

BUAD621 Syllabus Summer 2019

Welcome to *BUAD621: Decision Analytics and Visualization*. The skills learned in this class will make you competent with leveraging data to make interpretable, persuasive, and visual recommendations that inspire action and lead to better outcomes. To do this, you will learn to traverse and combine the four disciplines shown in Figure 1: 1) Communication, 2) Probability/Statistics, 3) Computation/Programming, and 4) Business. The traversal of these skill-sets is part of a methodology known as the *Business Analyst Workflow* that includes capturing, manipulating, transforming, modelling, visualizing, and presenting data to inspire process-improving decisions and actions within a firm.

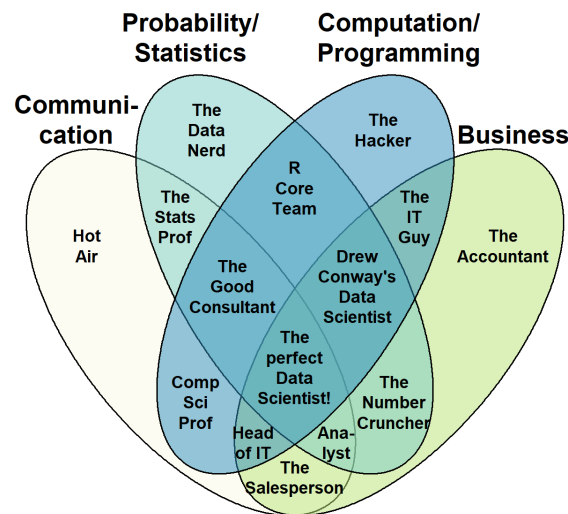


Figure 1: Data science is the combination of communication, statistics, programming and business disciplines. You will start to master traversing between all four of them during this course.

Class Info: BUAD621-172 *Decision Analytics & Visualization*, Tu Th 4:00pm - 8:00pm NCC Office. Website: <http://www.udel.edu/canvas>.

Professor Contact Information: Professor Adam J. Fleischhacker. You can reach me at ajf@udel.edu or via the course website on CANVAS. You can call me, “Adam”, “Professor”, or if you are brave you can even try my last name by saying “Professor Fleischhacker (pronounced fly-shack-er)”. ZOOM web conferencing available upon request at <https://zoom.us/j/7228418439>.

Computing Requirements: (*laptop required for each class*) We will be doing data analysis using a statistical computer program called R and accessing R via another program called RStudio. Both programs are free and run on Windows, Mac, Linux, or accessed in the cloud via browser. While those with good computer skills may find using R easier than people who are newer to computer programming, the investment in learning R is worth it. R is used for data analysis in many of the world’s best companies. See this article for example: <https://www.northeastern.edu/levelblog/2017/05/31/big-companies-using-r-data-analysis/>. In addition, it has an accompanying eco-system that make it well-suited for business analytics; one can go from data manipulation, to modelling using the latest techniques, to visual insight, all within this eco-system.

Required Book: We will use a draft version of a book that I am writing (cover shown in Figure 2) along with additional materials that are freely available. Book content is available both as PDF files via CANVAS and at the book’s website: <http://causact.updog.co>

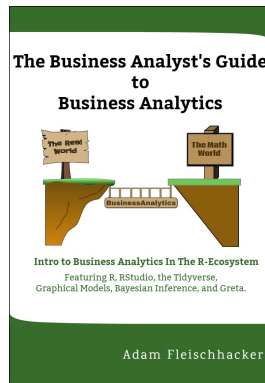


Figure 2: Book cover for The Business Analyst's Guide to Business Analytics.

Grading

There will probably be three distinct assessment types used in this class:

1. HW Quizzes: These quizzes are mostly to ensure you are gaining the skills of a data scientist.
2. "Client" Deliverable: The client deliverable will ensure your ability to present insights in a clear and engaging way.
3. Participation: This grade is to encourage you to take ownership of learning the material.

Assessment Type	Percentage of Overall Grade
HW Quizzes	80%
Deliverable	10%
Participation	10%

Homework Quizzes: Four homework quiz sets are due Wednesday of each week (starting 6/19) and are to be submitted via the course website by 11pm. Late homework (even one second late) is evidence of poor effort and grading is done to encourage good effort; hence, late homework will not be accepted. Homework must be done individually and **computer work cannot be shared between students**. That being said, seeking guidance from the discussion board on CANVAS, me, another student, or any materials you can find on the Internet or in textbooks is encouraged when you get stuck or for clarification. I encourage you to discuss the HW just do not share materials; simply discuss. For quiz questions with numerical answers, you will be given four attempts at each homework quiz. **The questions will change with each attempt, be careful to answer the current version of the quiz.** Partial credit is not given. Up to four missed points will automatically be forgiven to accomodate any unforeseen issues that prevent you from completing all your HW.

Lab Hour: Practice with the material is the only way to master it and hence, my grading encourages you to start HW early. Each Tuesday, there is a *lab hour* on the schedule, it runs from 7- 8pm and are reserved for working on the HW with myself and your fellow classmates available to answer questions. To take advantage of it, start your work well in advance of the due date ... a big component of learning computer programming is having the time to simply walk away when frustrated and come back to the material at a later time with fresh eyes. Please note that there is significantly more HW than can be completed in a 1 hour lab session, so come to the labs already having attempted the HW quizzes. *If you have completed all of the HW Quizzes for full credit, you do not need to attend the lab day and will still earn full credit for participation in the lab.*

Participation: A participation point is earned by 1) attending class, 2) never glancing at your cell phone without prior approval given by the professor (e.g. you are waiting for a call from a potential employer), 3) keeping laptops focused on course materials, and 4) keeping your minds remaining fully engaged in the class. This will be monitored through CANVAS attendance and you will be marked absent for even small violations of any of these four criteria.

Core Meta-Learning Principle (Waitzkin 2008)

I will advocate that you embrace an important principle about the learning process itself:

- *Productive struggle* - Growth comes at the point of resistance - we learn the most when we're outside of our comfort zone.

This is your journey and it is your responsibility to persevere through the challenging material of this class. At times, you will feel frustrated, mad, and exhausted. This is part of the process and part of the class is to learn that you will succeed in the end through perseverance and starting the work early.

Schedule (subject to change)

Date	Module #	Class Topic
06/11/19	1	Motivating the class, Introduction to the R-Ecosystem, Manipulating Data Intro
06/13/19	1	Manipulating Data + Data Viz Intro
06/18/19	2	Data Visualization
06/20/19	2	Representing Uncertainty
06/25/19	3	Decisions Under Uncertainty
06/27/19	3	Joint Distributions
07/02/19	4	Bayesian Updating
07/04/19	4	Probabilistic Graphical Models
07/09/19	5	Multi-Level Modelling
07/11/19	5	Inspiring Action

References

Waitzkin, Josh. 2008. *The Art of Learning: An Inner Journey to Optimal Performance*. Simon; Schuster.