning about formatting, row/column grouping, understanding sorting, formatting, and the concepts of header, footer, totals, subtotals, and page breaks

- **PARAMETERS & EXPRESSIONS**

Learning about parameters, filter and visibility expressions, understanding drill-through and drill-down, defining variables, and using the custom code

- **REPORTS & CHARTS CREATION**

Introduction to various aspects of bar chart, line chart, combination chart, shape chart, and sub-reports, the integration of Power Query and M language with SSRS, working with additional data sources in MSBI, rich transformation capabilities in MSBI, and reusing M functions built for PBIX in SSRS

- **DASHBOARD BUILDING**

Learning how to build a dashboard with Sparklines, data bars, map charts, and gauge charts, drilling into reports, and the basics of ad-hoc reporting

- **REPORTS & AUTHENTICITY**

Understanding report cache, authorization, authentication, report snapshot, and learning about subscriptions and site security

MSBI SSAS Course Content

- **GETTING STARTED WITH SSAS**

Understanding the concept of multidimensional analysis, understanding SSAS architecture and benefits, cubes, working with tables and OLAP databases, understanding the concept of data sources, working with dimension wizard, and understanding dimension structure, attribute relationships, and flexible and rigid relationships

- **STRUCTURES & PROCESSES**

Process dimension, the process database, creation of cube, cube structure, cube browsing, defining various categories, product key and customer key, column naming, processing and deploying a cube, and report creation with a cube

***Hands-on Exercise:** Create a cube and name various columns, deploy a cube after applying keys and other rules, and create reports with the cube*

- **TYPES OF DATABASE RELATIONSHIPS**

Understanding data dimensions and its importance, various relationships, regular, referenced, many-to-many, and fact, and working on data partitions and data aggregations

- **SSAS CUBES**

Learning about SSAS cube, various types of cubes, the scope of cube, and comparison with data warehouse

- **CUBES: OPERATIONS & LIMITATIONS**

Various operations on cube, the limitations of OLAP cubes, the architecture of in-memory analytics, and its advantages

- **CUBES & IN-MEMORY ANALYTICS**

Deploying cube with existing data warehouse capabilities to get self-service Business Intelligence and understanding how in-memory analytics works

Hands-on Exercise: Deploy a cube to get self-service Business Intelligence

- **DATA SOURCE VIEW**

Logical model of the schema used by the cube, components of cube, and understanding named queries and relationships

- **DIMENSIONS**

An overview of the dimensions concept, describing the attributes and attribute hierarchies, understanding key/value pairs, metadata reload, logical keys, and role-based dimensions

Hands-on Exercise: Create role-based dimensions and use attribute hierarchies

- **MEASURES & FEATURES OF CUBE**

Understanding the measure of cube, analyzing the measure, exploring the relationship between measure and measure group, cube features, and dimension usage

- **MEASURES & FEATURES OF CUBE (CONT.)**

Working with cube measures, deploying analytics, understanding the key performance indicators, deploying actions and drill-through actions on data, and working on data partitions, aggregations, translations, and perspectives

Hands-on Exercise: Work with cube measures, deploy analytics, deploy actions and drill-through actions on data, and make data partitions

- **WORKING WITH MDX**

Understanding Multidimensional Expressions language, working with MDX queries for data retrieval, and working with clause, set, tuple, and filter condition in MDX.

Hands-on Exercise: Apply clause, set, and filter condition in an MDX query to retrieve data

- **FUNCTIONS OF MDX**

Learning about MDX hierarchies, the functions used in MDX, ancestor, ascendant and descendant functions, and performing data ordering

Hands-on Exercise: Create MDX hierarchies and perform data ordering in ascending order and in descending order

- **DAX LANGUAGE**

Data Analysis Expressions (DAX), using the EVALUATE and CALCULATE functions, filtering DAX queries, creating calculated measures, and performing data analysis by using DAX

Hands-on Exercise: Use the EVALUATE and CALCULATE functions, filter DAX queries, create calculated measures, and perform data analysis by using DAX

- **BI SEMANTIC MODEL**

Designing and publishing a tabular data model and designing measures relationships, hierarchies, partitions, perspectives, and calculated columns

Hands-on Exercise: Design and publish a tabular data model and design measures relationships, hierarchies, partitions, perspectives, and calculated columns

- **PLANNING & DEPLOYING SSAS**

Configuring and maintaining SQL Server Analysis Services (SSAS), Non-Union Memory Architecture (NUMA), monitoring and optimizing performance, SSAS

Tabular model with vNext, Excel portability, importing a model from Power BI Desktop, importing a Power Pivot model, and the bidirectional cross-filtering relationship in MSBI

Hands-on Exercise: *Configure and maintain SQL Server Analysis Services (SSAS) and monitor and optimize performance*

- **ANALYZING BIG DATA WITH MICROSOFT R**

Reading data with R Server from SAS, txt, or Excel formats, converting data to the XDF format, summarizing data, rxCrossTabs versus rxCube, extracting quantiles by using rxQuantile, visualizing data (rxSummary and rxCube, rxHistogram and rxLinePlot), processing data with rxDataStep, performing transforms using functions transformVars and transformEnvir, processing the text using RML packages, building predictive models with ScaleR, and performing in-database analytics by using SQL Server

Hands-on Exercise: *Read data with R Server from SAS, txt or Excel formats, convert data to the XDF format, summarize data, extract quantiles by using rxQuantile; visualize data (rxSummary, rxCube, rxHistogram and rxLinePlot), perform transforms using functions transformVars and transformEnvir, build predictive models with ScaleR, and perform in-database analytics by using SQL Server*

- **MICROSOFT COURSES (SELF-PACED COURSE)**

Analyzing Data with SQL Server Reporting Services

SQL Course Content

1. INTRODUCTION TO SQL

1.1 Various types of databases

1.2 Introduction to Structured Query Language

1.3 Distinction between client server and file server databases

1.4 Understanding SQL Server Management Studio

1.5 SQL table basics

1.6 Data types and functions

1.7 Transact-SQL

1.8 Authentication for Windows

1.9 Data control language

1.10 The identification of the keywords in T-SQL, such as Drop Table

2. DATABASE NORMALIZATION & ENTITY RELATIONSHIP MODEL

2.1 Data anomalies

2.2 Update anomalies

2.3 Insertion anomalies

2.4 Deletion anomalies

2.5 Types of dependencies

2.6 Functional dependency

2.7 Fully functional dependency

2.8 Partial functional dependency

2.9 Transitive functional dependency

2.10 Multi-valued functional dependency

2.11 Decomposition of tables

2.12 Lossy decomposition

2.13 Lossless decomposition

2.14 What is normalization?

2.15 First normal form

2.16 Second normal form

2.17 Third normal form

2.18 Boyce-Codd normal form (BCNF)

2.19 Fourth normal form

2.20 Entity-Relationship model

2.21 Entity and entity sets

2.22 Attributes and types of attributes

2.23 Entity sets

2.24 Relationship sets

2.25 Degree of relationship

2.26 Mapping cardinalities: one-to-one, one-to-many, many-to-one, and many-to-many

2.27 Symbols used in the E-R notation

3. SQL OPERATORS

- 3.1 Introduction to relational databases
- 3.2 Fundamental concepts of relational rows, tables, and columns
- 3.3 Several operators (such as logical and relational), constraints, domains, indexes, stored procedures, and primary and foreign keys
- 3.4 Understanding group functions
- 3.5 The unique key

4. WORKING WITH SQL: JOINS, TABLES, & VARIABLES

- 4.1 Advanced concepts of SQL tables
- 4.2 SQL functions
- 4.3 Operators and queries
- 4.4 Table creation
- 4.5 Data retrieval from tables
- 4.6 Combining rows from tables using inner, outer, cross, and self joins
- 4.7 Deploying operators such as intersect, except, and union
- 4.8 Temporary table creation
- 4.9 Set operator rules
- 4.10 Table variables

5. DEEP DIVE INTO SQL FUNCTIONS

- 5.1 Understanding SQL functions – What do they do?
- 5.2 Scalar functions
- 5.3 Aggregate functions
- 5.4 Functions that can be used on different datasets, such as numbers, characters, strings, and dates
- 5.5 Inline SQL functions
- 5.6 General functions
- 5.7 Duplicate functions

6. WORKING WITH SUBQUERIES

- 6.1 Understanding SQL subqueries and their rules
- 6.2 Statements and operators with which subqueries can be used
- 6.3 Using the set clause to modify subqueries
- 6.4 Understanding different types of subqueries, such as where, select, insert, update,

delete, etc.

6.5 Methods to create and view subqueries

7. SQL VIEWS, FUNCTIONS, & STORED PROCEDURES

7.1 Learning SQL views

7.2 Methods of creating, using, altering, renaming, dropping, and modifying views

7.3 Understanding stored procedures and their key benefits

7.4 Working with stored procedures

7.5 Studying user-defined functions

7.6 Error handling

8. DEEP DIVE INTO USER-DEFINED FUNCTIONS

8.1 User-defined functions

8.2 Types of UDFs like scalar

8.3 Inline table value

8.4 Multi-statement table

8.5 Stored procedures and when to deploy them

8.6 What is a rank function?

8.7 Triggers and when to execute triggers

9. SQL OPTIMIZATION & PERFORMANCE

9.1 SQL Server Management Studio

9.2 Using pivot in MS Excel and MS SQL Server

9.3 Differentiating between Char, Varchar, and NVarchar

9.4 XL path, indexes, and their creation

9.5 Records grouping, advantages, searching, sorting, and modifying data

9.6 Clustered indexes creation

9.7 Use of indexes to cover queries

9.8 Common table expressions

9.9 Index guidelines

10. MANAGING DATA WITH TRANSACT-SQL

10.1 Creating Transact-SQL queries

10.2 Querying multiple tables using joins

10.3 Implementing functions and aggregating data

10.4 Modifying data

10.5 Determining the results of DDL statements on supplied tables and data

10.6 Constructing DML statements using the output statement

11. QUERYING DATA WITH ADVANCED TRANSACT-SQL COMPONENTS

11.1 Querying data using subqueries and APPLY

11.2 Querying data using table expressions

11.3 Grouping and pivoting data using queries

11.4 Querying temporal data and non-relational data

11.5 Constructing recursive table expressions to meet business requirements

11.6 Using windowing functions to group

11.7 Rank the results of a query

12. PROGRAMMING DATABASES USING TRANSACT-SQL

12.1 Creating database programmability objects by using T-SQL

12.2 Implementing error handling and transactions

12.3 Implementing transaction control in conjunction with error handling in stored procedures

12.4 Implementing data types and NULL

13. DESIGNING & IMPLEMENTING DATABASE OBJECTS

13.1 Designing and implementing relational database schema

13.2 Designing and implementing indexes

13.3 Comparing between indexed and included columns

13.4 Implementing clustered index

13.5 Designing and deploying views

13.6 Column store views

14. IMPLEMENTING PROGRAMMABILITY OBJECTS

14.1 Explaining foreign key constraints

14.2 Using T-SQL statements

14.3 Usage of Data Manipulation Language (DML)

14.4 Designing the components of stored procedures

14.5 Implementing input and output parameters

14.6 Applying error handling

14.7 Executing control logic in stored procedures

14.8 Designing trigger logic, DDL triggers, etc.

15. MANAGING DATABASE CONCURRENCY

15.1 Applying transactions

15.2 Using the transaction behavior to identify DML statements

15.3 Learning about implicit and explicit transactions

15.4 Isolation level management

15.5 Understanding concurrency and locking behavior

15.6 Using memory-optimized tables

16. OPTIMIZING DATABASE OBJECTS

16.1 Accuracy of statistics

16.2 Formulating statistics maintenance tasks

16.3 Dynamic management objects

16.4 Identifying missing indexes

16.5 Examining and troubleshooting query plans

16.6 Consolidating overlapping indexes

16.7 The performance management of database instances

16.8 SQL Server performance monitoring

17. ADVANCED TOPICS

17.1 Correlated subqueries, grouping sets, rollup, and cube

Hands-on Exercise:

1. *Implementing correlated subqueries*

2. *Using the exists clause with a correlated subquery*

3. *Using the union query*

4. *Using the grouping set query*

5. *Using rollup*

6. *Using cube to generate four grouping sets*

7. *Performing a partial cube*

18. MICROSOFT COURSES: STUDY MATERIAL

Project Work

MSBI and SQL Projects

MSBI Projects

SSIS

In this project, you will create a data flow task to extract data from the XLS format and store it into the SQL database. You will store the subcategory and category-wise sales in a table of the database. Through this project, you will be able to understand data flow, ODBC Set up and Connection Manager, flat file connection, and various transformations.

SSRS

By using a Student Survey dataset, you will try to extract meaningful insights by creating an SSRS report to show tabular visualization, matrix visualization, funnel chart, pie chart, scatter plot, drill-down, etc. You will have hands-on experience in using reporting services, expressions, parameters, charts, reports, transformations, etc.

SSAS

You will be working deeply in data dimensions and cubes as part of this project. Using the AdventureWorks DW database, you will have to build a cube to show the number of products there are for each color, the total sales, the amount for each currency, and the number of products there are for each product name. You will get familiar with SSAS perspectives through this project.

Case Study 1 - SSIS

As part of this case study, you will create the connection of OLDB and load data into SQL Server from Excel. You will be working with transformations and learn how to create constants and events in a package. You will further get to work with data flow, term extraction, and lookup.

Case Study 2 - SSRS

The topics that you will be covering in this case study are reporting services, report creation, expressions and parameters, report and authentication, and deployment. You will be using data connections, KPIs, functions of data bars, etc. You will also learn how to pass a parameter from the main chart to the detail chart (pie).

Case Study 3 - SSAS

For this case study, you will have to have knowledge of data mart, measures and features of cube, data dimensions and cubes, KPIs, perspectives in SSIS and SSAS, etc.

SQL Projects

Writing Complex Subqueries

In this project, you will be working with SQL subqueries and utilizing them in various scenarios. You will learn to use IN or NOT IN, ANY or ALL, EXISTS or NOT EXISTS, and other major queries. You will be required to access and manipulate datasets, operate and control statements in SQL, and execute queries in SQL against databases.

Querying a Large Relational Database

This project is on how to get details about customers by querying the database. You will be working with table basics and data types, various SQL operators, and SQL functions. The project will require you to download a database, restore it on the server, and then query it for customer details and sales information.

Relational Database Design

Here, you will convert a relational design that has enlisted various users, user roles, user accounts, and their status into tables in SQL Server. You will define relations/attributes and primary keys and create respective foreign keys with at least two rows in each table.

Certification

After the completion of the course, you will get certificates from IntelliPaat and Microsoft.



This certificate accredits that

Hemant Jain



has successfully completed the following
Microsoft Official Course

Course Name



N. Satya Nadella
Satya Nadella
Chief Executive Officer

Ayush Rathi
Ayush Rathi
Microsoft Certified Trainer



CERTIFICATE OF COMPLETION

This certificate is awarded to

Your Name

Who has successfully completed

Course Name

Fulfilling all the requirements stipulated by IntelliPaat to
achieve professional excellence.

Issued Date: Month XX, XXXX

Shilpi Jain

Mrs. Shilpi Jain
Director,
intellipaate Software Solutions Pvt. Ltd.

**VERIFIED
CERTIFICATE**

Certificate ID #94658291

Success Stories



Kevin K Wada

Thank you very much for your top-class service. A special mention should be made for your patience in listening to my queries and giving me a solution, which was exactly what I was looking for. I am giving you a 10 on 10!



Sampson Basoah

The Intellipaateam helped me in selecting the perfect course that suits my profile. The whole course was practically oriented, and the trainers were always ready to answer any question. I found this course to be impactful. Thank you.



Sugandha Sinha

Intellipaate's course instructors were excellent and well-versed with their concepts. The support team solved all my queries within the promised 24 hours. They explained all topics and concepts well, and the course material was updated and included videos, exercises, etc. I would highly recommend Intellipaate to those who wish to excel in the IT field.



Quentin Jones

Worth the money! The given training resources were well-organized. Overall, I got benefited from taking up the course. Besides, I also got a job through placement assistance provided by Intellipaate. Thanks, Intellipaate. I'm so grateful to you.

CONTACT US

INTELLIPAAT SOFTWARE SOLUTIONS PVT. LTD.

Bangalore

AMR Tech Park 3, Ground Floor, Tower B,
Hongasandra Village, Bommanahalli,
Hosur Road, Bangalore – 560068

USA

1219 E. Hillsdale Blvd. Suite 205,
Foster City, CA 94404

If you have any further queries or just want to have a conversation with us, then do call us.

IND: +91-7022374614 | US: 1-800-216-8930