



NANODEGREE PROGRAM SYLLABUS

# Business Analytics



# Overview

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. If you spend about 10 hours per week working through the program, you should finish the program in three months.

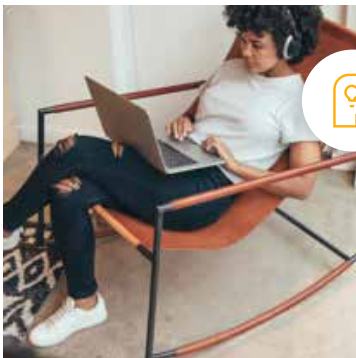
IN COLLABORATION WITH



**Estimated Time:**  
3 Months at  
10hrs/week



**Prerequisites:**  
None



**Flexible Learning:**  
Self-paced, so  
you can learn on  
the schedule that  
works best for you



**Need Help?**  
[udacity.com/advisor](https://www.udacity.com/advisor)  
Discuss this program  
with an enrollment  
advisor.

# Course 1: Welcome to the Program

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!

## Course Project Interpret a Data Visualization

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## Course 2: Introduction to Data

Learn how to use statistics and visuals to find and communicate insights. Develop Excel skills to manipulate, analyze, and visualize data in a spreadsheet. Build Excel models to analyze possible business outcomes.

### Course Project Analyze NYSE Data

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.

### LEARNING OUTCOMES

#### LESSON ONE

##### Descriptive Statistics I

- Learn data types, measures of center, and the basics of mathematical notation.

#### LESSON TWO

##### Descriptive Statistics II

- Learn a common visual method for quantitative data, measures of spread, and the difference between descriptive and inferential statistics.

**LESSON THREE****Spreadsheets:  
Getting Started**

- Learn about the keys steps of the data analysis process.
- Use cell referencing and menu shortcuts.

**LESSON FOUR****Spreadsheets:  
Manipulate Data**

- Sort and filter data.
- Use text and math functions
- Split columns and remove duplicates.

**LESSON FIVE****Spreadsheets:  
Analyze Data**

- Summarize data with aggregation and conditional functions.
- Use pivot tables and lookup functions.a

**LESSON SIX****Spreadsheets:  
Visualize Data**

- Build data visualizations for quantitative and categorical data.
- Create pie, bar, line, scatter, histogram, and boxplot charts.
- Build professional presentations.

**LESSON SEVEN****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.

**LESSON EIGHT****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.

# Course 3: SQL for Data Analysis

In this project, you will be provided a dataset reflecting data collected from an experiment. You'll use statistical techniques to answer questions about the data and report your conclusions and recommendations in a report.

## Course Project Query Digital Music Store Database

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.

### LEARNING OUTCOMES

#### LESSON ONE

#### Basic SQL

- Become fluent in basic SQL commands including SELECT, FROM, WHERE, and corresponding logical operators.

#### LESSON TWO

#### SQL Joins

- Combine data tables using SQL joins to answer more complex business questions..

#### LESSON THREE

#### SQL Aggregations

- Aggregate data in SQL including COUNT, SUM, MIN, and MAX.
- Write CASE and DATE functions, as well as work with NULL values.

#### LESSON FOUR

#### 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.

# Course 4: Data Visualization with Tableau

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.

## Course Project Build Data Dashboards

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.

### LEARNING OUTCOMES

#### LESSON ONE

#### Data Visualization Fundamentals

- Evaluate the quality of data visualizations and build high quality visualizations.

#### LESSON TWO

#### Design Principles

- Implement the best design practices, and to use the most appropriate chart for a particular situation.

#### LESSON THREE

#### Creating Visualizations in Tableau

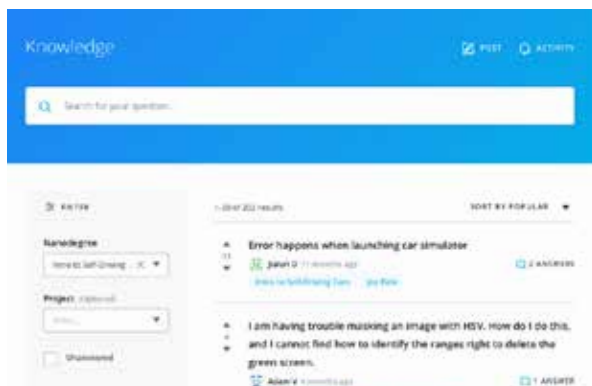
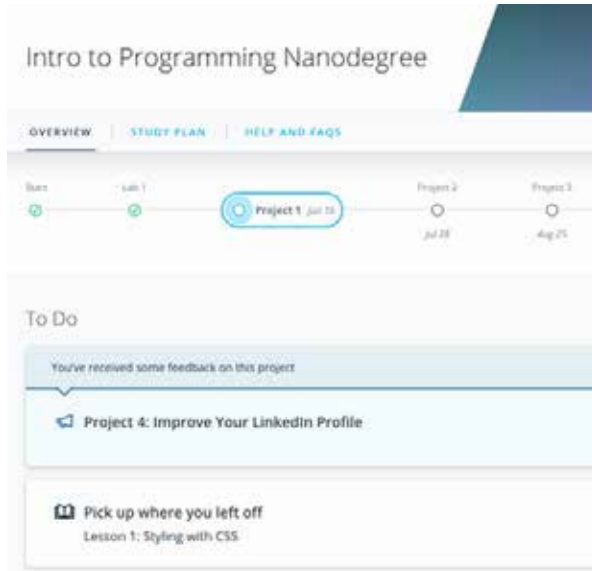
- Build data visualizations in Tableau.
- Use data hierarchies, filters, groups, sets, and calculated fields.
- Create map-based data visualizations in Tableau.

#### LESSON FOUR

#### Telling Stories with Tableau

- Build interactive Tableau dashboards.
- Tell impactful stories using data.

# Our Classroom Experience



## REAL-WORLD PROJECTS

Build your skills through industry-relevant projects. Get personalized feedback from our network of 900+ project reviewers. Our simple interface makes it easy to submit your projects as often as you need and receive unlimited feedback on your work.

## KNOWLEDGE

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

## STUDENT HUB

Leverage the power of community through a simple, yet powerful chat interface built within the classroom. Use Student Hub to connect with fellow students in your program as you support and learn from each other.

## WORKSPACES

See your code in action. Check the output and quality of your code by running them on workspaces that are a part of our classroom.

## QUIZZES

Check your understanding of concepts learned in the program by answering simple and auto-graded quizzes. Easily go back to the lessons to brush up on concepts anytime you get an answer wrong.

## CUSTOM STUDY PLANS

Preschedule your study times and save them to your personal calendar to create a custom study plan. Program regular reminders to keep track of your progress toward your goals and completion of your program.

## PROGRESS TRACKER

Stay on track to complete your Nanodegree program with useful milestone reminders.



## Learn with the Best



### Josh Bernhard

DATA SCIENTIST

Josh has been sharing his passion for data for nearly a decade at all levels of university, and as Lead Data Science Instructor at Galvanize. He's used data science for work ranging from cancer research to process automation.



### Dana Sheahan

CONTENT DEVELOPER

Dana is an electrical engineer with a Masters in Computer Science from Georgia Tech. Her work experience includes software development for embedded systems in the Automotive Group at Motorola, where she was awarded a patent for an onboard operating system.



### Derek Steer

CEO

Derek is the CEO of Mode Analytics. He developed an analytical foundation at Facebook and Yammer and is passionate about sharing it with future analysts. He authored SQL School and is a mentor at Insight Data Science..



### Mat Leonard

INSTRUCTOR

Mat is a former physicist, research neuroscientist, and data scientist. He did his PhD and Postdoctoral Fellowship at the University of California, Berkeley.

# All Our Nanodegree Programs Include:



## EXPERIENCED PROJECT REVIEWERS

### REVIEWER SERVICES

- Personalized feedback & line by line code reviews
- 1600+ Reviewers with a 4.85/5 average rating
- 3 hour average project review turnaround time
- Unlimited submissions and feedback loops
- Practical tips and industry best practices
- Additional suggested resources to improve



## TECHNICAL MENTOR SUPPORT

### MENTORSHIP SERVICES

- Questions answered quickly by our team of technical mentors
- 1000+ Mentors with a 4.7/5 average rating
- Support for all your technical questions



## PERSONAL CAREER SERVICES

### CAREER SUPPORT

- Resume support
- Github portfolio review
- LinkedIn profile optimization

# Frequently Asked Questions

## PROGRAM OVERVIEW

### WHY SHOULD I ENROLL?

This Nanodegree program is a great introduction to the fundamentals of data and analysis. You will leave with practical skills that you can apply in any job. These skills are also a great foundation to a career in data analysis and data science.

### WHAT JOBS WILL THIS PROGRAM PREPARE ME FOR?

This Nanodegree program is well-suited for those those looking to apply data skills in their current roles. It is also a great first step on a journey to becoming a data analyst or data scientist. We have more courses that will pick up from where this course leaves off to help you become ready for a career in data science.

### HOW DO I KNOW IF THIS PROGRAM IS RIGHT FOR ME?

Data is a transformational force in every business and analysis of data has become a mandatory skill to have to provide value in any organization. This Nanodegree program offers an introduction to the world of data. If you are just beginning learning about data, this is the course for you.

### WHAT IS THE SCHOOL OF DATA SCIENCE, AND HOW DO I KNOW WHICH PROGRAM TO CHOOSE?

Udacity's School of Data consists of several different Nanodegree programs, each of which offers the opportunity to build data skills, and advance your career. These programs are organized around three main career roles: Business Analyst, Data Analyst, and Data Scientist.

The School of Data currently offers two clearly-defined career paths. These paths are differentiated by whether they focus on developing programming skills or not. Whether you are just getting started in data, are looking to augment your existing skill set with in-demand data skills, or intend to pursue advanced studies and career roles, Udacity's School of Data has the right path for you! Visit [How to Choose the Data Science Program That's Right for You](#) to learn more.

## ENROLLMENT AND ADMISSION

### DO I NEED TO APPLY? WHAT ARE THE ADMISSION CRITERIA?

No. This Nanodegree program accepts all applicants regardless of experience and specific background.

### WHAT ARE THE PREREQUISITES FOR ENROLLMENT?

There are no prerequisites for enrolling aside from basic computer skills and English proficiency. You should feel comfortable performing basic operations on your computer like opening files and folders, opening applications, and copying & pasting.



# FAQs Continued

## TUITION AND TERM OF PROGRAM

### HOW IS THIS NANODEGREE PROGRAM STRUCTURED?

The Business Analytics Nanodegree program is comprised of content and curriculum to support four (4) projects. We estimate that students can complete the program in three (3) months working 10 hours per week.

Each project will be reviewed by the Udacity reviewer network. Feedback will be provided and if you do not pass the project, you will be asked to resubmit the project until it passes.

### HOW LONG IS THIS NANODEGREE PROGRAM?

Access to this Nanodegree program runs for the length of time specified in your subscription plan. See the [Terms of Use](#) for other policies around the terms of access to our Nanodegree programs.

### I HAVE GRADUATED FROM THE BUSINESS ANALYTICS NANODEGREE PROGRAM AND I WANT TO KEEP LEARNING. WHERE SHOULD I GO FROM HERE?

Check out the [Predictive Analytics for Business Nanodegree](#) program, which focuses on more advanced data analytics like making predictions, but does not require any coding.

Or, if you want to get started with programming in the data field, check out our [Programming for Data Science Nanodegree](#) program to build on the concepts you have learned. It will teach you more advanced SQL and also includes other modern programming languages used by Data Analysts and Scientists around the world.

