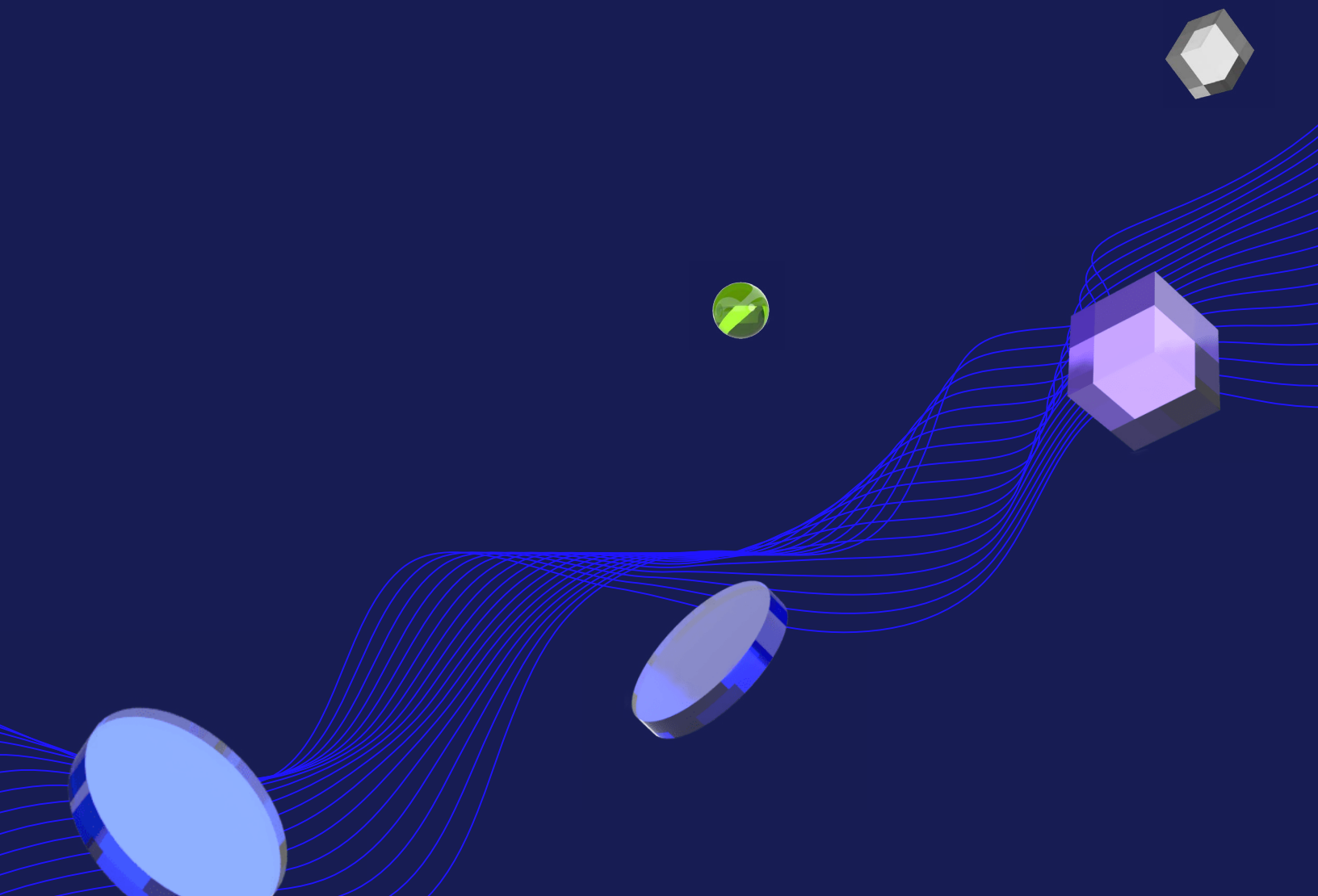


Business Intelligence Analytics

Nanodegree Program Syllabus



Overview

Learn what business intelligence analytics is and how enterprises use it. Learners will be introduced to how enterprises can effectively combine different data types and sources to create a sophisticated data model—and what strategies can be used to ensure data accuracy and consistency.



Learning Objectives

A graduate of this program will be able to:

- Identify the type of data analytics strategy used in a given situation and where they stand in the data analytics lifecycle.
- Load, clean, and organize data in Power Query, and create relational tables in Power Query and Power BI.
- Effectively source data in Power BI and create a clean and efficient data model for analysis.
- Help an enterprise to understand future risk, analyze different markets, or make decisions critical to an organization.

Program information



Estimated Time

3 months at 5-10hrs/week*



Skill Level

Beginner



Prerequisites

A well-prepared learner has:

- Basic understanding of how to read different types of charts like pie charts, line charts, and column charts.
- Basic skills in exploring and communicating data, such as investigating and communicating raw data to understand the columns of the data and their meaning.
- Basic knowledge of Microsoft Excel, including the use of basic functions such as SUM and AVERAGE.



Required Hardware/Software

Learners need Windows PC (Windows 10 or greater) and Power BI Desktop.

*The length of this program is an estimation of total hours the average student may take to complete all required coursework, including lecture and project time. If you spend about 5-10 hours per week working through the program, you should finish within the time provided. Actual hours may vary.

Intro to Data Analytics

This course establishes a framework for data analytics as a series of progressive steps starting with the data source and ending with the interpretation of results. We introduced fundamental concepts such as data integrity, the 4 types of data analytics (descriptive, diagnostic, predictive, and prescriptive), and types of statistical analysis. Learners who complete this course will be equipped with the skills to identify the type of data analytics strategy used in a given situation and where they stand in the data analytics lifecycle. This course will also provide a basic overview of Power BI as the tool of choice for this Nanodegree program.



Course Project

Out-of-the-Box Analytics

In this project, learners will be analysts for a consulting company called Out-of-the-Box Analytics Inc. They will review the client's online job advertising data and, from the data driven insights they gather, propose more efficient ways of allocating advertising funds. They will present their findings on a Power BI dashboard. They will complete this project by utilizing the steps from the data analytics lifecycle, ensuring the data has proper integrity, and applying the appropriate analytics method to deliver insights. Finally, learners will create their own Power BI dashboard to communicate their findings.

Lesson 1

Data Analytics Lifecycle

- Describe the steps of the data analytics lifecycle.
- Identify where they are within the data analytics lifecycle.
- Determine if sufficient criteria have been met to move forward within the data analytics lifecycle.

Lesson 2

Data Integrity

- Identify the critical components of data integrity and where it falls within the data analytics lifecycle.
 - Review a data table and identify data integrity issues.
 - Identify appropriate steps/methods to resolve data integrity issues.
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Lesson 3

Types of Data Analytics & Statistics

- Identify the 4 types of data analytics: descriptive, diagnostic, predictive, and prescriptive.
 - Identify the type of data analytics that should be used in a given situation.
 - Identify different types of analysis techniques that fall within predictive analytics.
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Lesson 4

Power BI Overview

- Identify which Power BI capabilities can be used to resolve a given data issue.
- Navigate through Power BI Desktop, load data, and create basic visuals.

Course 2

Data Preparation & Modeling

The preparation phase is perhaps the most important step in data analysis. Before data can be effectively analyzed, an effective data model is required, and creating that data model may utilize a wide range of skills. This course teaches the skills needed to load, clean, and organize data in Power Query, and create relational tables in Power Query and Power BI. After completing this course, learners will be able to effectively source data in Power BI and create a clean and efficient data model for analysis.



Course Project

Population Statistics Data Model

In this project, learners will be provided data about changes in population, employment, and income from various government sources including; the US Bureau of Labor Statistics, the US Census Bureau, and the US Federal Reserve. The data they are provided is saved in different locations, is raw and unclean, and requires organization. The learner will perform an analysis of the data, but in order to do so will first need to utilize the data preparation and modeling skills they learned in the course to build an efficient data model. This data model will be the foundation upon which their analysis is built. They will need to connect to and ingest various data sources, clean and organize that data, and build table relationships in an efficient table schema. This will all be done using the Power BI tools covered in the course.

Lesson 1

Relational Data & Table Structure

- Identify unique keys for creating relationships among different tables.
- Identify fact and dimension tables.
- Design star schemas.

Lesson 2

Power Query & M Overview

- Navigate through the different features and tools of Power Query.
- Identify the best tool for a given data cleaning situation.
- Read scripts in the advanced editor, decipher their meaning, and make basic changes.

Lesson 3

Data Cleaning & Organization

- Use tools in Power Query to clean data successfully.
- Use tools in Power Query to organize their data.
- Create custom M formulas in Power Query as part of the data cleaning process.

Lesson 4

DAX Language & Quantitative Analysis

- Read DAX code and make simple changes to existing formulas.
- Use DAX to create basic quantitative measurements.
- Set up table relationships correctly in Power BI.
- Create unique keys when necessary to facilitate data.

Course 3

Predictive Data Analysis

This course introduces learners to a selection of powerful tools in Power BI Desktop that can be used for predictive analysis. Concepts such as classification, regression, and forecasting are discussed in detail, and various techniques are explored with different data sets, allowing learners to practice predictive data analysis with a hands-on approach. The content covered in this course can help an enterprise to understand future risk, analyze different markets, or make other decisions critical to an organization.



Course Project

Commercial Flight Analysis in the State of New York

In this project, learners will use the data of past flights departing from the State of New York to analyze and give recommendations about flight delays. They will explore what influences the passenger satisfaction score the most by using the Key Influencers visual in Power BI. Also, they will use linear regression in Power BI to predict the passenger satisfaction score under some specific conditions. Afterward, learners will apply clustering to group the airports. Finally, they will use time-series forecasting in Power BI to forecast the State of New York's flight delays in the upcoming month. The main objective of this project is to leverage the predictive analytics tools in Power BI to improve the flight ecosystem of the state.

Lesson 1

Regression

- Identify when to use linear regression, define linear regression, and recognize the key components of linear regression.
 - Read and interpret the results of a regression analysis.
 - Construct a linear regression in Power BI to predict future outcomes.
 - Identify and analyze the main influencers of a variable in Power BI.
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Lesson 2

Classification & Clustering

- Identify when to use clustering and when to use classification.
 - Read and interpret a cluster analysis.
 - Construct a cluster analysis in Power BI.
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Lesson 3

Time-Series Forecasting

- Read and interpret a time-series forecasting model.
 - Identify when to use a time-series forecast.
 - Create a time-series forecasting model in Power BI.
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Lesson 4

Additional Tools & Techniques

- Explain what a Dataflow is and its key advantages.
- Explain what AutoML is.
- Explain how to use AutoML with Power BI Dataflows.
- Configure and use a Q&A visualization.
- Create a summary of the visuals using the Smart Narrative visualization.

Meet your instructors.



Ivan Vega

Sr. Analyst, Reporting & Insights

Ivan Vega is a Senior Analyst, Reporting & Insights at T-Mobile. On evenings and weekends, he teaches both SQL and data visualization courses for master's programs at Mary's College of California. He has been teaching for over 2 years and has been an analyst for over 8 years.



Joseph Lozada

Senior Business Intelligence Consultant

Joseph works at The Planet Group, engaging with clients in the energy industry across the US. He helps clients collect data, set up data infrastructure, and provide data analysis and forecasting so that they can better understand their operations and finances. He also works as an adjunct instructor of Excel and Microsoft Power BI analytics at the Community College of Rhode Island.

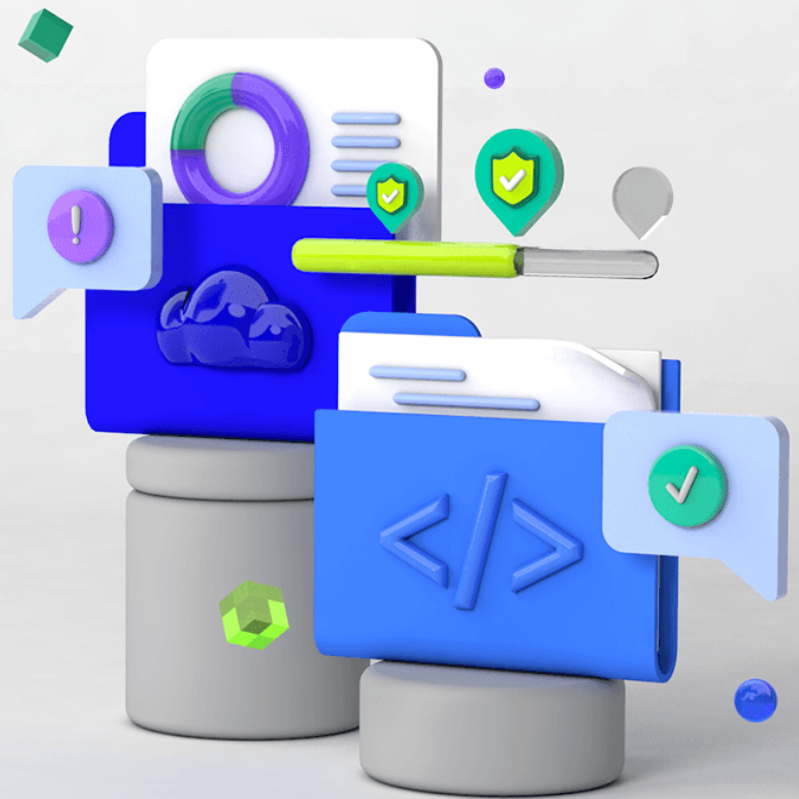


Daniel Roca

Full Stack Data Analytics Specialist

Daniel has worked for many years in business intelligence and data science and has used Power BI to find unique patterns in data to support decision-making. He is passionate about solving problems through data analytics, and loves the challenge of finding innovative ways to create efficient and impactful data-oriented solutions.

Udacity's learning experience



Hands-on Projects

Open-ended, experiential projects are designed to reflect actual workplace challenges. They aren't just multiple choice questions or step-by-step guides, but instead require critical thinking.



Knowledge

Find answers to your questions with Knowledge, our proprietary wiki. Search questions asked by other students, connect with technical mentors, and discover how to solve the challenges that you encounter.



Workspaces

See your code in action. Check the output and quality of your code by running it on interactive workspaces that are integrated into the platform.



Quizzes

Auto-graded quizzes strengthen comprehension. Learners can return to lessons at any time during the course to refresh concepts.



Custom Study Plans

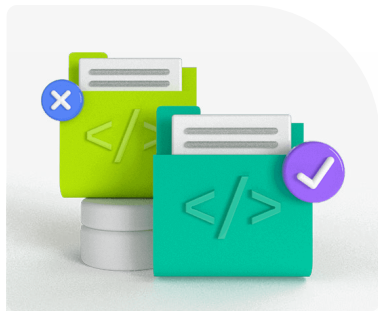
Create a personalized study plan that fits your individual needs. Utilize this plan to keep track of movement toward your overall goal.



Progress Tracker

Take advantage of milestone reminders to stay on schedule and complete your program.

Our proven approach for building job-ready digital skills.



Experienced Project Reviewers

Verify skills mastery.

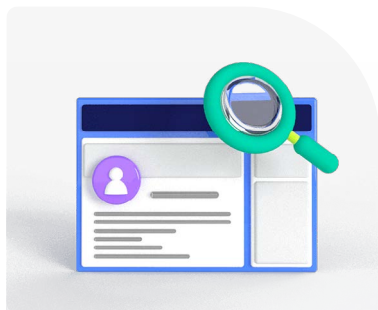
- Personalized project feedback and critique includes line-by-line code review from skilled practitioners with an average turnaround time of 1.1 hours.
- Project review cycle creates a feedback loop with multiple opportunities for improvement—until the concept is mastered.
- Project reviewers leverage industry best practices and provide pro tips.



Technical Mentor Support

24/7 support unblocks learning.

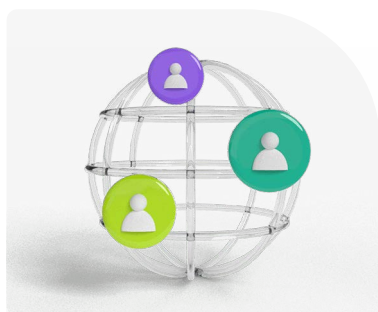
- Learning accelerates as skilled mentors identify areas of achievement and potential for growth.
- Unlimited access to mentors means help arrives when it's needed most.
- 2 hr or less average question response time assures that skills development stays on track.



Personal Career Services

Empower job-readiness.

- Access to a Github portfolio review that can give you an edge by highlighting your strengths, and demonstrating your value to employers.*
- Get help optimizing your LinkedIn and establishing your personal brand so your profile ranks higher in searches by recruiters and hiring managers.



Mentor Network

Highly vetted for effectiveness.

- Mentors must complete a 5-step hiring process to join Udacity's selective network.
- After passing an objective and situational assessment, mentors must demonstrate communication and behavioral fit for a mentorship role.
- Mentors work across more than 30 different industries and often complete a Nanodegree program themselves.

*Applies to select Nanodegree programs only.

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