STA220: The Practice of Statistics I

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Office Hours: TBD   Class Hours: Tuesdays, Thursdays 06:00-09:00 p.m.
Office: *Online*   Class Room: *Online*

How and when will the course operate?

This course is run fully online. See the "Course Schedule" (last two pages of this syllabus) and the Weekly Course Schedule in our Quercus course:

- https://q.utoronto.ca/courses/154192

Quercus is the primary website for this class, all materials will be hosted there.

Course materials provided on Quercus are for the use of students currently enrolled in this course only. Sharing (e.g., posting, providing, selling) course materials with anyone outside of the course is considered unauthorized use.

Sections

This course has two sections - L5101 (This one) and L5201. Both sections are covering the same material and share grading components. The lectures for this section are on Tuesdays and Thursdays at 6-9 PM EST. We share a piazza forum which you can join by following this link using the access code:

- sta220-summer

Course Content

Course content can be found on Quercus (https://q.utoronto.ca/). This course will provide an intuitive introduction to fundamental statistical concepts and reasoning. The course will cover: methods of data collection; constructing effective graphical and numerical displays; estimating and describing the natural variability in data; and the key ideas in how statistical tests can be used to separate significant differences from those that are only a reflection of the natural variability in data.

Course Objectives

1. Understand the ideas, principles, and considerations that are common to all statistical methods

2. Develop a statistical toolbox of some methods for the collection, analysis, and display of data

3. Identify appropriate uses of the statistical methods, including their strengths and limitations

4. Develop statistical literacy, including the ability to recognize the importance of data in decision-making and understand the social and scholarly applications of statistics

Suggested Readings

There are no required textbooks for the course, all of the course material is contained in the videos and notes.

There are many textbooks that cover the topics in the course if you would like a book for reference. Two recommended textbooks are:

Aphalo, Pedro (2017). *OpenIntro Statistics, 3ed by David M. Diez, Christopher D. Barr and Mine Çetinkaya-Rundel*. Vol. 2016. DOI: 10.19232/uv4pb.2016.2.90. https://leanpub.com/openintro-statistics.

Nolan, Deborah and edited by G. Casella Terry P. Speed. (2000). *Stat Labs : Learning Theory Through Applications*. Springer. https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/detail.action?docID=3035274.

You can get both of them for free using those links.

In the past we have also used :

Stats: Data and Models, Canadian edition, by Richard D. De Veaux, Paul F. Velleman, David E. Bock, Augustin M. Vukov, and Augustine C.M. Wong, 3rd Edition.

However it is not freely available.

Course Policy

Calculators

No calculators will be required for the course, but feel free to use them whenever you like.

Computing

We will be making extensive use of the R programming language and RStudio editor. Both are freely available. The guide to setting them up locally will be posted on quercus.

If you are having trouble setting up R locally on your computer we also have a cloud version you can access straight from a web browser. You can find more information in the guide on quercus.

You are not expected to have any prior experience with programming.

Additional Help

Need extra help with the coursework?

Here are some options:

- Post your question on the class discussion forum on Piazza. The instructor and TAs will monitor this discussion forum regularly.

- Attend an office hour. The instructor and TAs will have weekly office hours, with times posted on the course website.

- E-mail should only be used for emergencies or personal matters. If you email course questions to the instructor or TA, you will be asked to post your question on the discussion forum. In other words, individual questions about the course content will not be answered via email.

Class Components

Grading Scheme

Assessment	Due Date(s)	Breakdown	Total
Quizzes	24 hours after every lecture. Bonus Quiz due May 12th 11:59PM	Top 10/12 Quizzes @ 2% each Bonus Syllabus Quiz (1%)	20% (+1% bonus)
Assignments	Every Sunday at 11:59PM (05/17, 05/24, 05/31, 06/07, 06/14)	5 Assignments @ 11% each	55 %
Final Assessment	June 25th	25%	25%
Bonus Course Incentive	June 25th	2%	(2% bonus)

All deadlines are Eastern Standard Time (EST) - the local time in Toronto.

Lectures

- Every lecture will be composed of theoretical explanation as well as application through examples. With a break inbetween.

- Attendance and participation are highly recommended as lectures will build on top of previous lectures.

- Lectures will be recorded, with anonymized chat messages (messages will not be anonymous during, only in the recording)

Quizzes

Every lecture will be followed by a quiz that assesses understanding of that lecture. The quizzes are also designed to help you keep up with course material. Late quizzes will not be accepted and will result in a grade of zero. Quizzes are due 24 hours after the lecture and will be timed (20 minutes) after you open them. They will consist of 4-5 questions of equal weight.

The top 10 out of 12 quizzes will be considered for the final course mark.

All quizzes are "Open Book". **You are not allowed to consult with anyone. The answers you submit must be your own!**

Assignments / Homeworks

There will be five homework assignments in total for this course. One will be due every week, with the first assignment due on May 17th. They are designed to assess your statistical literacy, reasoning, and thinking. Homework assignments will be cumulative in nature so it is important to maintain a good understanding of course content as the term progresses.

Late homework assignments will be penalized at a rate of 25% in the first day, rounded up (e.g. 5 hours late is rounded up to one day, which results in a 25% penalty). This penalty is strict and automatically applied by Quercus. No submissions will be accepted beyond 24h after the deadline. These rules will not be waived for reasons other than medical, accessibility, etc, discussed previously with the instructor.

All assignments are "Open Book". You may discuss with other students, but **you may not share answers. You must submit your own work.**

Final Assesment / Final Project

The final project will allow you an opportunity to apply statistical methods to a real-life example. Emphasis will be made on the quality of data analysis and communication. The final project will be collaborative and will require you to create a short 5 minute video. More details will be announced as the assessment period approaches. Late submissions will not be accepted and will result in a grade of zero.

Final Project is "Open Book". You must collaborate with your group members for the group work component. However, **you may not discuss with other groups.**

Course Incentives

In addition to the requirements of the final project, you have the opportunity to earn bonus marks (up to 2%, added to the course grade) by building a creative piece that conveys statistical information gained from the analysis done in the project. Some examples of creative pieces include a pamphlet, drawing, painting, mind map, song, or video (separate from the required video of the project). For this bonus component, you are encouraged to think beyond numbers.

Bonus Syllabus Quiz

There will be a short quiz to assess your understanding of the syllabus. It is also a chance to earn 1% bonus mark (added to the course grade).

Marking Concerns

Any requests to have your assessment regraded must be made in writing to your instructor within one week of receiving the grade. The request must contain a justification for consideration, your name, student number, and email address. Note that your mark may increase, decrease, or stay the same as a result of a regrade.

Communications

How to communicate with the instructor

Questions about course material, such as:

- How do I do question 3.7 in the textbook?

- What is standard deviation?

- When is the assignment due?

Should be posted on the discussion forums on Piazza. Questions can be posted anonymously (so that the author is anonymous to other students but not to the instructors), if desired. If your communication is private, such as, "I missed the quiz because I was ill", then e-mail your instructor. Use your utoronto.ca e-mail account to ensure that your message doesn't automatically go to a Junk folder and include your full name, student number, course code, and course section. You must include "STA220" in the subject line of the email to ensure that it is read.

Academic Integrity

You are responsible for knowing the content of the University of Toronto's Code of Behaviour on Academic Matters here. If you have any questions about what is or is not permitted in this course, please do not hesitate to contact your instructor.

Please refer to the U of T sites related to:

- Code of Behavior on Academic Matters: http://www.governingcouncil.utoronto.ca/policies/behaveac.htm

- Academic Integrity: https://www.academicintegrity.utoronto.ca/

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 class room, or course materials, please contact Accessibility Services as soon as possible: accessibility.services@utoronto.ca or http://accessibility.utoronto.ca.

Class Schedule

Lecture	Date	Topics	Notes
1	05/05	Syllabus R and RStudio Numerical Summaries of data	First Quiz Due 24 hours after the lecture
2	05/07	Numerical Summaries of data Graphical Summaries of data	May 10th is the last day to enroll
3	05/12	Probability: Events	Bonus Syllabus Quiz due Tuesday11:59pm (05/12)
4	05/14	Probability: Random Variables	HW1 due Sunday11:59pm
5	05/19	Sampling Distributions	
6	05/21	Confidence Intervals Part 1	HW2 due Sunday11:59pm
7	05/26	Confidence Intervals Part 2	
8	05/28	The Process of Statistical Tests	HW3 due Sunday11:59pm
9	06/02	Effective Use of Statistical Tests	
10	06/04	Comparing Two Groups	HW4 due Sunday11:59pm
11	06/09	Linear Regression	
12	06/11	Data Collection	HW5 due Sunday11:59pm

Note that this class schedule is subject to change. Suggested readings will be included on Quercus in each respective week's module.