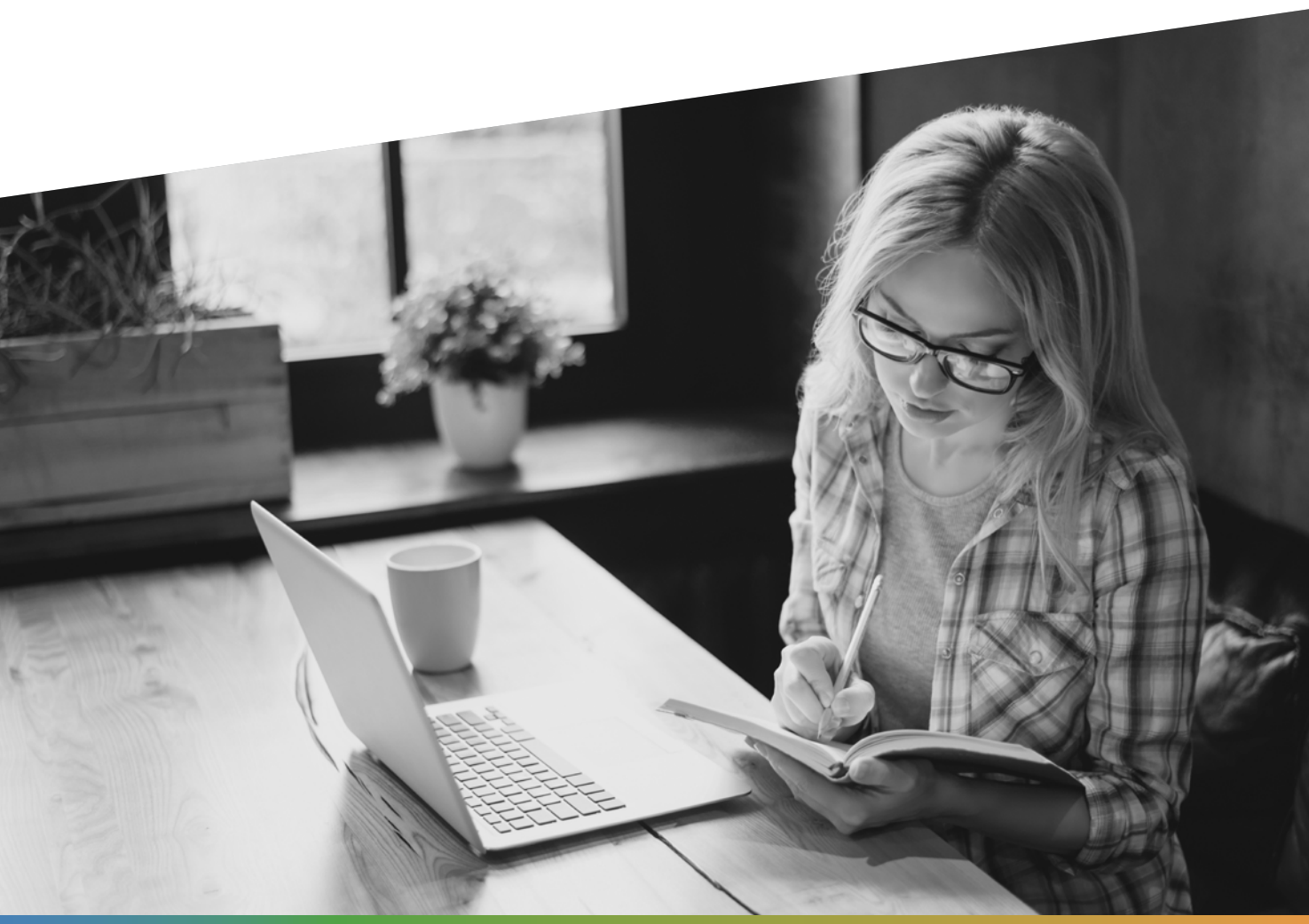
DATA ANALYST MASTER'S PROGRAM

Co-Developed with IBM

Contents

About the Course

This Data Analyst Master's Program, co-developed with IBM, will transform you into an expert in data analytics. In this course, you will learn the latest analytics tools and techniques, discover how to work with SQL databases, the languages of R and Python, the art of creating data visualizations, and how to apply statistics and predictive analytics in a business environment.



Key Features

- Industry-recognized certifications from IBM and Simplilearn for this unique co-developed program
- 12+ Real-life projects providing hands-on industry training
- Portfolio-worthy capstone demonstrating mastered concepts
- Lifetime access to self-paced learning and class recordings
- 30+ In-demand skills

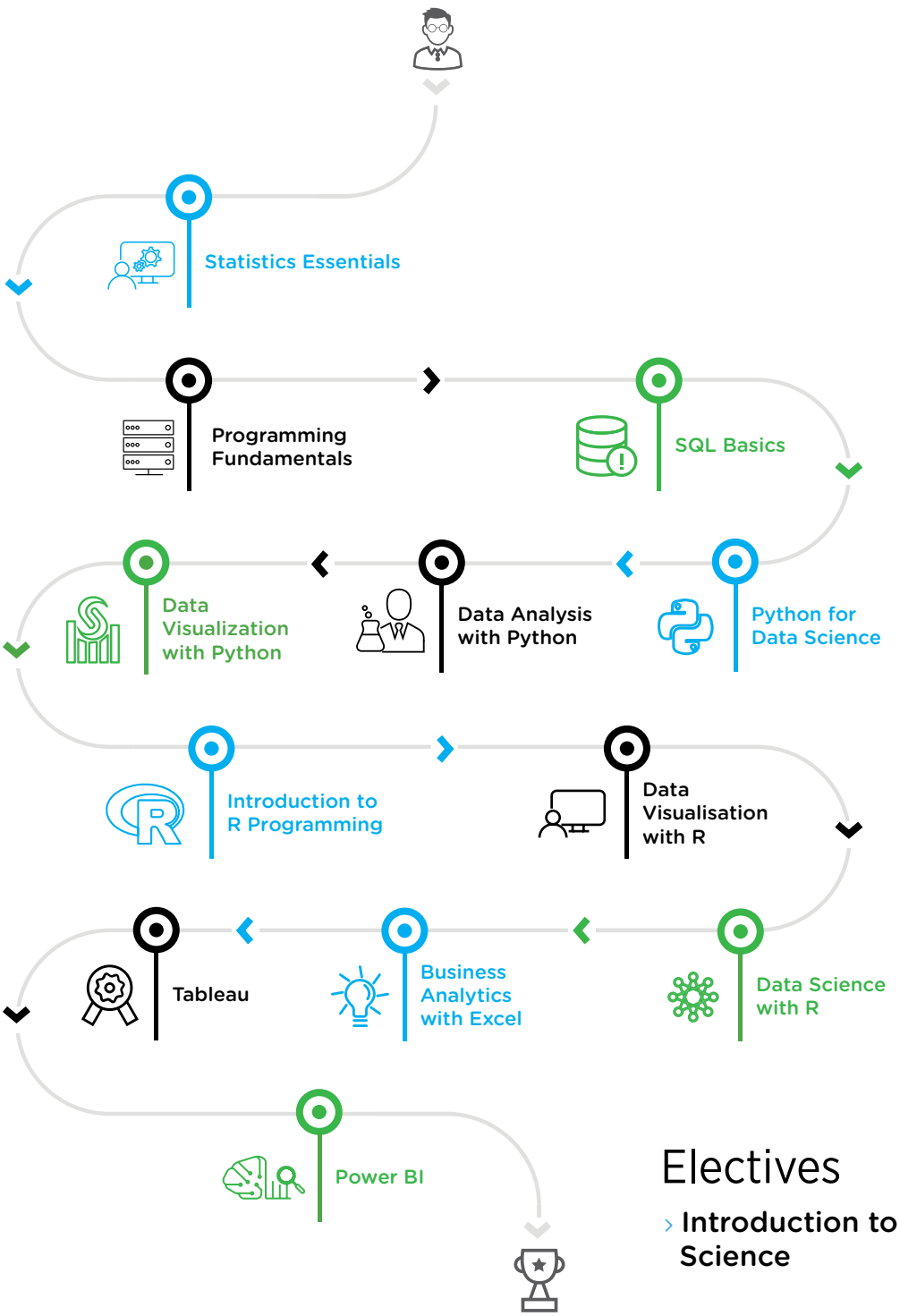
About IBM and Simplilearn Co-Developed Programs

A joint partnership with Simplilearn and IBM introduces students to an integrated blending learning, making them an expert in Data Analysis. The program co-developed with IBM will make students industry ready for Data Analyst job roles. IBM is a leading cognitive solution and cloud platform company, headquartered in Armonk, New York, offering a plethora of technology and consulting services. Each year, IBM invests $6 billion in research and development and has achieved five Nobel Laureates, nine US National Medals of Technology, five US National Medals of Science, six Turing Awards, and 10 Inductees in US Inventors Hall of Fame.

About Simplilearn

Simplilearn is a leader in digital skills training, focused on the emerging technologies that are transforming our world. Our blended learning approach drives learner engagement and backed by the industry's highest completion rates. Partnering with professionals and companies, we identify their unique needs and provide outcome-centric solutions to help them achieve their professional goals.

Learning Path - Data Analyst



Electives

- **Introduction to Data Science**

Data Analyst Master's Program Outcomes

Understand essential statistical concepts including measures of central tendency, dispersion, correlation, and regression.

Master SQL concepts such as Universal Query Tool and SQL command

Write your first Python program by implementing concepts of variables, strings, functions, loops, and conditions

Understand the nuances of lists, sets, dictionaries, conditions and branching, objects and classes in Python

Work with data in Python, including reading and writing files, loading, working, and saving data with Pandas

Learn how to interpret data in Python using multi-dimensional arrays in NumPy, manipulate DataFrames in pandas, use SciPy library of mathematical routines, and execute machine learning using Scikit-Learn

Perform data analytics using popular Python libraries

Gain insights on several data visualization libraries in Python; including Matplotlib, Seaborn, and Folium

Gain an in-depth understanding of the basics of R, learning how to write your own R scripts

Master R programming and understand how various statements are executed in R

Who Should Enroll in this Program?

A career as a Data Analyst requires a foundation in statistics and mathematics. Aspiring professionals of any educational background with an analytical frame of mind are best suited to pursue the Data Analyst Master's Program, including:

- IT professionals
- Banking and finance professionals
- Marketing managers
- Supply chain network managers
- Beginners in the data analytics domain
- Students in UG/ PG programs

Statistics Essentials

Statistics is the science of assigning a probability to an event based on experiments. It is the application of quantitative principles to the collection, analysis, and presentation of numerical data. Ace the fundamentals of Data Science, statistics, and Machine Learning with this course. It will enable you to define statistics and essential terms related to it, explain measures of central tendency and dispersion, and comprehend skewness, correlation, regression, distribution. You will be able to make data-driven predictions through statistical inference.

Key Learning Objectives

- Understand the fundamentals of statistics
- Work with different types of data
- How to plot different types of data
- Calculate the measures of central tendency, asymmetry, and variability
- Calculate correlation and covariance
- Distinguish and work with different types of distribution
- Estimate confidence intervals
- Perform hypothesis testing
- Make data-driven decisions
- Understand the mechanics of regression analysis
- Carry out regression analysis
- Use and understand dummy variables
- Understand the concepts needed for Data Science even with Python and R!

Course curriculum

- Lesson 1 - Introduction
- Lesson 2 - Sample or population data?
- Lesson 3 - The fundamentals of descriptive statistics
- Lesson 4 - Measures of central tendency, asymmetry, and variability
- Lesson 5 - Practical example: descriptive statistics
- Lesson 6 - Distributions
- Lesson 7 - Estimators and estimates
- Lesson 8 - Confidence intervals: advanced topics
- Lesson 9 - Practical example: inferential statistics
- Lesson 10 - Hypothesis testing: Introduction
- Lesson 11 - Hypothesis testing: Let’s start testing!
- Lesson 12 - Practical example: hypothesis testing
- Lesson 13 - The fundamentals of regression analysis
- Lesson 14 - Subtleties of regression analysis
- Lesson 15 - Assumptions for linear regression analysis
- Lesson 16 - Dealing with categorical data
- Lesson 17 - Practical example: regression analysis

Programming Fundamental

Programming is an increasingly important skill and this course will establish your proficiency in handling basic programming concepts. The course will cover the basics of Java, Python, and C++. By the end of this program, you will be gaining the context on what is object-oriented programming, understand the basic programming concepts like Data Types, Variables, Strings, Loops, Functions and also software engineering concepts like multithreading and multitasking.

Key Learning Objectives

- Obtain fundamental knowledge on basics of Java, Python and C++
- Expertise in object-oriented programming, understand the basic programming concepts like Data Types, Variables, Strings, Loops, Functions and also software engineering concepts like multithreading and multitasking

Course curriculum

- Lesson 1- Course Introduction
- Lesson 2- Basics of Java Python C++

SQL Basics

This course gives you all the information you need to successfully start working with SQL databases and make use of the database in your applications. Learn to correctly structure your database, author efficient SQL statements and clauses, and manage your SQL database for scalable growth.

Key Learning Objectives

- Understand databases and relationships
- Use common query tools and work with SQL commands
- Understanding transactions; creating tables and views
- Comprehend and execute stored procedures

Course curriculum

- Lesson 1- Rational Databases
- Lesson 2- SQL Querying
- Lesson 3- Your First Queries
- Lesson 4- Filtering Your Results
- Lesson 5- Consolidating Your Data
- Lesson 6- Grouping Your Data
- Lesson 7- Joining Tables
- Lesson 8- Subqueries
- Lesson 9- Manipulating Your Data
- Lesson 10- Transaction Control
- Lesson 11- Creating Database Objects and Adding Business Logic

Python for Data Science

Kickstart your learning of Python for Data Science with this introductory course and familiarize yourself with programming. Carefully crafted by IBM, upon completion of this course you will be able to write your Python scripts, perform fundamental hands-on data analysis using the Jupyter-based lab environment, and create your own Data Science projects using IBM Watson.

Key Learning Objectives

- Write your first Python program by implementing concepts of variables, strings, functions, loops, conditions
- Understand the nuances of lists, sets, dictionaries, conditions and branching, objects and classes
- Work with data in Python such as reading and writing files, loading, working, and saving data with Pandas

Course curriculum

- Lesson 1 - Python Basics
- Lesson 2 - Python Data Structures
- Lesson 3 - Python Programming Fundamentals
- Lesson 4 - Working with Data in Python
- Lesson 5 - Working with NumPy Arrays

Data Analysis with Python

Learn how to analyze data in Python using multi-dimensional arrays in NumPy, manipulate DataFrames in pandas, use SciPy library of mathematical routines, and perform machine learning using scikit-learn. This course will take you from the basics of Python to exploring many different types of data. You will learn how to prepare data for analysis, perform simple statistical analyses, create meaningful data visualizations, predict future trends from data, and more.

Key Learning Objectives

- Import data sets
- Clean and prepare data for analysis
- Manipulate pandas DataFrame
- Summarize data
- Build machine learning models using scikit-learn
- Build data pipelines

Course curriculum

- Lesson 1 - Importing Datasets
- Lesson 2 - Cleaning and Preparing the Data
- Lesson 3 - Summarizing the Data Frame
- Lesson 4 - Model Development
- Lesson 5 - Model Evaluation
- Lesson 6 - Types of Data Formats

Data Visualization with Python

Data visualization plays an essential role in the representation of both small and large-scale data. In this Data Visualization with Python course, you will learn how to create impressive graphics and charts and customize them to make them more productive and more pleasing to your audience. Expertise in several data visualization libraries in Python, namely Matplotlib, Seaborn, and Folium to extract information, better understand the data, and make more effective decisions.

Key Learning Objectives

- Learn data visualization and best practices when creating plots and visuals
- Master basic plotting with Matplotlib
- Generate different visualization tools using Matplotlib such as line plots, area plots, histograms, bar charts, box plots, and pie charts
- Understand Seaborn, a data visualization library in Python, and how to use it to create attractive statistical graphics
- Understand Folium, and how to use it to create maps and visualize geospatial data

Course curriculum

- Lesson 1 - Introduction to Visualization Tools
- Lesson 2 - Basic Visualization Tools
- Lesson 3 - Specialized Visualization Tools
- Lesson 4 - Advanced Visualization Tools
- Lesson 5 - Creating Maps and Visualizing Geospatial Data

Introduction to R Programming

Gain insight into the R Programming language with this introductory course. An essential programming language for data analysis, R Programming is a fundamental key to becoming a successful Data Science professional. In this course, you will learn how to write R code, learn about R's data structures, and create your own functions. After the completion of this course, you will be fully able to begin your first data analysis.

Key Learning Objectives

- Learn about math, variables, and strings, vectors, factors, and vector operations
- Gain fundamental knowledge on arrays and matrices, lists, and data frames
- Get understanding on conditions and loops, functions in R, objects, classes, and debugging
- Learn how to accurately read text, CSV and Excel files plus how to write and save data objects in R to a file
- Understand and work on strings and dates in R

Course curriculum

- Lesson 1 - R Basics
- Lesson 2 - Data Structures in R
- Lesson 3 - R Programming Fundamentals
- Lesson 4 - Working with Data in R
- Lesson 5 - Stings and Dates in R

Data Visualisation with R

In this Data Visualization with R course by IBM, you will learn how to create beautiful graphics and charts, customizing the look and feel of them as you wish using open source language R.

This course will help you learn how to leverage a software tool to visualize data will also enable you to extract information, better understand the data, and make more effective decisions.

Key Learning Objectives

- How to create beautiful graphics and charts
- How to customize the look and feel of them
- How to create Maps in R
- Expertise in creating Scatter Plots, Line Plots, and Regression, Bar Charts, Histograms, Pie Charts, Word Clouds, Radar Charts, Waffle Charts, Box Plots, etc.

Course curriculum

- Lesson 1 - Basic Visualization Tools
- Lesson 2- Basic Visualization Tools Continued
- Lesson 3 - Specialized Visualization Tools
- Lesson 4 - How to Create Maps
- Lesson 5 - How to Build Interactive Web Pages

Data Science with R

The next step to Data Science is learning R—the upcoming and most in-demand open source technology. R is an extremely powerful Data Science and analytics language which has a steep learning curve and a very vibrant community. This is why it is quickly becoming the technology of choice for organizations who are adopting the power of analytics for competitive advantage.

Key Learning Objectives

- Gain a foundational understanding of business analytics
- Install R, R-studio, and workspace setup, and learn about the various R packages
- Master R programming and understand how various statements are executed in R
- Gain an in-depth understanding of data structure used in R and learn to import/export data in R
- Define, understand and use the various apply functions and DPYR functions
- Understand and use the various graphics in R for data visualization
- Gain a basic understanding of various statistical concepts
- Understand and use hypothesis testing method to drive business decisions
- Understand and use linear, non-linear regression models, and classification techniques for data analysis
- Learn and use the various association rules and Apriori algorithm
- Learn and use clustering methods including K-means, DBSCAN, and hierarchical clustering

Course curriculum

- Lesson 1 - Introduction to Business Analytics
- Lesson 2 - Introduction to R Programming
- Lesson 3 - Data Structures
- Lesson 4 - Data Visualization
- Lesson 5 - Statistics for Data Science-I
- Lesson 6 - Statistics for Data Science-II
- Lesson 7 - Regression Analysis
- Lesson 8 - Classification
- Lesson 9 - Clustering
- Lesson 10 - Association

Business Analytics with Excel

Business Analytics with Excel training will boost your analytics career with powerful new Microsoft Excel skills. This business analytics training will equip you with all the concepts and hard skills required for a strong analytics career basis. You'll learn the basic concepts of data analysis and statistics, helping promote data-driven decision making. Your new knowledge of this commonly used tool combined with official business analytics certification is guaranteed to ensure career success.

Key Learning Objectives

- Understand the meaning of business analytics and its importance in the industry
- Grasp the fundamentals of excel analytics functions and conditional formatting
- Learn how to analyze with complex datasets using pivot tables and slicers
- Solve stochastic and deterministic analytical problems using tools like scenario manager, solver and goal seek
- Apply statistical tools and concepts like moving average, hypothesis testing, ANOVA and regression to data sets using Excel
- Represent your findings using charts and dashboards
- Get introduced to the latest Microsoft analytic and visualization tools i.e. Power BI

Course curriculum

- Lesson 1- Introduction to Business Analytics
- Lesson 2- Formatting Conditional Formatting and Important Functions
- Lesson 3- Analysing Data with Pivot Tables
- Lesson 4- Dashboarding
- Lesson 5- Business Analytics with Excel
- Lesson 6- Data Analysis Using Statistics
- Lesson 7- Power BI

Tableau Desktop 10

This Tableau Desktop 10 training will help you master the various aspects of the program and gain skills such as building visualization, organizing data, and designing dashboards. You will also learn concepts of statistics, mapping, and data connection. It is an essential asset to those wishing to succeed in Data Science.

Key Learning Objectives

- Grasp the concepts of Tableau Desktop 10, become proficient with statistics and build interactive dashboards
- Master data sources and datable blending, create data extracts and organize and format data
- Master arithmetic, logical, table and LOD calculations and ad-hoc analytics
- Become an expert on visualization techniques such as heat map, treemap, waterfall, Pareto, Gantt chart and market basket analysis
- Learn to analyze data using Tableau Desktop as well as clustering and forecasting techniques
- Gain command of mapping concepts such as custom geocoding and radial selections
- Master Special Field Types and Tableau Generated Fields and the process of creating and using parameters
- Learn how to build interactive dashboards, story interfaces and how to share your work

Course curriculum

- Lesson 1 - Getting Started With Tableau
- Lesson 2 - Working With Tableau
- Lesson 3 - Deep Diving with Data and Connections
- Lesson 4 - Creating Charts
- Lesson 5 - Adding Calculations to your Workbook
- Lesson 6 - Mapping data in Tableau
- Lesson 7 - Dashboards and Stories
- Lesson 8 - Visualizations for an Audience

Power BI

Microsoft Power BI is a suite of tools to analyze your data and extract business insights from it through building interactive dashboards. This Power BI Training course will help you get the most out of Power BI, enabling you to solve business problems and improve operations.

This Power BI training course helps you grasp and master how to develop dashboards from published reports, discover greater insight from your data with Quick Insights, practical recipes on the various tasks that you can do with Microsoft Power BI—from gathering your data to analyzing it and finally contains some handy recipes on troubleshooting various issues in Power BI.

Key Learning Objectives

- Create dashboards from published reports
- Quickly generate visuals and dashboards with Quick Insights
- Use natural language in the Q&A feature to quickly generate visuals for actionable insight
- Create and manage data alerts
- Get report layout and data visualization best practices
- Understand which charts/graphs to use depending on the question being answered or the story being told
- Use shapes to design, emphasize, and tell a story
- See how to incorporate custom visuals into your reports and dashboards
- Share reports and dashboards, as well as their pro's and con's
- Complete a Power BI data analysis/visual project from start to finish

- Improve team collaboration with Microsoft Teams
- Know how to get and prepare your data for analysis and visualization
- Find out how to create relationships between tables in your data model
- Create calculated columns and measures using the DAX language

Elective Course

Introduction to Data Science:

Data Science is the highly sought field of the century. Explore the truth about what Data Science is and hear from real practitioners telling real stories about what it means to work in Data Science and use cases for the same.

Certificates

Upon completion of this Master's Program, you will receive the certificates from IBM and Simplilearn in the Data Analyst courses in the learning path. These certificates will testify to your skills as an expert in Data Analyst. Upon program completion, you will also receive an industry-recognized Master's Certificate from Simplilearn.

Advisory board member

Ronald Van Loon

Top 10 Big Data & Data Science Influencer, Director - Advertisement

Named by Onalytica as one of the three most influential people in Big Data, Ronald is also an author for a number of leading Big Data and Data Science websites, including Datafloq, Data Science Central, and The Guardian. He also regularly speaks at renowned events.

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