Stat 4911: Introduction to Statistical Inference for Data Analytics
Spring Semester, 2020

Instructor

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Office Hours:

Tuesday 11:00 am - 12:00 pm, Pomerene Hall 161
Thursday 11:00 am - 12:00 pm, Pomerene Hall 161
By appointment, Pomerene 114 or Cockins Hall 327
I strongly encourage proactive attendance of office hours.

Course Structure

Course Description: A teamwork-based synthesis of the Data Analytics major curriculum through the analysis of data supplied by a partnering institution. Prepares students for the complexity of data analysis they will encounter outside of the university in a mentored setting.

Prereq: 4620, or permission of instructor.

The goal of this course is to prepare students for a more realistic representation of what a career in statistics/data science/data analytics will be like. We will work closely with clients from the Ohio State Office of Advancement who have a great deal of data related to many years of charitable giving to OSU.

Thus, expect the pace and expectations of the course to change from time to time as our clients' goals and expectations evolve.

Tentative timeline:

Week 1: meet with clients; learn about the data, client goals and expectations (January 9?)

Week 2: begin work on Project 1

Week 3-5: work time, concept review, readings

Week 6: present Project 1 results and findings to clients (February 11 and 13?)

Week 7: differentiate groups; begin work on Project 2

Week 8-13: work time, concept review, readings

Week 14: present Project 2 results and findings to clients (April 14 and 16?)

Required Course Materials

Required software: R programming language (https://www.r-project.org/) and the R Studio coding platform (https://www.rstudio.com/) will be used in class and for programming assignments. These resources are open-source and free to download.

Class Policies

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Student conduct: all students, TAs, graders, and the professor must feel safe, comfortable, and welcomed in our classroom. Additionally, any behavior that detracts from a reasonable learning environment, such as inappropriate talking during class, is not permitted. Students who do not show this respect to others or who cause disruption to other students or the instructor will be asked to leave. University policies should be reviewed here: https://studentconduct.osu.edu/.

Any student who feels as though they have been affected by a breach of the student code of conduct should discuss it with their TA or professor. A formal report can be filed here: https://studentconduct.osu.edu/.

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu

Distractions: cell phones should be kept away during class. Although we will often be coding during class, laptops should be used only for class-related activity. Absolutely no TV streaming or other content that can distract others is permitted.

Communication: due to FERPA considerations, all electronic communication with your TA and professor must be done with your official Ohio State email account. Email subject lines

should be reasonably informative, including the student's name, class section (TR or WF), course number, and brief subject. Emails should be written professionally and respectfully.

Attendance: **students are expected to attend all lectures**. Because Ohio State does not have a universal student absence policy, **absences will be considered on a case by case basis.** Your case may be strengthened with documentation such as doctor's notes, OSU athletics schedules, court summons, advance notice, and strong prior attendance. In the event of illness, **personal medical details are none of my business**. In the event of an excused missed assignment **it is the student's responsibility to schedule a mutually agreeable time with their TA or professor to complete the assignment**.

Disability and Learning Accommodations: students with documented accommodations should discuss their needs with the professor as soon as possible, and ensure all necessary requirements have been fulfilled on behalf of the Ohio State Office of Student Life Disability Services.

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

Academic Integrity

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of

plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Grades and Assignments

In general, all assignments must include thorough work. Work must be neat, organized, and presented professionally. All assignments must represent the student's own unique work.

Project 1	Project 2	In-Class Assignments	Reading Assignments
30%	40%	15%	15%

Project 1: the Office of Advancement will provide a data set related to charitable giving at The Ohio State University. All students will work to answer a common research goal/objective. Projects will be completed in groups of 4-5.

Project 2: Once we have had some time to familiarize ourselves with the data, the Office of Advancement will provide some opportunities to differentiate their objectives. Projects will be completed in groups of 4-5.

Projects will be graded based on the following criteria, as outlined by the Department of Statistics:

1) Demonstrate the ability to take a general statement of a problem and clearly identify a specific formulation of it that can be studied with available data and information.
2) Demonstrate the ability to identify appropriate analytic tools for solving the stated problem.
3) Demonstrate the ability to appropriately refine an analysis based on an initial exploration of the data.
4) Demonstrate the ability to show how the results of an analysis improve our understanding of a problem.
5) Present findings in an accessible format that addresses the clients' main goals and needs
6) Perform all of these tasks with the professionalism expected of a full-time employee

I will assess these criteria throughout the semester, through my interactions with students, discussions with clients, and evaluation of the presentation.

In-Class Assignments: occasionally we will complete coding assignments, concept quizzes, or practical assignments in class to review or introduce key concepts for data scientists. These assignments will be graded based on correctness.

Reading Assignments: occasionally readings will be posted to Carmen. Brief assignments to assess understanding will be posted to Carmen to be completed outside of class. These assignments will be graded based on correctness.

Grading Cutoffs: cutoffs are inclusive. For example, a 93.0000% earns an A. 92.9999% earns an A-. Anything below 60% earns an F. In the interest of fairness to all students, grades will not be adjusted for individuals.

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
93%	90%	87%	83%	80%	77%	73%	70%	67%	63%	60%	Below 60%

Grade disputes: If you believe that an error was made regarding a grade, you have one week from the date it was returned to the class to submit a dispute to the instructor. Disputes must be submitted in writing, and clearly explain why the grade should be reviewed. The instructor may reject disputes, and/or review the entire assignment and potentially revise other errors previously made during grading. The instructor will review all disputes on a case by case basis.

Data Analytics Learning Center

GTAs for **Stat 3201, 3202, 3301, 3302, 3303** and **4620** will hold their office hours in the DALC. You can find the hours during which the GTA for your Statistics class will be available [here](). If the DALC is staffed by a GTA for another Statistics course when you stop by, he or she will help you if possible, but may not be able to answer all of your questions.

In rare situations due to last minute emergencies, the Statistics GTA assigned to the DALC may not be able to attend his or her office hours. If the DALC is closed when the schedule indicates it should be open, we recommend waiting for a few minutes. If the room is still not staffed by your Statistics GTA after a reasonable amount of time, please email your instructor to let us know about the problem. You can also contact your Statistics GTA to see about arranging a make-up time to meet.

Topics and Readings

1) Introduction to data subject area
2) Exploratory data analysis
3) Data ethics
4) Problem identification
5) Project scoping and planning
6) Statistical modeling and analysis
7) Model criticism and refinement
8) Report writing
9) Presentations

Changes to this Syllabus

The instructor reserves the right to update policies as necessary throughout the semester, so students should review this document periodically. Changes will be announced to students in class and/or through Carmen.

For situations not described in this syllabus, the instructor reserves the right to review circumstances on a case by case basis.