

BI developer- 300 hours

Course description

The BI Developer program trains data and software professionals to design and deliver end-to-end Business Intelligence solutions in modern organizations — from extracting data from multiple sources, through building data warehouses and ETL processes, to creating analytical models, dashboards, and interactive reports for managerial decision-making. Throughout the program, participants gain hands-on experience with SQL and T-SQL, database design, data warehousing and ETL pipelines, end-to-end development with Power BI, and data manipulation and analysis using Python. The program emphasizes the combination of business understanding with strong technical skills, extensive hands-on practice, and a capstone internship project that simulates real-world BI and analytics work environments.

What Participants Gain?

Graduates leave the program with practical, end-to-end BI development capabilities: extracting data from diverse sources, designing and building data warehouses, developing ETL processes, modeling data, and creating interactive dashboards and reports using Power BI. They also gain hands-on skills in data manipulation and analysis with Python, develop business-oriented analytical thinking, and complete a comprehensive capstone internship project that becomes part of their professional portfolio. This combination of tools, experience, and project-based learning equips graduates to step into BI Developer, Data Analyst, and analytics roles in modern organizations.

Target Audience

- Candidates with basic technical background in information systems
- Infrastructure professionals, software developers, and QA engineers
- Graduates of Information Systems, Industrial Engineering & Management, Business Administration, Economics, and Management programs with IS specialization
- Technologically oriented candidates aiming to enter BI and data roles

Prerequisites

- Basic technical background or relevant education in information systems or data-related fields
- Technical orientation and comfort working with computing environments
- A personal computer with at least 16GB RAM and stable internet connection

Course Contents:

בשמחה — הנה תרגום מקצועי, נקי ומסודר לאנגלית, לפי הסדר המקורי של החלקים והנושאים:

SQL Basics

- Setting up the development environment – Introduction to SQL Server Management Studio

Querying Data Using T-SQL

- Basic database concepts
- SQL Server data types
- Retrieving data: SELECT statement
- Filtering data: WHERE, logical operators, and expressions
- Organizing retrieved data: ORDER BY, GROUP BY, TOP N
- Using system-supplied scalar functions
- Using aggregate (group) functions
- Multi-table queries: JOINS
- Using simple subqueries
- Modifying data using DML statements: INSERT, UPDATE, DELETE

Database Design

- Database design
 - Working with data types
 - Designing and implementing tables
- Ensuring data integrity through constraints
- Table structures and indexing
 - Indexes and SQL statement performance

- Advanced table structures: partitioning, columnstore indexes

Advanced SQL Techniques & T-SQL Programming

- Advanced SQL tools and techniques
 - Advanced subqueries (derived tables, correlated subqueries, EXISTS)
 - Ranking and analytic functions
 - The MERGE statement
 - Transactions and locking mechanisms
- Programming with Transact-SQL
 - Using variables
 - Displaying data in the Query and Results panes
 - Control flow: loops and conditions
 - Working with result sets: temporary tables and table variables
- Database code objects
 - Designing and implementing views
 - Designing and implementing stored procedures
 - Designing and implementing user-defined functions
 - Additional code objects – overview
 - Triggers
 - .NET (CLR) integration
 - R language integration
 - XML and JSON support – working with semi-structured data

Data Warehouse Fundamentals

- Business Intelligence and Data Warehousing
 - Data warehouse concepts and terminology
 - Planning and managing data warehouse projects
- Designing a dimensional model
 - Normalization
 - Star and Snowflake schemas
- Advanced data modeling
 - Surrogate keys
 - Snapshots and logs
 - Slowly Changing Dimensions (SCD)

SQL Server Integration Services (SSIS 2016)

This module focuses on developing ETL processes using SSIS.

- Introduction to SQL Server Integration Services (SSIS 2016)
 - ETL architecture overview
 - Microsoft SSIS overview
 - Connection manager levels
 - Basic data flow task transformations
- Control Flow
 - Using variables and parameters
 - Control flow tasks
 - Precedence constraints
 - Control flow containers

- Debugging and troubleshooting
 - Debugging techniques
 - Logging and event handlers
- Deploying and configuring SSIS packages
 - Package deployment

ETL Concepts & Techniques

- ETL concepts and techniques
 - ETL process design
 - Staging area
 - Full and incremental loading techniques
 - Data integrity preservation
 - QA and validation
 - ETL administration and monitoring

Power BI

- Introduction to Power BI
 - Self-Service BI
 - Tool architecture
 - Development workflow (end-to-end flow)
- Data ingestion and transformation with Power BI Query Editor
 - Introduction to Power BI Query Editor
 - Extracting data from multiple sources
 - Files (Excel, text files)
 - SQL

- Folders
 - Transforming data and process automation
 - Creating a date dimension
 - Automating data preparation
 - Table joins
 - Calculated columns
 - Data filtering
 - Splitting and merging columns
 - Data cleansing
 - Introduction to the M language
- Data modeling and measures
 - Data modeling principles
 - Modeling methodologies
 - Star and Snowflake schemas
 - Defining relationships between tables
- Measures and KPIs
 - Measures and KPI definition
 - Introduction to DAX and the impact of the data model on measure design
 - Developing DAX measures
 - Time intelligence measures for period-over-period and cumulative analysis
- Reports and dashboards
 - Report design and development
 - Best practices for report design
 - Filters and visualizations
 - Custom visuals from Microsoft AppSource

- Bookmarks, tooltips, and drillthrough
- Buttons and interactions
- Mobile-optimized design
- Power BI Service (Cloud)
 - Overview of the Power BI Service
 - Publishing models to the cloud
 - Installing and configuring the Gateway
 - Creating dashboards
 - Sharing reports and dashboards
 - Managing user permissions and workspaces
 - Scheduling refresh and configuring data sources via the Gateway

Internship Project

A structured, mentored capstone project that integrates all previously learned tools and concepts. The project includes working with a data source, extracting and transforming relevant data for a business question, designing a data warehouse and ETL processes, building a data model and Power BI dashboard using advanced visualization techniques. The final deliverable is a business-driven dashboard addressing real organizational needs.

Data Manipulation with Python

Basic Python

- Fundamentals
 - Introduction
 - Python essentials
 - Working environment (IDEs, Jupyter)
- Data types
 - Numbers

- Strings
- Booleans
- None
- Collections
 - Lists
 - Tuples
 - Dictionaries
 - Sets
- Control flow
 - if...else
 - for...in
 - list comprehensions
 - while
- Textual interface
 - input
 - format

Intermediate Python

- Functions
 - User-defined functions
 - *args and **kwargs
 - Built-in functions
 - Lambda expressions
- Working with text files
- Standard library
 - import

- datetime

Python Tools for Data Work

- NumPy
 - Arrays
 - Broadcasting
- Matplotlib
 - Plotting and objects
 - Seaborn
- Pandas
 - Series and Index
 - DataFrame
 - GroupBy
 - Visualizations
- Practice: Use Cases and Exploratory Data Analysis (EDA)
 - Diamonds dataset
 - IMDB dataset
 - San Francisco Crime dataset
 - Adult US Census dataset
- General tools
 - Regular expressions (re)
 - APIs and connecting to data resources (JSON, SQLAlchemy)

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