

OPMGT565, Fall 2022
Business Analytics: Tools for Big Data
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Class time: Mondays and Wednesdays, 1:30 pm - 3:20 pm

Class location: PCAR395

Office hours: Monday 3:30 -- 4:30 pm and/or by appointment, feel free to email me

Overview

Business analytics encompasses many techniques and skills that enterprises use to gain insights from their data and make better decisions. Many firms in a variety of industries use these techniques: Google, Amazon, Target, Coca-Cola, WalMart, Capital One, Facebook, etc. These techniques are also applicable to the many functional areas of business, such as operations, marketing, accounting, finance, etc.

This course introduces analytic techniques via quantitative tools and sophisticated software: descriptive analytics and visualization using Tableau and statistical modeling using Python. While we will be using a programming language to perform analysis, this is not a technical/coding or theoretical course. As such, I will not expect you to write any code from scratch, you will work with understanding, modifying, and interpreting provided code. This course does not aim to produce experts in statistical analysis, neither it aims to teach students to code; rather, the aim is to provide students with competency and confidence to interact with and manage a team of analytics professionals.

Course Learning Objectives

Upon completion of this course, you will be able to:

- think critically about business analytics, which includes finding the right data and selecting the right type of analysis for a given task;
- identify opportunities for applying business analytics in real business settings;
- be well equipped to become data-savvy managers.

Course Materials

1. [HBSP coursepack](#) with readings and cases; I marked cases/readings as optional to give you flexibility on when to purchase what; the coursepack includes a required game registration - every student will need to register for the game.
2. Class slides (posted on Canvas on the day of each lecture);
3. Publicly available articles and learning materials, links or files will be provided in the pages for the corresponding classes.

Notice that there is no required textbook for the course. There are many free and open-source resources on the topics we will cover that, you are free to use those, and I will provide links to the sources I recommend. If you would like to check out a few good books, here are some (not so technical) options that I like:

- [Data Science for Business](#) by Foster Provost and Tom Fawcett;
- [The Big Book of Dashboards](#) by Steve Wexler , Jeffrey Shaffer, et al.;
- [Storytelling with Data](#) by Cole Nussbaumer Knaflic.

Course Policies

This course relies on active student participation. Please come to class prepared, work on the individual and team assignments, and come ready to contribute to your and everyone's learning.

We will do coding in class, please come with your laptop, and be ready to use it in class. Be mindful of your computer use, multi-tasking is distracting for you and your peers.

Late assignments will not be accepted.

Required Software

We will be using Tableau and Python in this class.

Tableau

Tableau can be downloaded at <https://www.tableau.com/academic/students> and student licenses to Tableau are freely available. Tableau is also available remotely via [Foster's virtual labs](#).

Python

- Please go to <https://www.anaconda.com>. and download the installer for your system. **The first part** of [this guide](#) provides a step by step tutorial but the rest (Create Anaconda Environment from Navigator) is **optional**.

- Once Anaconda is installed, open Anaconda Navigator and you will see Jupyter notebook as one of the options on the landing page. Click Launch and a new webpage will pop up. Create a new Notebook by clicking New --> Python 3(ipykernal) and you are all ready to explore Python code.

- Useful Python Videos:

- [Intro to using Pandas](#)
- [Basics of data visualization and plotting using Matplotlib](#)

Class Teams

Many activities in this class will be conducted in teams. Please form teams of 3-5 students.

Here is a [Google sheet](#) to help you with team formation. Put your name/email down in one of the prepared Team slots and others will join you.

Data Insights Competition

We will spend the first 2.5 weeks learning about visualization best practices and techniques that allow you to extra insights from data. I will then give you a dataset, and you will compete in teams on posing and answering interesting and relevant questions using the visualization techniques. During Class 6, each team will present their question(s), dashboard(s), and discuss the insights they obtained from the

analysis. You will be assessed based on the questions chosen, techniques applied, and the quality of the obtained insights.

Case Assignments

For case assignments, please follow the instructions and questions posted on Canvas. Please upload the file with your solution (one submission per team) to Canvas, and be prepared to present your solution to the class and justify your analytical choices.

Individual Exercises

There will be multiple small individual exercises, these exercises are designed to make sure you prepare for the upcoming classes and are following the material. I will make the exercises available as we get closer to the relevant classes and will you send announcements when they are up.

Participation

To participate in class, you need to do the assigned readings, analyze the cases based on the questions given, and be ready to respond to questions and provide comments in class. Be prepared to be challenged and to defend your suggestions or solutions with careful and thoughtful analysis! Remember the random stack of cards from the OM core course? We will do it again :)

Final Project

Data Analytics are best learned by doing, which is why a large part of the final grade is based on a team project. The project will focus on the application of data analytics methods, using real data, and will be carried out throughout the quarter. Please refer to [this page](#) for project details.

Course grading

Activity	Grade weight	Type
Simulation Results and Discussion	5%	Individual
Data Insights Competition	15%	Team
Individual Exercises	15%	Individual
Case Assignments	25%	Team
Participation	15%	Individual

Final Project

25%

Team

Total

100%

Course Schedule

Date	Link to class page:
September 28, 2022	Class 1 -- Demystifying data science, machine learning, and AI
October 3, 2022	Class 2 -- Simulation debrief
October 5, 2022	Class 3 -- Storytelling with data, visualization best practices, intro to Tableau
October 10, 2022	Class 4 -- Generating business insights via interactive Tableau dashboards
October 12, 2022	Class 5 -- Advanced functionality in Tableau
October 17, 2022	Class 6 -- Data Insights Competition - Student presentations
October 19, 2022	Class 7 -- Intro to Python, Manipulating data, Multi-variable regression
October 24, 2022	Class 8 -- Regression diagnostics, step-wise regression
October 26, 2022	Class 9 -- Time series methods, Forecasting
October 31, 2022	Class 10 -- Time series methods, Forecasting continued
November 2, 2022	Class 11 -- Discrete Choice: Logistic Regression, CART
November 7, 2022	Class 12 -- Discrete Choice continued
November 9, 2022	Class 13 -- Unsupervised Learning: Clustering and Segmentation
November 14, 2022	Class 14 -- Unsupervised Learning: Clustering and Segmentation continued
November 16, 2022	Class 15 -- Recommender Systems
November 21, 2022	Class 16 -- Recommender Systems: Applications
November 23, 2022	No class, Happy Thanksgiving!

November 28, 2022	Classes 17 and 18 -- AI for Text Mining
November 30, 2022	Classes 17 and 18 -- AI for Text Mining
December 5, 2022	Presentations
December 7, 2022	Presentations

Teamwork

For team assignments, I expect every team member to contribute to the final product in a fair way (this applies to case assignments and course project).

At the end of the course, I will ask every student to confidentially evaluate other team members' contribution to the team projects. These evaluations will be considered in grading of all team-based work.

Academic Integrity

Please treat the program, your classmates, your instructors, and yourself with respect at all times. When working in teams, collaboration *within* the group is expected and encouraged, however, each team should work independently and submit their own work (not borrowing from other teams or from other, potentially online, resources).

Religious Accommodations Policy

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy](#). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form](#).