DUKE UNIVERSITY **DEPARTMENT OF STATISTICAL SCIENCE**
DURHAM NC 27708-0251 - USA

STA 470S: Introduction to Statistical Consulting — Fall 2023

Professor: Dr. Ed Iversen
iversen@duke.edu
Old Chemistry 122B

Class:	Tuesday/Thursday 11:45am – 1:00pm	Old Chemistry 025	In Person
		Click Here to Join Zoom	Remote
Office hours:	Wednesdays 1:30–2:30pm	Old Chemistry 122B *or* Click Here to Join Zoom	Ed Iversen
	Mondays 2–3pm or by appointment	Old Chem 203B kat.husar@duke.edu	Kat Husar

Course Synopsis:

This course immerses students in real world consulting, exposing them to all aspects of research including data collection, modeling, and evaluating results. Through the campus–wide consulting program, students work with researchers from a multitude of disciplines providing recommendations for statistical methodologies appropriate for their research. Projects are also examined through the lens of research ethics underlying data collection, model assumptions, analysis, reproducibility, and reporting of results. Case studies will highlight what can go wrong in interdisciplinary research when researchers are not vigilant of the highest ethical standards.

Course Format:

Class time is split between the following components:

- *Client meetings and presentations.* Clients of the Statistical Consulting Center (SCC) — typically Duke students or faculty; sometimes members of the larger community — present their statistics questions and the relevant research background in class. All students are expected to actively participate in the discussion surrounding the presentation as all will materially contribute to the SCC's report to the client describing our recommendations.

  The class membership is partitioned into small groups and assigned focused tasks related to the project and report. In particular, one group is tasked with writing and revising the SCC's report while the remaining groups provide supporting materials — background research, text describing specific recommendations, a summary of a relevant method — to the primary writing group. Supporting materials are delivered either in the form of an in–class presentation, as a written document, or both.

- *Discussion and peer evaluation of client–focused products.* Class time will be allocated to discussion of professional communication skills, both written and spoken, using in–class presentations, draft

reports and supporting documents as vehicles. All members of class will participate in peer review and revision of these documents.

- *Consulting best practices.* Readings and discussion on statistical consulting best practices.
- *Research ethics.* We will consider individual consulting projects through the lens of research ethics. In addition, the class will engage in focused discussions of ethics as it pertains to the practice of statistics and review case studies highlighting what can go wrong in interdisciplinary work when those involved do not follow the highest ethical standards.

Assignments:

For each client–based project, several (usually 2–4) students will be teamed together, with each such group tasked with writing a portion of the client report and with participation in the presentation of our recommendations to the client. All students will participate in peer evaluation of these documents and presentations and in their revision. The faculty member and TA will be available to serve as mentors throughout this process and will provide and discuss a formal evaluation of the first drafts of the reports and supporting documents.

Depending on client load, students registered for STA 470 may have one or more case–study–based data analysis assignments.

Grading:

Your final grade in the class will be split between

1. *participation* in class discussions, project–oriented online (via Sakai) discussions and peer evaluation exercises (25%);
2. *oral presentations* to a client, as class background or otherwise in support of a client report (25%); and
3. *writing assignments* (50%).

To achieve a high participation score you must participate actively and make valuable contributions to small as well as large group (class as a whole) discussions. Your presentations must reflect that you have understood the problem and thought about it critically, even though you may not have arrived at a solution.

This class is allied with Duke's Statistical Consulting Center (SCC) and, as such, is part of a functioning academic consulting practice. The SCC is a professional service to the Duke community and it is expected that client meetings and the reports we generate for our clients meet a high standard. Our clients' research depends on the quality of our consulting.

Academic Integrity:

Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Citizens of this community commit to reflect upon and uphold these principles in all academic and non–academic endeavors, and to protect and promote a culture of integrity. Plagiarism on homework assignments, lying about an illness or absence, and other forms of academic dishonesty are a breach of trust with classmates and faculty, violate the Duke Community Standard, and will not be tolerated. Such incidences will result in a 0 grade for all parties involved as well as being reported to the Office of Student Conduct. Additionally, there may be penalties to your final class grade. Please review the Duke's Academic Dishonesty policies at http://www.studentaffairs.duke.edu/conduct/z-policies/academic-dishonesty.

Policies:

- *Late work policy on assignments is as follows:*

  - There will be no opportunity for make–up assignments due to the nature of the class; some flexibility with due date/times may be possible with advance notice of a conflict.
  - Late work penalties: 3/4 credit if after class on due date; 1/2 credit if received the following day; otherwise no credit.

- *Attendance is expected of all students* and is critical to the function of our consulting center.
- *Use of Artificial Intelligence Tools:* Since the primary objective of this course is to develop and hone your professional communication skills in writing, conversation and formal presentation, all assignments must be prepared as instructed and by you and your class team mates. In particular, *unless explicitly instructed to do so as part of an assignment, the use of AI tools such as generative text models is prohibited*, falling under the definition of plagiarisim at Duke. There may, however, be one or more assignments over the course of the semester in which we experiment with generative AI as a tool for assimilating, learning, teaching and otherwise conveying information to our clients and to one another.
- *Attendance Policy Related to COVID Symptoms, Exposure, or Infection.* Student health, safety, and well–being are the university's top priorities. To help ensure your well–being and the well–being of those around you, please do not come to class if you have symptoms related to COVID–19, have had a known exposure to COVID–19, or have tested positive for COVID–19. If any of these situations apply to you, you must follow university guidance related to the ongoing COVID–19 pandemic and current health and safety protocols. If you are experiencing any COVID–19 symptoms, contact student health at 919-681-9355.

  To keep the university community as safe and healthy as possible, you will be expected to follow these guidelines. Please reach out to me and your academic dean as soon as possible if you need to quarantine or isolate so that we can discuss arrangements for your continued participation in class.

Resources:

Writing Studio. Please feel encouraged to set up a synchronous online appointment with the Writing Studio, a place beyond our classroom to work collaboratively with an attentive, nonevaluative reader. You can schedule an appointment at any stage in your writing process, including before you have even started writing. You'll find friendly student consultants who are eager to talk with you about your writing and think with you about ways to make your processes even more effective. Visit http://twp.duke.edu/twp-writing-studio to schedule an appointment and to learn more about Studio resources.

Students with demonstrated high financial need who may have limited access to computers and stable internet may request assistance in the form of loaner laptops and WIFI hotspots. For new Fall 2021 technology assistance requests, please go here. Please note that supplies are limited. For updates, please visit keeplearning.duke.edu.

For *technical help with Sakai or Zoom*, contact the Duke OIT Service Desk at https://oit.duke.edu/help. You can also access the self–service help documentation for Zoom here and for Sakai here. The ARC (Academic Resource Center) has a student–friendly learning online guide and Zoom instructions here. Look on the sidebar on the left.

The *Academic Resource Center (ARC)* offers free services to all students during their undergraduate careers at Duke. Services include Learning Consultations, Peer Tutoring, Learning Communities, ADHD/LD Coaching, Outreach Workshops, GRE/MCAT Prep, Study Connect, and more. Because learning is a process unique to every individual, we work with each student to discover and develop their own academic strategy for success at Duke. Contact the ARC to schedule an appointment. Undergraduates in any year, studying any discipline can benefit: arc.duke.edu / theARC@duke.edu / 919-684-5917, 211 Academic Advising Center Building, East Campus – behind Marketplace.