STA220H1 S: The Practice of Statistics I

Winter 2025

New room as of Jan. 14, due to enrollment increase:

Room 100, Muzzo Family Alumni Hall (AH)

Tuesdays 9:10am - 11:00am

Thursdays 10:10am - 11:00am

1 Course Description

An introductory course in statistical concepts and methods, emphasizing exploratory data analysis for univariate and bivariate data, sampling and experimental designs, basic probability models, estimation and tests of hypothesis in one-sample and comparative two-sample studies. A statistical computing package is used but no prior computing experience is assumed. Note: STA220H1 does not count as a distribution requirement course.

Recommended Prep: Grade 12 Mathematics and one University course in BR= 3/ 4/ 5

Exclusions: ECO220Y1/ ECO227Y1/ GGR270H1/ IRW220H1/ PSY201H1/ SOC202H1/ STA261H1/ STA238H1/ STA248H1/ STA288H1/ EEB225H1/ STAB22H3/ STAB57H3/ STA215H5/ STA220H5/ ECO220Y5/ ECO227Y5/ STA258H5/ STA260H5

Breadth Requirements: The Physical and Mathematical Universes (5)

By the end of this course, students will be able to . . .

1. explain in plain language what the field of statistics is about and why it is important
2. use and apply fundamental statistics concepts to gain insight from data
3. map out the concepts of the course and make connections between topics
4. think critically about observed associations between variables before drawing conclusions
5. have and be able to use a beginner's quantitative toolbox of statistical analysis techniques

2 Instructor Team & Office Hours

Prof. Gwendolyn Eadie *(she/her)*
E-mail:
gwen.eadie@utoronto.ca
Office Hours:
Tuesdays 11:30am - 12:30pm (Astronomy Building, Room 220)
Tuesdays 3:10pm - 4:00pm (Over Zoom, Passcode: 921105, starting in Week 2)

Teaching Assistant	e-mail	Office Hours
Dory Abelman	dor.abelman@mail.utoronto.ca	tbd
Jongtaek Lee	jongtaek.lee@mail.utoronto.ca	tbd
Xiaofan Xia	xiaofan.xia@mail.utoronto.ca	tbd
Zi Cheng Liu	stephenzicheng.liu@mail.utoronto.ca	tbd

3 Communication

We will use Quercus and Piazza as online platforms for the course. You can access Piazza from within Quercus. The syllabus, all course slides, assignments, announcements, grades, zoom link(s) for office hours, etc. will be posted on Quercus. **General questions about the course, course content, an assignment, etc., should be posted to Piazza so that others can benefit from the response**.

Before emailing the instructor, please:

1. check this syllabus to see if the answer is here,
2. check discussion posts on Piazza,
3. post your question to the appropriate discussion board on Piazza,
4. go to TA or instructor office hours
5. see Section 5.1 if the inquiry is about missed term work.

Emails to the instructor (Prof. Eadie) are for personal issues/questions/concerns only. I will do my best to respond to emails within 2 working days, and I typically do not respond to emails outside of regular business hours. *Due to high email volumes, I will not respond to questions that can be answered via Piazza, the syllabus, etc.*

4 Schedule

4.1 Lectures & Topics Covered

Tuesdays: 50 minutes of lecture, followed by a 10 min break. Then 50 minutes of a combination of lecture and/or in-class activities and examples.

Thursdays: 50 minutes of lecture (with examples).

Below is a tentative schedule of topics to be covered in class. Chapters covered are from OpenIntro Statistics. The schedule is subject to change as needed.

Week	Date	Chapters	Topic(s)
1	Jan 7, 9	1, 2	course overview, introduction to/summarizing data
2	Jan 14, 16	3	probability
3	Jan 21, 23	3, 4	more probability and distributions
4	Jan 28, 30	4	more distributions
5	Feb 4, 6	ALL ABOVE, 5	MIDTERM (Tues), estimation (Thurs)
6	Feb 11, 13	5, 6.1-6.2	inference for a proportion, difference of proportions
7	Feb 18, 20	—	*Reading Week, no office hours*
8	Feb 25, 27	6.3-6.4,	testing goodness of fit, testing independence
9	Mar 4, 6	7.1	one sample means, t distribution
10	Mar 11, 13	7.2	catch-up, paired data
11	Mar 18, 20	7.3-7.4	difference of two means, power
12	Mar 25, 27	Ch. 8.1-8.2	introduction to linear regression
13	Apr 1, 3	Ch. 8.3-8.4	outliers, inference for linear regression
14-17	Apr 9-30	ALL ABOVE	FINAL EXAM date TBD by Faculty of Arts & Science

Lectures are in-person. Lectures will be recorded using the OCCS system and uploaded to Quercus after class.

Taping/Recording/Photographing of Lectures: The University considers an instructor's lectures and course material to be the instructor's intellectual property and covered by the Canadian Copyright Act. Students wishing to record lectures or other course material in any way are required to ask the instructor's explicit permission and may not do so unless permission is granted. **This includes audio and video recording and photographing slides or other course materials.** Granting permission to record applies only for that individual student's own study purposes and does not include permission to "publish" or distribute them in any way. It is forbidden for a student to publish an instructor's notes on a website or to sell them in other form without formal permission.

4.2 Important Dates

You can find the general Academic Dates & Deadlines for the Faculty of Arts & Science here: https://www.artsci.utoronto.ca/current/dates-deadlines/academic-dates

Week	Date	Important Thing
1	Wed Jan 8	Assignments 1 posted to Quercus
	Wed Jan 10	Assignment 3 posted
2		
3	Wed Jan 22	Assignment 1 Due
4		
5	Tue Feb 4	Midterm
6	Wed Feb 12	Assignment 2 posted
7		*Reading Break*
8		
9	Wed Mar 5	Assignment 2 Due
10		
11		
12		
13	Wed Apr 2	Assignment 3 Due
14-17	Apr 9-30	Final Exam (date TBD by Faculty of Arts & Science)

5 Assessment & Grading

10% Assignment 1
10% Assignment 2
15% Assignment 3
25% Midterm
40% Final Exam

Assignments: Due on Wednesdays at 5:00pm and submitted via Crowdmark (link provided in Quercus). If you are unable to meet the Wednesday due date, you can submit your work by 5:00pm on the Friday with no penalty. Assignments handed in after 5:00pm ET on the Friday will be given a grade of 0, unless there is a legitimate reason (e.g., accessibility accommodations, illness, emergency, etc.).

Midterm: held in our regular classroom on Tuesday Feb. 4 during regular class time.

Final Exam: to be scheduled by the University.

5.1 Missed Term Work Policy

The University of Toronto now has an ACORN Absence Declaration Tool for missed coursework. The tool can be used to declare an absence *once* per academic term (e.g., the winter term) for a maximum period of seven (7) consecutive calendar days. The ACORN Absence Declaration Tool helps you create an official record of your absence that is used to support a request for academic consideration in your courses, without the need to present additional supporting documentation. More info here: https://registrar.utoronto.ca/policies-and-guidelines/absence-declaration/

Other acceptable forms of documentation for missed term work include: U of T Verification of Illness or Injury Form (VOI), College Registrar's letter, or Letter of Academic Accommodation from Accessibility Services.

For all missed term work: Please fill out the following form https://forms.office.com/r/ZAa8G3ktxZ. *Requests made only through email will not be accepted.*

Missed Assignments: If Assignment 1 or Assignment 2 is missed for a legitimate reason (e.g., accommodations, illness, emergency, etc.), then please fill out the form above and the instructor will provide accommodations on a case-by-case basis (likely in the form of a make-up assignment due at the end of term). Assignment 3 cannot be missed. If you require an extension on Assignment 3 due to a legitimate reason, then please fill out the form above before 5:00pm Friday April 4.

Missed Midterm: If you miss the Midterm due to illness, emergency, etc. then please use the form above within 72 hours of the midterm date. A make-up midterm will be scheduled early in Week 6. If the make-up midterm cannot be written at the day/time specified, then the instructor will schedule an oral make-up test with the student.

Missed Final Exam: You must write the final exam to pass the course. Students who do not write their final exam will need to petition for a deferred final exam. Instructors and units cannot excuse a student from writing a final exam nor can they offer an alternative date or format of examination.

6 Learning & Study Resources

6.1 Textbooks

We will be using the following textbook in this course:

OpenIntro Statistics 4th Ed. Diez, D. Barr, C. D., and Cetinkaya- Rundel Mine. **Free and available to download here:** https://leanpub.com/os
→This is an excellent textbook that is less conversational but contains clearly explained concepts. A nice feature of the text and website is that many of the examples and vignettes used to illustrate the concepts are based on real applications of statistics.

A supplementary (not required) textbook is:

Stats: Data and Models, 4th Canadian edition by Richard D. De Veaux, Paul F. Velleman, David E. Bock, Augustin M. Vukov, and Augustine C.M. Wong. 4th ed.
→This textbook is written in a conversational style. Most concepts are clearly explained and there are lots of fun and interesting vignettes that illustrate statistical concepts.

6.2 Lead or Join a Recognized Study Group (RSG) for this course

RSGs are peer-led study groups of up to 8 students enrolled in the same A&S course. Apply now to be an Recognized Study Group (RSG) Leader for this course.

Volunteering to be an RSG Leader is a great way to:

- Make friends in this course
- Gain new leadership and group-facilitation skills
- Increase your understanding of course material
- Prepare for tests and exams
- Boost your resume
- Earn a Co-Curricular Record (CCR) credit

Over 1000 students volunteered to be an RSG Leader last year and over 3500 students joined an RSG! Volunteer to be an RSG Leader this term with the support and training of upper-year A&S students! No experience is necessary.

Looking to join an RSG? Explore all available RSGs on the Arts & Sciences Online Services. New RSGs are added daily! Find more information, visit: `uoft.me/rsgs`

6.3 Statistics Aid Centre

Need extra help with your statistics or actuarial science coursework? The Sidney Smith Statistics Aid Centre is a new drop-in aid centre located in the Sid Smith TA room (SS 621/621A). TAs will be available in-person and online to help support students from a wide range of our STA courses. The aid centre provides general help to all undergraduate students taking a course in statistics or actuarial science.

More information can be found here: https://www.statistics.utoronto.ca/undergraduate-student-resources/statistics-aid-centres

7 Academic Integrity

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, please reach out to me. Note that you are expected to seek out additional information on academic integrity from me or from other institutional resources (for example, the University of Toronto website on Academic Integrity).

The following is a statement directly from Appendix D of the Academic Integrity Handbook: "Academic integrity is one of the cornerstones of the University of Toronto. It is critically important both to maintain our community which honours the values of honesty, trust, respect, fairness and responsibility and to protect you, the students within this community, and the value of the degree towards which you are all working so diligently." Section B of the University of Toronto's Code of Behaviour on Academic Matters (`https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019`) lists common offenses. For example, it is an offence for students to:

- use someone else's ideas or words in their own work without acknowledging that those ideas/words are not their own with a citation and quotation marks, i.e. to commit plagiarism
- include false, misleading or concocted citations in their work.
- obtain unauthorized assistance on any assignment. To provide unauthorized assistance to another student. This includes showing another student completed work.
- submit their own work for credit in more than one course without the permission of the instructor.

- falsify or alter any documentation required by the University. This includes, but is not limited to, doctor's notes.
- use or possess an unauthorized aid in any test or exam.

There are other offences covered under the Code, but these are by far the most common. Please respect these rules and the values which they protect."

More information can be found here: https://www.academicintegrity.utoronto.ca

7.1 Generative Artificial Intelligence Tools (e.g. ChatGPT)

Generative Artificial Intelligence (AI) Tools are prevalent nowadays. In this course,

- **The knowing use of generative AI tools,** including ChatGPT and other AI writing and coding assistants, for the completion of, or to support the completion of, an examination, term test, assignment, or any other form of academic assessment, **may be considered an academic offense in this course.**
- **Students may not copy or paraphrase from any generative AI applications**, including ChatGPT and other AI writing and coding assistants, for the purpose of completing assignments in this course.

As a final note on AI-use: You may use the University of Toronto's AI tools as a study aid only. However, beware and be critical/skeptical of answers given by these generative AI tools; it has been shown that tools such as ChatGPT provide very convincing but ultimately totally incorrect explanations about some topics.

Accessibility Services and Accommodations

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. Students with diverse learning styles and needs are welcome in this course. If you have a disability that may require accommodations, please feel free to approach me and/or the Accessibility Services office:

https://studentlife.utoronto.ca/department/accessibility-services/

phone: 416-978-8060

email: accessibility.services@utoronto.ca

The University of Toronto supports reasonable accommodation of the needs of students who observe religious holy days other than those already accommodated by ordinary scheduling and statutory holidays. As mentioned on the webpage below, please let me know if you require accommodations or expect absences, and I will make every reasonable effort to avoid scheduling compulsory activities at these times. More information can be found here:

https://www.viceprovoststudents.utoronto.ca/policies-guidelines/accommodation-religious/).

The University of Toronto strives to provide a family-friendly environment. You may wish to inform me if you are a student with family responsibilities. If you are a student parent or have family responsibilities, you also may wish to visit the Family Care Office website at familycare.utoronto.ca.

Equity, Diversity, and Inclusion

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere

of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Land Acknowledgement

We wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.