# UDACITY
## FOR ENTERPRISE

THE SCHOOL OF BUSINESS

# Business Analytics

NANODEGREE SYLLABUS

# Overview

## In Collaboration with

**MODE**

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.

his program is also great preparation for more advanced programs, such as the Data Analyst or Predictive Analytics for Business Nanodegree programs.

## Program Information

**TIME**
3 months
Study10 hours/week

**LEVEL**
Foundational

**PREREQUISITES**
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.

**HARDWARE/SOFTWARE REQUIRED**
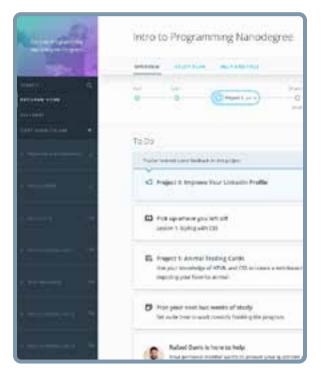Computer running OS X or Windows

**INTERESTED IN THIS NANODEGREE?**
Contact us at enterpriseNDs@udacity.com.

# Our Classroom Experience



## REAL-WORLD PROJECTS
Learners build new skills through industry-relevant projects and receive personalized feedback from our network of 900+ project reviewers. Our simple user interface makes it easy to submit projects as often as needed and receive unlimited feedback.

## KNOWLEDGE
Answers to most questions can be found with Knowledge, our proprietary wiki. Learners can search questions asked by others and discover in real-time how to solve challenges.
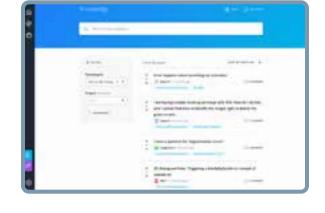
## WORKSPACES
Learners can check the output and quality of their code by testing it on interactive workspaces that are integrated into the classroom.

## QUIZZES
Understanding concepts learned during lessons is made simple with auto-graded quizzes. Learners can easily go back and brush up on concepts at anytime during the course.

## CUSTOM STUDY PLANS
Create a custom study plan to suit your personal needs and use this plan to keep track of your progress toward your goal.





## PROGRESS TRACKER
Personalized milestone reminders help learners stay on track and focused as they work to complete their Nanodegree program.

# Learn with the Best

## Josh Bernard
DATA SCIENTIST AT NERD WALLET

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

## Mat Leonard
INSTRUCTOR

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

## Dana Sheahan
CONTENT DEVELOPER

Dana is an electrical engineer with a Master of Computer Science degree 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 AT MODE

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.

## Sam Nelson
PRODUCT LEAD

Sam is the Product Lead for Udacity's Data Analyst, Business Analyst, and Data Foundations programs. He's worked as an analytics consultant on projects in several industries, and is passionate about helping others improve their data skills.

# Course 1: Welcome to the Program

| Project | Interpret a Data Visualization |
|---------|-------------------------------|

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 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.

| 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.

## Course 2: Introduction to Data, cont.

| LESSON TITLE | LEARNING OUTCOME |
|---|---|
| **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. |
| **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.<br>• Use pivot tables and lookup functions. |
| **SPREADSHEETS: VISUALIZE DATA** | • Build data visualizations for quantitative and categorical Data.<br>• Create pie, bar, line,scatter, histogram, and boxplot charts.<br>• Build professional presentations. |
| **METRICS** | • Become familiar with business metrics used by business analysts in the area of marketing, sales, growth, engagement, and financial analysis.<br>• Calculate and interpret key performance metrics.<br>• Calculate metrics and create plots to visualize metrics in Excel. |
| **EXCEL MODELING** | • Understand the fundamentals of sales and financial forecasting models.<br>• 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.

| 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.

| LESSON TITLE | LEARNING OUTCOME |
|--------------|------------------|
| BASIC SQL | • Learn data types, measures of center, and the basics of mathematical notation. |
| SQL JOINS | • Learn a common visual method for quantitative data, measures of spread, and the difference between descriptive and inferential statistics. |
| SQL AGGREGATIONS | • Learn basic functionality for spreadsheet software. Use cell referencing and menu shortcuts. |
| ADVANCED SQL LESSONS [OPTIONAL] | • Use subqueries, also called CTEs, in a number of different situations.<br>• Use window functions including RANK, NTILE, LAG, LEAD new functions along with partitions to complete complex tasks.<br>• 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.

| Project | Build Data Dashboards |
|---|---|

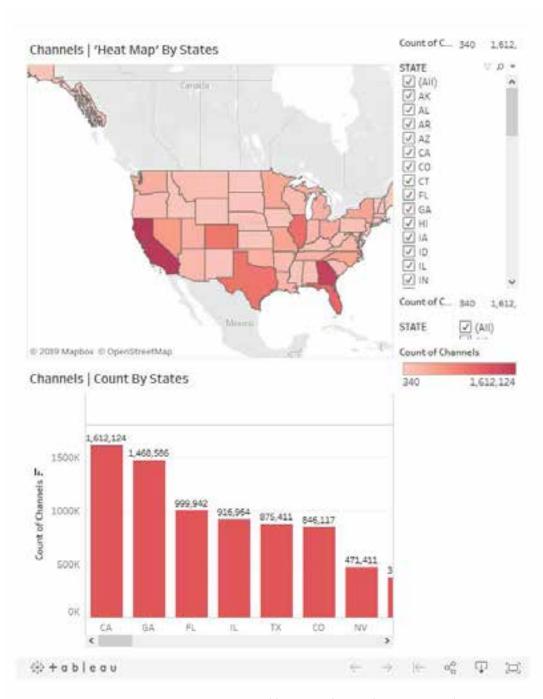By the end of this project, you will be able to:
- Select the most appropriate data visualization for an analysis.
- Evaluate the effectiveness of a data visualization.
- Build interactive and engaging Tableau dashboards.

| LESSON TITLE | LEARNING OUTCOME |
|---|---|
| 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.<br>• Use data hierarchies, filters, groups, sets, and calculated fields.<br>• Create map-based data visualizations in Tableau. |
| TELLING STORIES WITH TABLEAU | • Build interactive Tableau dashboards.<br>• Tell impactful stories using data. |

## Project Example | Build Data Dashboards



*Actual learner-submitted Business Analytics course project material.*

# All Our Nanodegree Programs Include:

## Pre-Assessments

Our in-depth workforce assessments identify your team's current level of knowledge in key areas. Results are used to generate custom learning paths designed to equip your workforce with the most applicable skill sets.

## Dashboard & Progress Reports

Our interactive dashboard (enterprise management console) allows administrators to manage employee onboarding, track course progress, perform bulk enrollments and more.

## Industry Validation & Reviews

Learners' progress and subject knowledge is tested and validated by industry experts and leaders from our advisory board. These in-depth reviews ensure your teams have achieved competency.

## Real World Hands-on Projects

Through a series of rigorous, real-world projects, your employees learn and apply new techniques, analyze results, and produce actionable insights. Project portfolios demonstrate learners' growing proficiency and subject mastery.

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# Our Review Process

## Real-life Reviewers for Real-life Projects

Real-world projects are at the core of our Nanodegree programs because hands-on learning is the best way to master a new skill. Receiving relevant feedback from an industry expert is a critical part of that learning process, and infinitely more useful than that from peers or automated grading systems. Udacity has a network of over 900 experienced project reviewers who provide personalized and timely feedback to help all learners succeed.

### Vaibhav
UDACITY LEARNER

*"I never felt overwhelmed while pursuing the Nanodegree program due to the valuable support of the reviewers, and now I am more confident in converting my ideas to reality."*

────────── now at ──────────
**CODING VISIONS INFOTECH**

## All Learners Benefit From:

| Line-by-line feedback for coding projects | Industry tips and best practices | Advice on additional resources to research | Unlimited submissions and feedback loops |

## How it Works
Real-world projects are integrated within the classroom experience, making for a seamless review process flow.

- Go through the lessons and work on the projects that follow
- Get help from your technical mentor, if needed
- Submit your project work
- Receive personalized feedback from the reviewer
- If the submission is not satisfactory, resubmit your project
- Continue submitting and receiving feedback from the reviewer until you successfully complete your project

## About our Project Reviewers

Our expert project reviewers are evaluated against the highest standards and graded based on learners' progress. Here's how they measure up to ensure your success.

### 900+
**Expert Project Reviewers**

Are hand-picked to provide detailed feedback on your project submissions.

### 1.8M
**Projects Reviewed**

Our reviewers have extensive experience in guiding learners through their course projects.

### 3
**Hours Average Turnaround**

You can resubmit your project on the same day for additional feedback.

### 4.85/5
**Average Reviewer Rating**

Our learners love the quality of the feedback they receive from our experienced reviewers.

# UDACITY
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For more information visit: **www.udacity.com/enterprise**