

Data Analytics Beginner Curriculum

OVERVIEW

Harness Excel, SQL, and Power BI to tell compelling stories with data. Build confidence and credibility to power insight-driven strategy on the job.

This course will teach you how to use large data sets to make critical decisions. This program was created for analysts, digital marketers, sales managers, product managers, and data novices looking to learn the essentials of data analysis. You'll use industry tools, Excel, SQL, and Power BI to analyze large real-world data sets and create dashboards and visualizations to share your findings. Data Analytics culminates in a portfolio-grade presentation of your analysis and insights to your classmates and instructional team.

By the end of the course, you will be able to:

- Use Excel and Power BI to collect, clean, and analyze large data sets.
- Present data-driven insights to key stakeholders using data visualization and dashboards.
- Tell compelling stories with your data.

To assess your skills, you will need to:

- Attend all class sessions throughout the course.
- Complete all homework assignments.
- Complete and present your final project.

Upon passing this course, you'll have a certificate of completion.

PREREQUISITE

This is a beginner-friendly program with no prerequisites. If you are new to data analysis, your Admissions officer may recommend that you take a short Excel course. If you already work with basic functions in Excel and Power BI, our curriculum will enable you to perform more powerful analyses.

The course also requires

- Your laptop (PC or Mac). It must be no more than four years old and able to run the most recent operating system.
- If remote, a webcam, headphones, and good access to the internet are required.

Our Admissions team can discuss your background and learning goals to advise if this course fits you.

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CAPSTONE PROJECT

For the Data Analytics final project, you will address a data-related problem in your professional field or a topic of interest. You will acquire real-world data sets and then prepare, clean, and analyze them to draw meaningful conclusions.

Students share their results, and each creates a presentation that includes:

- A summary of the data acquisition, cleaning, and parsing stages.
- A clear visualization or dashboard that displays insights both numerically and graphically.
- A description of high-level insights and resulting actions relevant to key stakeholders.

Our instructors are available to validate the feasibility and manage the scope of your project.

PRE-WORK

Welcome to Data Analytics.

Get up and running with critical concepts and tools you'll use throughout the course with these recommended self-paced lessons. Explore the essentials of data wrangling -- i.e., the process of finding, sifting through, cleaning, and transforming data -- so it can be used to answer business questions.

The Data Framework

- Explain the value of data.
- Describe the data framework and how analysts use it.
- Write a specific and testable question given a scenario.

Finding the Right Data

- Describe the data sources available for analysis.
- Evaluate data sets and their variables.
- Determine if a data set can be used to solve a business problem.

Cleaning Your Data

- Use the filter feature to spot-check for problematic data.
- Handle missing data based on industry norms.
- Use conditional formatting to identify duplicates and extreme values within a data set.
- Use find/replace to fix issues/errors that are easily identifiable.
- Select a data cleaning strategy based on a given scenario.

Organizing Data with Functions

- Use VLOOKUP and HLOOKUP.
- Distinguish between the three functions.

DURATION



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CONTENT

Unit 0	Fundamentals	<p><i>Lay a good foundation for your data analyst career by grasping data analysis's basic elements and concepts.</i></p> <p>Understanding data</p> <ul style="list-style-type: none"> • What is data? • Types of data • Source of data • Data collection and storage • Data formats (Long form and wide form) • Data constraints • Data privacy and security <p>Basic Statistics</p> <ul style="list-style-type: none"> • Basic statistical terms and concepts • Descriptive statistics • Inferential statistics <p>Introduction to data analysis</p> <ul style="list-style-type: none"> • Types of data analysis • Steps in analyzing data/CRISP-DM • Presenting data analysis findings
Unit 1	Data Analysis with Excel	<p><i>Practice using Excel to conduct basic data cleaning, aggregation, analysis, and visualization.</i></p> <p>Introduction to Microsoft Excel</p> <ul style="list-style-type: none"> • Outline goals, expectations, and logistics. • An overview of Microsoft Excel. <p>Data entry and manipulation with Excel</p> <ul style="list-style-type: none"> • Data entry in Excel and standard formulas. • Validating data in Excel. • Data access control in Excel. • Important shortcuts in Excel. <p>Data Cleaning and Formulas</p> <ul style="list-style-type: none"> • Common Excel functions. • Advanced Excel functions. • Identifying data constraints in Excel. • Dealing with data constraints (e.g., missing values, outliers, data types conversion, etc.).





		<ul style="list-style-type: none"> • Data Cleaning with Functions. • Data Transformation (Longform, Wideform, crosstabulation). <p>Referencing and Lookups</p> <ul style="list-style-type: none"> • Build relationships between cells in Excel. • Manipulate Data sets using VLOOKUP and HLOOKUP. <p>Aggregating Data with PivotTables</p> <ul style="list-style-type: none"> • Apply Excel aggregation functions to data sets. • Use PivotTables to summarize data. • Identify common problems and solutions for PivotTables. • Modify data structures with regular tables for effective workbooks. <p>Communicating with Excel</p> <ul style="list-style-type: none"> • Introduction to data visualization. • Identify the appropriate visualization types for the data set at hand. • Create analytics visuals such as bar charts, pie charts, line graphs, histograms, and scatter plots. • Explore data using conditional formatting for categorization and analysis. • Conduct exploratory data analysis. • Building dashboards with Excel.
	Project	Apply what you've learned in Excel and present your process, findings, and challenges to the class, giving and receiving peer-to-peer feedback.
Unit 2	Data Narratives and Visualization With Power BI	<p><i>Leverage Power BI to visualize and map data and connect data across Excel, SQL, and Power BI.</i></p> <p>Introduction to Power BI</p> <ul style="list-style-type: none"> • Prepare data for import into Power BI. • Navigate the Power BI interface to build the visualization. • Aggregate measures and dimensions. • Work with discrete and continuous data. <p>Data Manipulation in Power BI</p> <ul style="list-style-type: none"> • Connect to various data sources. • Manage data relationships. • Create calculated fields to analyze data (DAX). • Optimize data models. • Explore time-based data.





		<ul style="list-style-type: none"> • Apply filters to single or multiple work pages. • Data Cleaning with Power Query Editor. <p>Reports and Dashboards in Power BI</p> <ul style="list-style-type: none"> • Apply visual analytics best practices. • Publish reports to Power BI Service. • Quick Insights in Power BI • Create and Configure a Dashboard. • Ask Questions of your Data. • Design interactive dashboards with parameters, advanced filters, and layout containers. • Create Power BI apps. • Share dashboards with your organization. <p>Data Narratives</p> <ul style="list-style-type: none"> • Create stories in Power BI to illustrate data-driven decisions. • Finalize dashboards and stories for the final project.
	<p>Project</p>	<p>Wrap up and reflect on your Data Analytics journey with Power BI by applying what you have learned throughout the course to a real-world data set.</p>
<p>Unit 3</p>	<p>Querying, Cleaning, and Organizing Data with SQL</p>	<p><i>Use SQL to conduct advanced data querying, cleaning, and aggregation.</i></p> <p>Introduction to SQL</p> <ul style="list-style-type: none"> • What is SQL? • Why SQL? • Introduction to DBMS. • Entity Relationship Diagram (ERD). • Setting up Postgresql. <p>Basic queries in SQL</p> <ul style="list-style-type: none"> • Types of SQL statements. • Practice and write SQL queries. <p>Operators</p> <ul style="list-style-type: none"> • Arithmetic operators. • Logical and comparison operators. <p>Combining Data with JOINS</p> <ul style="list-style-type: none"> • Introduction to JOINS. • Types of keys (Primary and Foreign keys). • Aliasing.





		<ul style="list-style-type: none">• Types of JOINS.• Practicing the different types of JOINS.• JOINS and filtering. <p>Aggregations</p> <ul style="list-style-type: none">• Introduction to aggregations.• Introduction to NULLS.• NULLS and Aggregations.• COUNTS and NULLS.• Aggregation functions: SUM, MIN, MAX, AVG. FIRST, LAST, COUNT.• GROUP BY, DISTINCT, and HAVING.• DATE function.• CASE statements.• More functions: TRIM, LEN, MID, ROUND, NOW, FORMAT, UCASE, LCASE. <p>SQL Subqueries, CTEs, and Views</p> <ul style="list-style-type: none">• Introduction to subqueries.• Subqueries formatting.• More on Subqueries.• Construct subqueries for multi-step operations.• WITH vs Subqueries.• CTEs.• Views. <p>SQL Data Cleaning</p> <ul style="list-style-type: none">• Introduction to SQL data cleaning.• LEFT and RIGHT functions.• POSITIONS, STRPOS, LOWER, UPPER.• Concatenation.• CAST.• COALESCE.
	Project	Apply what you've learned in SQL and present your process, findings, and challenges to the class, giving and receiving peer-to-peer feedback.



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