Business Analytics Nanodegree Syllabus

Master data fundamentals applicable to any industry

Before You Start

There are no prerequisites for this program, aside from basic computer skills. You should be comfortable opening files, folders, and applications, and performing operations like copy and paste.

Contact Info

While going through the program, if you have questions about anything, you can reach us at bizanalytics-support@udacity.com. For help from Udacity Mentors and your peers or visit the Udacity Classroom.

Nanodegree Program Info

This program is an excellent program for non-technical people who want to make more data driven decisions. You'll learn data analysis skills and tools that will help you throughout your career, whether you're in engineering, sales, marketing, operations, etc. You'll learn to use Excel, SQL, and Tableau to manipulate, analyze, and visualize data with the end goal of making better, data-informed decisions. This program is also great preparation for more advanced programs, such as the Data Analyst or Business Analyst Nanodegree programs.

Depending on how quickly you work through the material, the amount of time required is variable. We have included an hourly estimation for each section of the program. The program is three months long (approx. 13 weeks). If you spend about 10 hours per week working through the program, you should finish each term within the 13 weeks. Students will have an additional four weeks beyond the end of the term to complete all projects.

Length of Program*: 13 weeks and approximately 130 hrs
Frequency of Classes: Self-paced the 13-week term
Textbooks required: None
Instructional Tools Available: Video lectures, Text instructions, Quizzes, In-classroom mentorship

*This is a self-paced program and the length is an estimation of total hours the average student may take to complete all required coursework, including lecture and project time. Actual hours may vary.

Introduction to Data Analysis

Intro Project: Interpret a Data Visualization

Due Week 1 (*suggested)*
In the lessons leading to your first project, you will get to know your instructors and learn how data is being applied in many industries. You'll also learn about course structure, navigation, learning resources, deadlines, projects, and everything that will help you succeed in this course.

You will then get to work on your first project, where you will draw insights from interactive dashboards. A large part of working with data is being able to interpret data visualizations and explain your insights to others. This project will build your intuition on working with data dashboards, while also showing you the types of beautiful visualizations you will be able to produce by the end of this program!

Project: Analyze NYSE Data

Due Week 5 (*suggested)*
In this project, you will work with a New York Stock Exchange (NYSE) dataset that contains fundamental financial data for 500 companies. You will use spreadsheets to analyze and summarize the data using statistics and data visualizations. You will communicate the key findings in a professional manner. You will also design a dashboard that calculates the financial metrics and auto populates the income statement for each company using data validation and advanced lookup tools within Excel. You will then forecast financial metrics within the Income Statement, based on three scenarios with distinct assumptions for a company of your choice from the NYSE dataset.

By the end of this project, you will be able to:
➔ Calculate summary statistics using spreadsheets.
➔ Create data visualizations using spreadsheets.
➔ Ask questions and answer them using data.
➔ Work with real-world data that has missing and incorrect values.
➔ Calculate key business metrics in financial analysis and interpret values.
➔ Forecast financial metrics using scenario analysis.

Lesson Title	Learning Outcomes

Descriptive Statistics I	➔ Learn data types, measures of center, and the basics of mathematical notation.
Descriptive Statistics II	➔ Learn a common visual method for quantitative data, measures of spread, and the difference between descriptive and inferential statistics.
Spreadsheets: Getting Started	➔ Learn basic functionality for spreadsheet software. ➔ Use cell referencing and menu shortcuts.
Spreadsheets: Manipulate Data	➔ Sort and filter data. ➔ Use text and math functions. ➔ Split columns and remove duplicates.
Spreadsheets: Analyze Data	➔ Summarize data with aggregation and conditional functions. ➔ Use pivot tables and lookup functions.
Spreadsheets: Visualize Data	➔ Build data visualizations for quantitative and categorical data. ➔ Create pie, bar, line, scatter, histogram, and boxplot charts. ➔ Build professional presentations.
Metrics	➔ Become familiar with business metrics used by business analysts in the area of marketing, sales, growth, engagement, and financial analysis. ➔ Calculate and interpret key performance metrics. ➔ Calculate metrics and create plots to visualize metrics in Excel.
Excel Modelling	➔ Understand the fundamentals of sales and financial forecasting models. ➔ Create forecasting models using advanced lookup and data validation tools (INDEX, MATCH, OFFSET)in Excel.

SQL for Data Analysis

Project: Query Digital Music Store Database

Due Week 9 (*suggested)*
In this project, you will query a digital music store database which holds information regarding the store's media, employees, and customers. You will use the database to help the store gain an understanding of the types of music that are purchased, where customers live, and how the company might optimize their business practices.

By the end of this project, you will be able to:
- ➔ Write SQL to query a single table.
- ➔ Write SQL to query multiple tables.
- ➔ Ask a question that requires data from multiple places, join the data together, and answer the question.
- ➔ Install SQL on your own machine, upload a database, ask complex questions about the data in a database, and query the database to answer those questions.

Lesson Title	Learning Outcomes
Basic SQL	➔ Become fluent in basic SQL commands including SELECT, FROM, WHERE, and corresponding logical operators.
SQL Joins	➔ Combine data tables using SQL joins to to answer more complex business questions.
SQL Aggregations	➔ Aggregate data in SQL including COUNT, SUM, MIN, and MAX. ➔ Write CASE and DATE functions, as well as work with NULL values.
Advanced SQL Lessons [Optional]	➔ Use subqueries, also called CTEs, in a number of different situations. ➔ Use window functions including RANK, NTILE, LAG, LEAD new functions along with partitions to complete complex tasks. ➔ Clean data, optimize queries, and write advanced JOINs.

Data Visualization with Tableau

Project: Build Data Dashboards

Due Week 13 (*suggested)*
Sharing insights is an integral part of working with data. In this project, you'll build interactive dashboards with Tableau to tell stories from data. You'll use a dataset of flight delays in the US to visualize the quality of airlines and airports, find the best times to fly, and more. These types of visualizations help guide decision making to reach the best outcomes.

By the end of this project, you will be able to:
- ➔ Select the most appropriate data visualization for an analysis.
- ➔ Evaluate the effectiveness of a data visualization.
- ➔ Build interactive and engaging Tableau dashboards.

Lesson Title	Learning Outcomes
Data Visualization Fundamentals	➔ Evaluate the quality of data visualizations and build high quality visualizations.
Design Principles	➔ Implement the best design practices, and to use the most appropriate chart for a particular situation.
Creating Visualizations in Tableau	➔ Build data visualizations in Tableau. ➔ Use data hierarchies, filters, groups, sets, and calculated fields. ➔ Create map-based data visualizations in Tableau.
Telling Stories with Tableau	➔ Build interactive Tableau dashboards. ➔ Tell impactful stories using data.