STA490: Statistical Consultation, Communication, and Collaboration

Course information

The purpose of the course is to develop skills in the collaborative practice of statistics. This will be done through class discussion, readings, case studies, and a collaborative project. Course activities develop skills in statistical problem solving and oral and written communication, and engage you in issues related to appropriate and ethical statistical practice.

Teaching team

Instructor: Nathalie Moon
Please call me: Nathalie
How do you pronounce that?

- Nathalie: the "h" is silent
- Moon: like the English word!

Pronouns: she/her
Email: sta490@course.utoronto.ca
Class meetings: Thursdays 10:10 to noon ET
Project meetings: Mondays 12:10 – 2pm ET
Office hours: TBA, details will be posted on Quercus

Project Mentors: Marco Antonio Gallegos Herrada, Yovna Junglee, Kathleen Miao, George Stefan, Emily Somerset

Writing TA: Vajini Atukorale

Course delivery

Seminar meetings:

- Thurs 10 a.m. to noon ET
- In person (Room information on ACORN)

Project meetings:

- (most) Mondays noon – 2pm ET
- In person (Room information on ACORN)

All course materials will be posted on Quercus (q.utoronto.ca)

Course mantra

It's OK not to know.

Expressing ignorance is encouraged.

It's not OK to not have a willingness to learn.

Land acknowledgement

The land on which our university operates is the traditional lands of the Anishinaabe, the Haudenosaunee, and the Mississaugas of the Credit. With the Dish with One Spoon treaty, these peoples agreed to share and protect this land, and all those who have come here since, both Indigenous and non-Indigenous, are invited into this treaty in a spirit of respect and peace. This land is also, more recently, subject to Treaty 13, a treaty between the Mississaugas and the British Crown.

In this course, we are coming together to discuss statistics, a field that has been part of historical and ongoing colonization, oppression, and harm of Indigenous peoples. Let us remind ourselves of our responsibilities to this land, its original peoples, and to each other and work to be ethical and culturally competent practitioners in our chosen fields.

Learning objectives

By the end of the course, you should be able to:

1. Connect general scientific questions from researchers from other disciplines to statistics through distilling essential features of the problem, asking good questions, and restating the collaborator's answer to check understanding
2. Evaluate and critique data analyses and solutions to statistical problems – both your own and those of others (e.g. recognize limitations, biases, etc.)
3. Conduct all stages of a statistical analysis: understand the background, formulate research questions in quantifiable terms, explore and wrangle data in a reproducible manner, choose and implement appropriate methods and evaluate their relative merits, and report on results in a reproducible manner
4. Collaborate effectively in a team to evaluate methodology and provide insights into researcher questions
5. Communicate statistical ideas and findings to a range of audiences using oral, written, and visual methods
6. Understand and apply ethical considerations to your professional practice
7. Cultivate self-directed learning skills to analyze, adapt, and enhance your own educational and professional development processes.

How to succeed in the course

- Work on your project *every week*
    - Set yourself mini deadlines, especially during analysis and writing
- Update your project log 'real-time' (don't leave it till the last minute)
- Do the readings and the reading check-ins (when applicable)
- Be prepared and on time for all classes and project meetings (see the questions for seminar meetings)
- Ask good questions
- Do all the assigned work on time
- Demonstrate that you are trying

Thursday seminar meetings (every week)

Seminars are different from lectures. Sometimes, part of the meeting time will be dedicated to a formal lecture with slides highlighting key concepts. Most weeks, there will be assigned reading or work which must be done in preparation for the seminar meeting, and you are responsible for coming to class ready to identify aspects of the readings which need to be discussed further and for raising questions about points which are unclear. During discussions, you should be listening for three things to help you shape the group discussion that follows:

1. Relevant questions / concepts / issues which require further discussion
2. One question / concept / issue which you don't yet fully understand
3. One question / concept / issue which you are interested in and would like talk about more

Monday project breakout meetings (most weeks)

Project breakout meetings will be held on Mondays from 12:10 – 2pm; the schedule will be available on Quercus. Your project mentor will be present at these meetings to guide you and provide advice, but you are responsible for coming to these meetings ready to speak about the work you've done on your project over the previous week, raise questions or challenges you've encountered and come up with strategies to solving these as a group. The activities in these breakout sessions will vary, but may include the following:

- Introduction to your collaborative project
- One-on-one chats with your graduate student mentor to discuss your progress on your project
- Group discussion to discuss strategies for analysis, compose questions for your collaborator, etc.
- Check-in meetings with research collaborator

Note: you are expected to work on your project every week, whether you have a scheduled project meeting or not.

Missed Thursday or Monday meetings

This course is discussion-based, so I expect that you will attend. Most class meetings and discussions will not be recorded. However, if you are unwell, it is important that you take care of yourself.

Missing a Thursday seminar: If you are unwell or experience a personal emergency which prevents you from attending a Thursday seminar meeting, please contact the course instructor at sta490@course.utoronto.ca as soon as possible. You may be required to submit a written response to demonstrate your reflections about the week's discussion topics or undertake an alternative task.

Missing a Monday Project Meeting: Please **do not** attend in person if you are experiencing cold and flu-like symptoms or believe you may be contagious; some of your classmates may be immunocompromised or live with someone who is. In this event, you must email your project mentor as soon as possible:

- If you feel well enough to participate, but are concerned about minor symptoms or an exposure, contact your project mentor to arrange to join the meeting online via Zoom.
- If you are not well enough to participate, communicate with your project mentor as soon as possible to let them know. If you were responsible for preparing something for the meeting, make your best effort to send this to your group as well, so as not to harm your group's progress.

Frequent Missed Seminars or Project Meetings: It is normal (and expected) for everyone to get sick or experience personal emergencies that prevent them from attending class occasionally. Occasional absences, *with appropriate notification of the course instructor (Thursdays) or project mentor (Mondays),* will not result in penalties. However, if you are absent frequently, you should reach out to your registrar and sta490@course.utoronto.ca to seek support and potential accommodation. Active engagement is required to complete this seminar course.

Collaborative project

Much of the course will be structured around a major collaborative project. Students will be divided into groups of 3-4 and assigned a graduate student mentor to guide and support their work on this project. While most project work will be submitted and assessed individually (see the next section), active participation in project meetings is expected.

How will your success be measured?

	Weight	Due date(s)
Active Engagement and Participation (Thurs & Mon)	**20%**	Ongoing
Fall term project	**17%**	
EDA	(1)	October 2
Statistical Analysis	(5)	October 18
Draft Report	(2)	November 8
Reproducibility Report	(3)	November 20
Final Report	(6)	November 29
Collaborative Project	**46%**	
EDA	(5)	January 24
Technical summary	(10)	February 28
Draft Report #1 & peer feedback	(2)	March 7
Draft Report #2	(2)	March 19
Final Report	(12)	April 4
Project presentations (3 times, in class)	(3 x 3)	Nov 21 / Nov 28 Jan 30 / Feb 6 Mar 27 / Apr 3
Presentation to collaborator	(3)	March 25 or earlier
Project logs	(3)	Weekly until Feb 28
Statistical Spotlight	**10%**	
Presentation	(5)	January 9
Creative submission	(5)	March 21
Reflection	**7%**	
Mid-course reflection	(3)	January 31
Career reflection	(3)	March 14
Reflective Study Surveys	(1)	September 20 & April 4

Dates are tentative, but unlikely to change.

Readings and references

Required readings will be posted on the course page on Quercus. You will use Perusall to annotate the readings as you review them, in preparation for each class meeting.

Anytime you need a reference on a statistics topic (software or methodology), start by seeing what you can find on your own, then ask your graduate student mentor or course instructor.

Communication

Please email your instructor at sta490@course.utoronto.ca about course matters. The instructor may contact the entire class by email and/or Quercus announcements. The email address linked to your student account will be used—please make sure that you regularly read the email that goes to that account.

Your project mentor will provide you with information on how to best ask questions about the project between meetings and how to contact them.

See *Missed Thursday or Monday meetings* section above for information about communication if you need to miss a meeting.

Late/missed work

No late work will be accepted without prior approval from the instructor. Many of the tasks in this course are scaffolded, so completing them late interferes with your ability to complete later coursework.

When possible, alert your instructor to potential issues as early as you can. This will allow us to work together with you to find a suitable solution.

If you submit an assessment, it will be assumed that you deemed yourself fit enough to do so and your grade will stand as calculated. No accommodation can be made based on claims of medical, physical, or emotional distress after the fact

Marking concerns

Any request to have an assessment remarked must be emailed to the course instructor at sta490@course.utoronto.ca within one week of the grades being posted; your request will be reviewed by the course instructor (in consultation with your graduate student mentor, as appropriate). Your request must include:

- your name and student number,
- a **detailed written justification** for your request; it is **not enough** to simply say that you believe your work deserves higher credit.

Please note that we reserve the right to review the grading of your entire submission when you re-submit an assessment for reconsideration (i.e., your grade could go down).

Computing and minimum technical requirements

We will be using RStudio to make reproducible data analysis reports using R and R Markdown.

You can use RStudio on your personal machine or through the U of T JupyterHub: jupyter.utoronto.ca.

To participate in office hours you will need a **U of T Zoom account.** If you do not yet have one, go to https://utoronto.zoom.us/ to set one up. To participate fully, you will need Desktop client or mobile app: version 5.3.0 or higher or ChromeOS: version 5.0.0 (4241.1207) or higher. You can check your desktop client or mobile app version by following these instructions. The office hour schedule will be posted on Quercus; if you have a conflict with the posted times, please email sta490@course.utoronto.ca for alternative arrangements.

The purpose of STA490 is *not* to teach you how to program in R. The expectation is that that you know enough from your previous courses and have strategies for debugging and learning new things as needed. This is what would be expected of you in the world of work. That said, we know everyone may have had slightly different pathways to this class.

Here are some useful resources to brush up on your R skills:

- Chapters 3 and 5 of R for Data Science by Hadley Wickham & Garret Grolemund (this whole book is awesome!)

Accessibility

The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom, or course materials, please contact Accessibility Services as soon as possible: email accessibility.services@utoronto.ca or visit the website at http://accessibility.utoronto.ca

If you have an accommodation letter from your accessibility advisor that is relevant to this course, please do the following:

- *Email your letter to the instructor for your section with "Accommodation letter" as part of the email subject, CC your advisor and let us know anything else you wish us to know/any questions you have. Please do this as soon as possible after you enrol in the course/receive this syllabus.*
- *Confirm any accommodations for **each** specific assessment at least **1 week** before the assessment / due date.*

Religious accommodation

At the University of Toronto, we are part of a diverse community of students, staff, and faculty from a wide range of cultural and religious traditions. If you anticipate missing a course activity due to a religious observance, please let me know as early in the course as possible. With sufficient notice—ideally at least three weeks—we can work together to make alternate arrangements.

Academic integrity

Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the University of Toronto degree that you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

Plagiarism

In this course, probably more than your previous statistics courses, you may be at risk of plagiarising if you do not understand the rules and your responsibilities. You must not present the work of others as your own. This includes, but is certainly not limited to, copying text and including it in your writing without a citation and quotation marks.

There are many resources to help you learn more:

- https://guides.library.utoronto.ca/plagiarism
- https://www.academicintegrity.utoronto.ca/smart-strategies/

Intellectual property statement

Course material that has been created by your instructor (i.e., lecture slides, term test questions/solutions and any other course material and resources made available to you on Quercus) is the intellectual property of your instructors and is made available to you for your personal use in this course. Sharing, posting, selling or using this material outside of your personal use in this course is not permitted under any circumstances and is considered an infringement of intellectual property rights.

While recordings of class meetings will be made available to you on the course website, these are intended only for students registered in the course. You are not authorized to copy these materials or distribute them to individuals who are not registered in the course. If you would like to record any course activities in this course, you MUST ask permission from your instructor in advance. According to intellectual property laws, not asking permission constitutes stealing.

Tutoring companies

Tutoring companies do not have any right to suggest they are associated with this course. There is extensive support available within the course, department, and university for all students. Some so-called “tutoring” may in fact be a predatory scam and a potential risk to students’ academic integrity.

Generative AI

Students may use artificial intelligence tools, including generative AI, in this course as learning aids. However, students are ultimately accountable for the work they submit. **If students use an artificial intelligence tool (e.g. ChatGPT) in an assignment, they must include, as an appendix, any content produced by an artificial intelligence tool and the prompt(s) used to generate the content. Any content produced by an artificial intelligence tool must be cited appropriately.** Many organizations that publish standard citation formats are now providing information on citing generative AI (e.g. MLA: https://style.mla.org/citing-generative-ai/.)

If you are unsure if a particular usage of a generative AI tool is appropriate, please ask your instructor for guidance. Note that policies for the use of these tools may be different across courses, and even for different assignments within a course.

Note that a protected version of Microsoft Copilot is now available to all students.