Business Analyst Nanodegree Program Syllabus

Learn to analyze data, create dashboards, and build predictive models

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Prerequisites: Basic statistics and math knowledge, basic spreadsheet skills

Predicting Diamond Prices (day 1)

A jewelry company wants to put in a bid to purchase a large set of diamonds, but is unsure how much it should bid. In this project, you will use the results from a predictive model to make a recommendation on how much the jewelry company should bid for the diamonds. You'll submit this project in your first 7 days, and by the end you'll be able to:

➔ Understand the Data
➔ Visualize the Data
➔ Make a recommendation

Predict Sales for a Catalog Launch

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

Supporting Lesson Content: Problem Solving with Advanced Analytics

Lesson Title	Learning Outcomes
THE PROBLEM SOLVING FRAMEWORK	➔ Learn a structured framework for solving problems with advanced analytics
SELECTING AN ANALYTICAL METHODOLOGY	➔ Select the most appropriate analytical methodology based on the context of the business problem
LINEAR REGRESSION	➔ Build, validate, and apply linear regression models to solve a business problem

Select the Location of a New Pet Store

A pet store chain is selecting the location for its next store. You 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 Title	Learning Outcomes
UNDERSTANDING DATA	➔ Understand the most common data types ➔ Understand the various sources of data
DATA ISSUES	➔ Identify common types of dirty data ➔ Make adjustments to dirty data to prepare a dataset ➔ Identify and adjust for outliers
DATA FORMATTING	➔ Summarize, cross-tabulate, transpose, and reformat data to prepare a dataset for analysis
DATA BLENDING	➔ Join and union data from different sources and formats

Create Reports from a Database

Management wants some high level metrics about their organization. You will write SQL queries to extract and analyze data from a transactions database and prepare a set of visualizations.

Supporting Lesson Content: Creating an Analytical Dataset

Lesson Title	Learning Outcomes
RELATIONAL DATABASES	➔ Understand how data is structured in SQL
SQL FOR DATA ANALYSIS	➔ Run queries to summarize data ➔ Use joins to combine information across tables ➔ Create tables and import data from csv

Build Tableau Dashboards

A movie producer wants to better understand film industry trends before releasing its next movie. You will explore a dataset and build Tableau dashboards to answer a set of questions and tell a story with data.

Supporting Lesson Content: Data Visualization in Tableau

Lesson Title	Learning Outcomes
DATA VISUALIZATION FUNDAMENTALS	➔ Understand the importance of data visualization ➔ Know how different data types are encoded in visualizations
DESIGN PRINCIPLES	➔ Select the most effective chart or graph based on the data being displayed ➔ Use color, shape, size, and other elements effectively

UDACITY

CREATING VISUALIZATIONS WITH TABLEAU	➔ Become proficient in basic Tableau functionality, including charts, filters, hierarchies, etc. ➔ Create calculated fields in Tableau
TELLING STORIES WITH TABLEAU	➔ Create Tableau dashboards and stories to effectively communicate data

Predict Loan Default Risk

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

Supporting Lesson Content: Classification Models

Lesson Title	Learning Outcomes
CLASSIFICATION PROBLEMS	➔ Understand the fundamentals of classification modeling and how it differs from modeling numeric data
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
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 Test a New Menu Launch

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

Supporting Lesson Content: A/B Testing for Business Analysts

Lesson Title	Learning Outcomes
A/B Testing Fundamentals	➔ Understand the fundamentals of A/B testing, including selecting target and control units and variables and the duration of a test
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
Matched Pair Design Tests	➔ Match test units to control units ➔ Design a matched pair design A/B test and analyze the results
Matched Pair Practice	➔ Use trend and seasonality as control variables for a matched pair design A/B test

Forecast Video Game Demand

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

Supporting Lesson Content: Time Series Forecasting

Lesson Title	Learning Outcomes
Fundamentals of Time Series Forecasting	➔ Understand trend, seasonal, and cyclical behavior of time series data
ETS Models	➔ Use time series decomposition plots ➔ Build out an ETS model in Alteryx
ARIMA Models	➔ Stationarize data through differencing, a process that prepares data for ARIMA modeling ➔ Build out an ARIMA model in Alteryx
Analyzing and Visualizing Results	➔ Use holdout samples to compare models and select the best one for a business problem ➔ Visualize your forecasts through various plots

Combine Predictive Techniques

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

Supporting Lesson Content: Segmentation and Clustering

Lesson Title	Learning Outcomes
Segmentation Fundamentals	➔ Understand the difference between localization, standardization, and segmentation
Preparing Data for Clustering	➔ Scale data to prepare a dataset for cluster modeling ➔ Select variables to include based on the business context
Variable Reduction	➔ Use principal components analysis (PCA) to reduce the number of variables for cluster model
Clustering Models	➔ Select the appropriate number of clusters ➔ Build and apply a k-centroid cluster model
Validating and Applying Clusters	➔ Validate the results of a cluster model ➔ Visualize and communicate the results of a cluster model