

MSAN 603
Big Data Business Strategies
SPRING 2017

Instructor: Nicholas Ross

Time and Location: Sec 1: TuTh 11:05AM-12:55PM Howard 529
Sec 2: TuTh 11:05AM-12:55PM Howard 529

Contact: email: ncross@usfca.edu

Office Hours: Main Campus: Malloy 315: MW 12-1PM (Main Campus)
Downtown campus: By appointment

Overview and Objectives

The purpose of this class is to provide students with a business-orientated understanding of big data and how it is applied within organizations. To that end we will take a case-based approach which focuses on common situations that data scientists may find themselves at odds with less data-orientated individuals within an organization. The second part of this class is thinking about the business of big data, with a focus on career issues and what makes a job “good.”

As with just about everything else, there is good news and bad news. The good news is that learning about these topics will help inform your career and may even spark your interest in something that you didn’t know you were interested in.

The bad news... is that there is no standard curriculum for this class. While some other Masters of Analytics programs offer a course similar to this, there is no consistent framework or book to be relied upon. As a result, the information presented is biased toward what has helped me in my career. I’ve spent over 5 years in business school and another decade working in data analysis (when I started in “big data”, “big” meant more than a gig), so I’m not without experience, it just that my experience is biased.

While this class focuses on practical applications and examples, I will touch on theory when I believe that theory is useful. I assure you that when I am deriving things it isn’t because I don’t have other stuff to say, it is because there is something to be gleaned in that derivation.

Modern data-focused business decision-making is a function of communication, presentation, and the ability to convey complex mathematical and statistical results to laypeople of various backgrounds. As such, style, presentation, grammar and communication will be focused on heavily in this class.

This class will also offer students the opportunity to ask questions of data scientists and analysts across a spectrum of different technology-related fields. During these times, students will be expected to act professionally.

Course Outline

1. Tracking (3 Weeks)

- Lesson Objectives:
 - Understand the process of instrumentation, with a focus on how business, product and operational questions are answered by data
 - Identify the positives and negatives around different user tracking systems
 - Use best practices to create useful funnel analysis and interaction analysis
 - Be capable of creating tracking events, labels and metadata to efficiently answer business questions
- Assignments / Reading:
 - **Case #1:** Port of Oakland
Lesson objective: Program a Monte-Carlo simulation and bootstrap statistical estimators
 - **Case #2:** Funnel Analysis
Lesson objective: Use bootstrapping techniques to understand how timing and variance effects the analysis of funnels
 - **Case #3:** Kik Messenger
Lesson objective: Translate business questions and product problems into an event tracking system using best practices. Complete a SWOT analysis.
 - **Case #4:** AB-Testing
Lesson objective: Use Statistical testing to analyze AB test results.

2. Auctions (2 Weeks)

3. The business of big data. Finance, Valuation and Salaries

Grades will be determined along the following lines:

- Projects: 60%
 - There are two types of assignments: those worth 10 points and those worth 100 points. At the end of the course these will be averaged together with the 100 point assignments being worth much more than the 10 point assignments. The weighing will be a function of the amount of material covered.
- Final Exam: 20%
- Professionalism : 20%

Odds and Ends:

- For each assignment, groups will be formed and that group will work together to solve the problem. Note that, unlike the SQL course, grading will be strict.

- Grammar is important. While much of the class work is quantitative in nature, assignments that require written communication will be judged (harshly) if they fail to be clearly constructed.
- Cheating is not tolerated. At all. Unless an assignment is clearly designated as group work, I expect it to be done alone. USF's honor code can be found online and I expect it to be followed. Disciplinary action will be taken against any student found violating this code.
- As a Jesuit institution committed to *cura personalis* - the care and education of the whole person – USF has an obligation to embody and foster the values of honesty and integrity. USF upholds the standards of honesty and integrity from all members of the academic community. All students are expected to know and adhere to the University's Honor Code. You can find the full text of the code online at www.usfca.edu/academic_integrity. The policy covers:
 - Plagiarism – intentionally or unintentionally representing the words or ideas of another person as your own; failure to properly cite references; manufacturing references.
 - Working with another person when independent work is required.
 - Submission of the same paper in more than one course without the specific permission of each instructor.
 - Submitting a paper written by another person or obtained from the internet.
 - The penalties for violation of the policy may include a failing grade on the assignment, a failing grade in the course, and/or a referral to the Academic Integrity Committee.
- Attendance is required. Unless a student gives me prior warning, all absences are considered unexcused.
- The quickest way to reach me is via email. While I don't have any official office hours, I will gladly find a time and place where we can meet if that proves necessary.
- Class participation is required. This is a big part of your grade. I expect class to include discussions. Just to make this clear and give you an even bigger incentive to pay attention and ask questions, if you catch me making a mistake, I will give you a chocolate (if you are allergic to chocolate, please let me know).
- I have generally tried to find free online resources, rather than requiring textbooks. For some topics, I will put down recommendations for resources and further reading. They are not required.
- If you are a student with a disability or disabling condition, or if you think you may have a disability, please contact USF Student Disability Services (SDS) at 415 422-2613 within the first week of class, or immediately upon onset of disability, to speak with a disability specialist.

If you are determined eligible for reasonable accommodations, please meet with your disability specialist so they can arrange to have your accommodation letter sent to me, and we will discuss your needs for this course. For more information, please visit: <http://www.usfca.edu/sds> or call (415) 422-2613.

- All students are expected to behave in accordance with the Student Conduct Code and other University policies (see <http://www.usfca.edu/fogcutter/>). Open discussion and disagreement is encouraged when done respectfully and in the spirit of academic discourse. There are also a variety of behaviors that, while not against a specific University policy, may create disruption in this course. Students whose behavior is disruptive or who fail to comply with the instructor may be dismissed from the class for the remainder of the class period and may need to meet with the instructor or Dean prior to returning to the next class period. If necessary, referrals may also be made to the Student Conduct process for violations of the Student Conduct Code.
- As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as a faculty member. I am required to share information regarding sexual misconduct or information about a crime that may have occurred on USF's campus with the University. Here are other resources:
 - To report any sexual misconduct, students may visit Anna Bartkowski (UC 5th floor) or see many other options by visiting our website: www.usfca.edu/student_life/safer.
 - Students may speak to someone confidentially, or report a sexual assault confidentially by contacting Counseling and Psychological Services at 415-422-6352.
 - To find out more about reporting a sexual assault at USF, visit USF's Callisto website at: www.usfca.callistocampus.org.
 - For an off-campus resource, contact San Francisco Women Against Rape (SFWAR) (415) 647-7273 (www.sfwar.org).
- All assignments are to be submitted in PDF format.