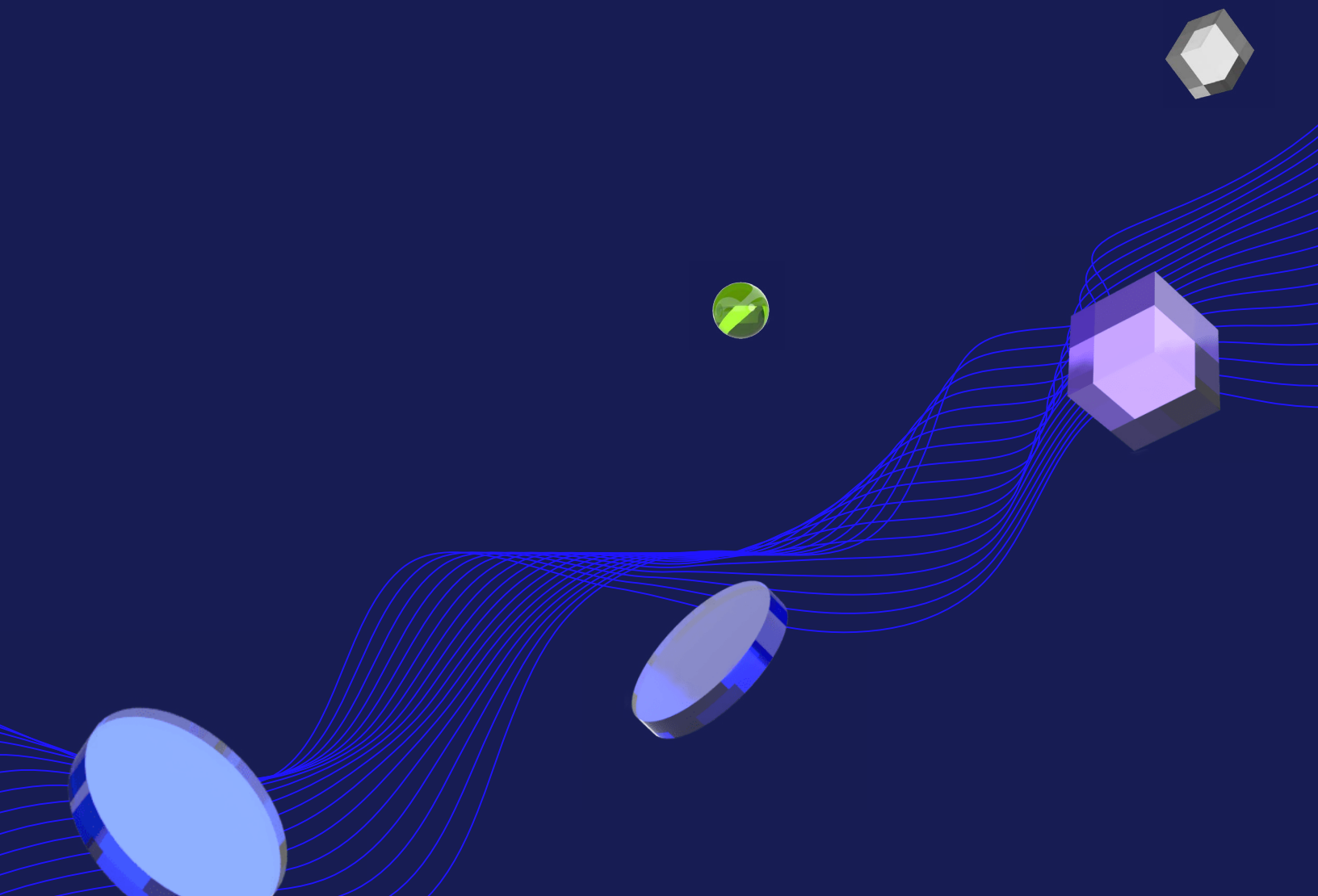


Predictive Analytics for Business

Nanodegree Program Syllabus



Overview

The Predictive Analytics for Business Nanodegree program is designed to teach learners to master a scientific approach to solving problems with data and apply predictive analytics and business intelligence to solve real-world problems. Learners will build fluency in Alteryx, a tool that prepares, blends, and analyzes data quickly, and Tableau, a powerful data visualization platform.



Learning Objectives

A graduate of this program will be able to:

- Create mental models to clearly define business issues.
- Visualize and prepare data to improve efficacy of predictive models.
- Identify and implement a variety of predictive modeling techniques.

Built in collaboration with:

alteryx

Program information



Estimated Time

3 months at 10hrs/week*



Skill Level

Intermediate



Prerequisites

A well-prepared learner should have basic statistics and math knowledge, including familiarity with descriptive and inferential statistics. Learners should also be familiar with basic algebra in order to understand the mathematical models that will be presented in this program.



Required Hardware/Software

Learners need access to the internet and a 64-bit computer. Additional software such as Python and its common data analysis libraries (e.g., Numpy and Pandas) will be required, but the program will guide students on how to download once the course has begun.

*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.

Problem Solving with Advanced Analytics

In this course, we give learners a framework to help them organize and plan your analytical approach. Learners also introduce both simple linear regression and multiple linear regression.



Course Project

Predict Sales for a Catalog Launch

A home goods manufacturer wants to predict expected profits from a catalog launch. Learners will apply a framework to work through the problem and build a linear regression model to provide results and a recommendation.

Lesson 1

The Problem Solving Framework

- Learn a structured framework for solving problems with advanced analytics.

Lesson 2

Selecting an Analytical Methodology

- Select the most appropriate analytical methodology based on the context of the business problem.

Lesson 3

Linear regression

- Build, validate, and apply linear regression models to solve a business problem.

Data Wrangling

Data wrangling is at the core of all data activity. Learn how to work with different data types, dirty data, and outliers. Also learn how to reformat data and join data from different sources together.



Course Project

Create an Analytical Dataset

A pet store chain is selecting the location for its next store. Learners will use data preparation techniques to build a robust analytic dataset and use it to build a predictive model to select the best location.

Lesson 1

Understanding Data

- Define the value of marketing data that can shape your business strategies.
- Utilize the key metrics that can answer your marketing questions.

Lesson 2

Data Issues

- Identify common types of dirty data.
- Make adjustments to dirty data to prepare a dataset.
- Identify and adjust for outliers.

Lesson 3

Data Formatting

- Summarize, cross-tabulate, transpose, and reformat data to prepare a dataset for analysis.

Lesson 4

Data Blending

- Join and union data from different sources and formats.

Classification Models

Classification models are a powerful tool for business analyst. Learn more about binary and non-binary classification models and how to use them to drive business insights.



Course Project

Predict Loan Default Risk

A bank recently received an influx of loan applications. Learners will build and apply a classification model to provide a recommendation on which loan applicants the bank should lend to.

Lesson 1

Classification Problems

- Understand the fundamentals of classification modeling and how it differs from modeling numeric data.

Lesson 2

Binary Classification Models

- Build logistic regression and decision tree models.
- Use stepwise to automate predictor variables selection.
- Score and compare models and interpret the results.

Lesson 3

Non-Binary Classification Models

- Build and compare forest and boosted models and interpret their results.
- Score and compare models and interpret the results.

A/B Testing

Helping businesses make the best decisions is an essential part of business analysis. Planning and executing the analysis of an AB test allow you to provide confident recommendations. Learn how to create, execute and analyze an AB test.



Course Project

A/B Test a Menu Launch

A chain of coffee shops is considering launching a new menu. Learners will design and analyze an A/B test and write up a recommendation on whether the chain should introduce the new menu.

Lesson 1

A/B Testing Fundamentals

- Understand the fundamentals of classification modeling and how it differs from modeling numeric data.

Lesson 2

Randomized Design Tests

- Select test and control variables and understand the importance of sample size.
- Design a randomized design A/B test and analyze the results.

Lesson 3

Matched Pair Design Tests

- Match test units to control units. Design a matched pair design A/B test and analyze the results.

Lesson 4

Matched Pair Design Tests

- Use trend and seasonality as control variables for a matched pair design A/B test.

Time Series Forecasting

Time series forecasting is a powerful analytical tool. In this course, learners will find out how ETS and ARIMA models are used to forecast data and how they deal with trends and seasonality. These skills will be evaluated in the final project.



Course Project

Forecast Video Game Demand

A video game producer is planning production levels. Learners will use time series forecasting models to forecast monthly demand and provide a recommendation to help match supply to demand.

Lesson 1

Fundamentals of Time Series Forecasting

- Understand trend, seasonal, and cyclical behavior of time series data.

Lesson 2

ETS Models

- Use time series decomposition plots.
- Build out an ETS model in Alteryx.

Lesson 3

Arima Models

- Stationarize data through differencing, a process that prepares data for ARIMA modeling.
- Build out an ARIMA model in Alteryx.

Lesson 4

Analyzing & Visualizing Results

- Use holdout samples to compare models and select the best one for a business problem.
- Visualize your forecasts through various plots.

Segmentation & Clustering

Segmentation and clustering are effective methods for finding patterns in your data. In this course, learners will prepare data to be clustered appropriately and interpret results.



Course Project

Combine Predictive Techniques

A grocery store chain is planning a significant expansion. Learners will use multiple analytical techniques to provide recommendations on how to expand. After completing the project, they will feel comfortable combining predictive techniques and delivering results to complex business problems.

Lesson 1

Segmentation Fundamentals

- Understand the difference between localization, standardization, and segmentation.

Lesson 2

Preparing Data for Clustering

- Scale data to prepare a dataset for cluster modeling.
- Select variables to include based on the business context.

Lesson 3

Variable Reduction

- Use principal components analysis (PCA) to reduce the number of variables for cluster model.

Lesson 4

Clustering Models

- Select the appropriate number of clusters.
- Build and apply a k-centroid cluster model.

Lesson 5

Validating & Applying Clusters

- Validate the results of a cluster model.
 - Visualize and communicate the results of a cluster model.
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Lesson 6

Creating Visualization with Tableau

- Become proficient in basic Tableau functionality, including charts, filters, hierarchies, etc.
- Create calculated fields in Tableau.

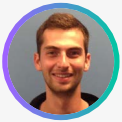
Meet your instructors.



Patrick Nussbaumer

Technical Activation Director at Alteryx, Inc.

Patrick Nussbaumer is Technical Activation Director at Alteryx, Inc. Prior to Alteryx, Patrick has spent the past 20 years in a variety of roles focused on data analysis, telecommunications, and financial services industries.



Ben Burkholder

Senior Solutions Engineer at Alteryx Inc.

Ben Burkholder is a senior solutions engineer at Alteryx, Inc. In this role he works extensively with clients to help develop plans to solve complex business problems around data preparation, geospatial analysis, and predictive analytics.



Maureen Wolfson

Solutions Engineer at Alteryx Inc.

Maureen Wolfson is a solutions engineer at Alteryx, Inc. She has more than 20 years of data analysis expertise specializing in data, customer and geospatial analysis.



Rod Light

Solutions Engineer Practice Lead at Alteryx Inc.

Rod Light is a solutions engineer practice lead at Alteryx, where he helps customers and prospects design data analytics solutions for their businesses using Alteryx.

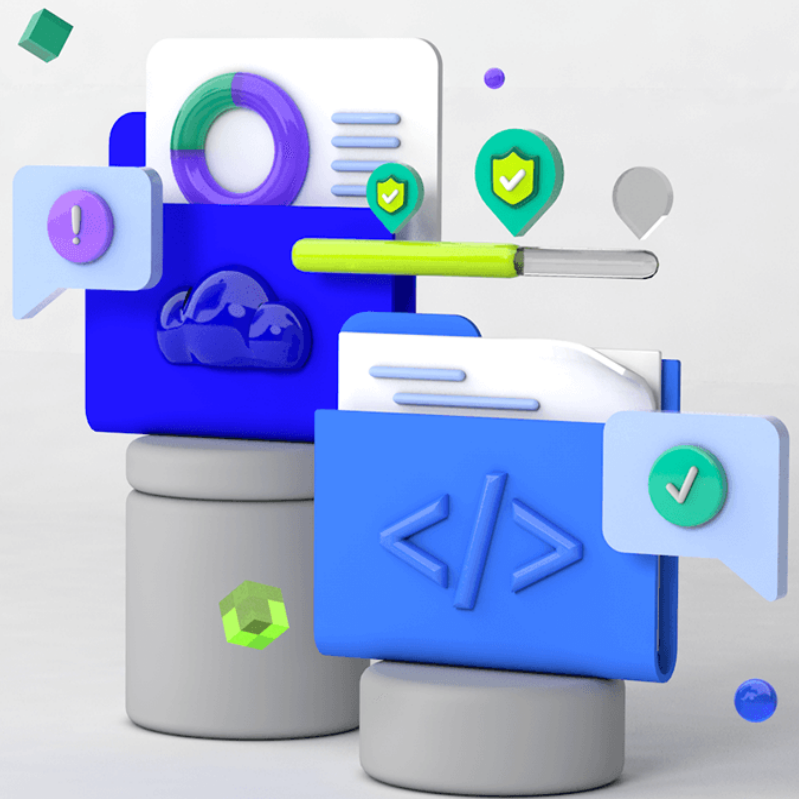


Tony Moses

Solutions Engineer at Alteryx Inc.

Tony Moses is a solutions engineer at Alteryx, Inc. He works with customers to help develop plans to solve complex business problems around data preparation, geospatial analysis, and predictive analytics.

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

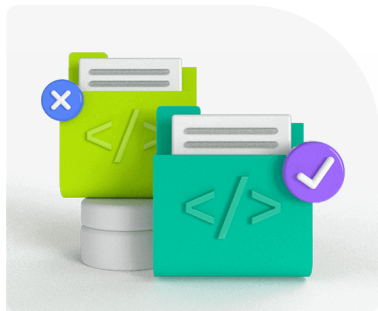
Create a personalized study plan that fits your individual needs. Utilize this plan to keep track of movement toward your overall goal.



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.

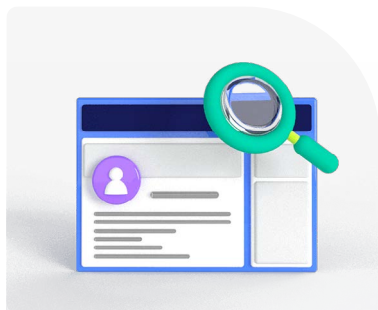
- Personalized project feedback and critique includes line-by-line code review from skilled practitioners with an average turnaround time of 1.1 hours.
- Project review cycle creates a feedback loop with multiple opportunities for improvement—until the concept is mastered.
- Project reviewers leverage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



Technical Mentor Support

24/7 support unblocks learning.

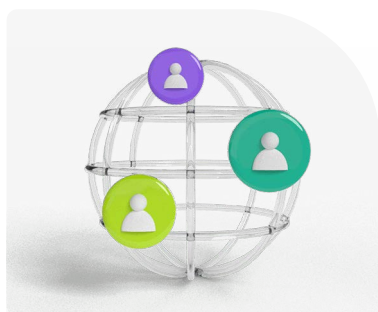
- Learning accelerates as skilled mentors identify areas of achievement and potential for growth.
- Unlimited access to mentors means help arrives when it's needed most.
- 2 hr or less average question response time assures that skills development stays on track.



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.

Learn more at

www.udacity.com/online-learning-for-individuals →