

University of Toronto
Department of Statistical Sciences

STA220H1F L5101: Practice of Statistics I
Syllabus: Fall 2022

Land Acknowledgement

We wish to acknowledge the 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 most recently, the Mississaugas of the Credit River. 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.

Resource: native-land.ca

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Course Formats Highlights

This course is an Online Synchronous course. Any deviations from this document will be announced on the Quercus. Please keep visited regularly the website link [FAS student FAQs](#).

1. Course logistics (Instructor and Team, Class time, Office hours)

This is an Online Synchronous course.

Instructor: Esam Mahdi

Email: e.mahdi@utoronto.ca

Class Day/Time:

Section	Lecture
LEC5101	Wednesday 6-9 pm, via zoom-link (posted on Quercus) First lecture: September 14, 2022

We will follow “U of T time” and begin 10 minutes past the hour.

Instructor’s Office hour: Thursday, 3:00 – 4:00 pm via zoom-link (posted on Quercus). Any change will be decided during the first lecture.

TAs and their office hours will be announced on Quercus.

All course content (e.g., lecture slides/PDF etc.) will be available on Quercus. and links therein (<https://q.utoronto.ca>). For security reasons, please do not copy or share the Zoom links anywhere.

The majority of course communication and announcements will happen through Quercus. It is your responsibility to check Quercus regularly.

Communicating with the Instructor

Before emailing your instructor, please:

- re-read this syllabus to see if the answer is already here,
- check the announcement and modules posted on Quercus,
- ask your Teaching Assistant (TA),
- post your questions to Piazza,
- meet during office hours

If your question is not answered after looking through these resources, then please email the instructor.

When emailing your instructor, please use the subject line: STA220 H1F – LEC5101.

Here, STA220 H1F is your course code and LEC5101 is your section.

If this subject is not included, your email may be missed.

2. Course Overview

Course Description:

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.

Intended Learning Outcomes

- Understand the ideas, principles, and considerations that are common to all statistical methods,
- Develop a statistical toolbox of some methods for the collection, analysis, and display of data
- Identify appropriate uses of the statistical methods, including their strengths and limitations, and
- Develop statistical literacy, including the ability to recognize the importance of data in decision-making and understand the social and scholarly applications of statistics.

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

Exclusions: ECO220Y1/ ECO227Y1/ GGR270H1/ PSY201H1/ SOC300Y1/ STA261H1/ STA238H1/ STA248H1/ STA288H1/ EEB225H1/ STAB22H3/ STAB57H3/ STA215H5/ STA220H5/ ECO220Y5/ ECO227Y5/ STA258H5/ STA260H5

3. Course Materials, Textbooks & Supplementary Learning Resources

There is no required course textbook. We will follow the modules found here: <https://sta220.utstat.utoronto.ca/> .

Module 1: Summarizing Data - One Variable and Relationships Between Variables

Module 2: Probability: Events

Module 3: Probability: Random Variables

Module 4: Sampling Distributions

Module 5: Data Collection

Module 6: Confidence Intervals Part 1 (sampling from normal distribution)

Module 7: Confidence Intervals Part 2 (sampling from non-normal distributions)

Module 8: The Process of Statistical Tests

Module 9: The Effective Use of Statistical Tests

Module 10: Comparing Two Groups

Module 11: Simple Linear Regression

All course material can be found at the above link, in the lectures and notes posted on Quercus.

It is beneficial to your learning to explore the course material in different contexts and multiple times, so we also recommend the following two textbooks:

1. **OpenIntro Statistics 4th Ed.** Diez, D. Barr, C. D., and Cetinkaya- Rundel Mine.
 - a. *Free and available to download here:* <https://leanpub.com/os>.
 - b. 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.
2. **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.
 - a. This textbook is available at the University of Toronto bookstore <https://www.pearson.com/en-ca/subject-catalog/p/stats-data-and-models-canadian-edition/P200000002661/9780137364626/>.
 - b. It is written in a conversational style. Most concepts are clearly explained and there are lots of fun and interesting vignettes that illustrate statistical concepts.

Computations

We will use R for all examples. R is freely available for download at <http://cran.r-project.org> for Windows, Mac, and Linux operating systems. It is strongly recommended that you also download R Studio (www.rstudio.com) to accompany R for a nicer user interface. If you encounter tech problems with the installation, you can also opt to use R Studio cloud (rstudio.cloud) which includes up to 15 project hours per month. You can also use the server version of RStudio on <https://jupyter.utoronto.ca>. All students and faculty have access to this resource. This means that you don't have to download and install R and RStudio. You will not need to know R commands, but you do need to know how to read and interpret output from R. If you are interested in learning to replicate the work done in the video lectures, there are option R videos that walks you through the syntax and steps in R.

Calculators (for in-person tests/exams)

You will need a calculator. Any calculator that has logarithmic functions will be sufficient. Calculators on phones or other devices equipped to communicate with the outside world (for example, through the internet or cellular or satellite phone networks) will not be permitted during the term tests or final exam.

4. Discussion Board

This term you will have the option to use Piazza for class discussion. If you decide not to use Piazza, it will not disadvantage you in any way, and will not affect official University outcomes (e.g., grades and learning opportunities). If you choose not to opt-into Piazza, then you can ask questions or discuss course material with the instructor or TAs

during office hours. Be sure to read Piazza's Privacy Policy (<https://piazza.com/legal/privacy>) and Terms of Use (<https://piazza.com/legal/terms>) carefully. Take time to understand and be comfortable with what they say. They provide for substantial sharing and disclosure of your personal information held by Piazza, which affects your privacy. If you decide to participate in Piazza, only provide content that you are comfortable sharing under the terms of the Privacy Policy and Terms of Use.

The Piazza system is highly catered to getting you help fast and efficiently from classmates, the TA, and the lecturers. Rather than emailing questions to the teaching staff, we encourage you to post your questions on Piazza. To sign up for the discussion forum click on the link: piazza.com/utoronto.ca/fall2022/sta220h1flec5101

Additional help

Need extra help with the coursework? Here are some options:

For continued class discussion and questions outside of class, try posting on the discussion forums. The instructor and TAs will be monitoring them regularly.

You can see your instructor or the teaching assistants during their office hours.

E-mail should only be used for emergencies or personal matters. See the Course Logistics section in the above.

5. Assessments & Grading

Homework assignment and Midterm exam will be completed online. Final exams will be completed in-person, i.e., on paper under invigilation.

5.1 Marking Scheme

- 32% Homework (HW) assignments (online; best 4 out of 5 assignments, so each worth 8%)
- 33% Midterm Test (online during class time. More details will be specified on Quercus)
- 35% Final Assessment (in-person as specified by the Faculty of Arts and Science later)

5.2 Assessment Details

Assessment	Modules covered (see Section 3)	Due Date (test duration)
HW 1 (MC, SA)	1	Sept 23 (Friday)
HW 2 (MC, SA)	2, 3	Oct 7 (Friday)
HW 3 (MC, SA)	4, 5	Oct 21 (Friday)
Midterm Test	1,2,3,4,5	Oct 26 (Wednesday) (6:20 – 7:50 pm; 90 mins) Online
HW 4 (MC, SA)	6, 7	Nov 14 (Friday)
HW 5 (MC, SA)	8, 9, 10	Dec 8 (Thursday). Note it.
Final Assessment	1 – 11	TBA

MC: Multiple choice questions. SA: Short answer questions. TBA: To be announced (on Quercus).

5.3 Homework assignments

The homework assignments will be a combination of multiple-choice and short answer questions. The multiple-choice questions will be completed on Quercus, and the short answer questions will be completed on Crowdmark (<https://app.crowdmark.com/sign-in/utoronto>)

Late Penalty for Homework Assignments

For the short answers questions submitted via Crowdmark, a 25% per day penalty will be applied to assignments that are submitted late. For example, this means that if an assignment is due at 17:00, and is submitted at 17:01, then it will incur a 25% late penalty. If it is submitted at 17:01 the following day, then it will incur a 50% late penalty. For the MC questions submissions on Quercus Quizzes must be submitted in time. The system does not allow late submission.

Missed Homework Assignments (due to valid reasons)

There are no make-ups for missed homework assignments. If a homework is missed for a valid reason (e.g., illness or personal emergency), then within one week following the assessment you must fill out the absence declaration form on ACORN and on Quercus. For each such missed assignment, the 50% of the total weight (of 8%) for that homework assignment will be shifted to the other homework assignments (i.e., 4% weight) and the remaining to the final assessment (i.e., 4% weight). Otherwise, a missed homework will be assigned a grade of zero.

5.4 Midterm Test

Midterm will be online during the lecture time. The proposed time is Wednesday, October 26 from 6:20 to 7:50 pm. More details will be given one week before the exam time.

Late submission: There is no possibility of submitting Term tests **late**.

Missed Midterm test

There are no make-ups for missed midterm test. If the test is missed for a valid reason (e.g., illness or personal emergency), then **within one week** following the assessment you must fill out the absence declaration form on ACORN and then send me an email. If the midterm test is missed due to illness or personal emergency, its 100% weight will be shifted to the final (i.e., the final will account for 68% of the course grades).

5.5 Final exam

The faculty of arts and science schedules the final exam. You will be permitted to bring a 8.5"x11", **two-sided, handwritten** aid sheet. You must bring your student identification to the final exam.

Late submission: There is no possibility of submitting the final exam **late**.

Missed Final Assessment

If the final is missed due to a valid reason (e.g., illness or personally emergency), then a make-up exam will be conducted in December or early January for those with approved petition.

5.6 Minimum passing requirement

In addition to the U of T grading policy, students must complete the final assessment to pass the course.

5.7 Re-mark Requests

Any requests to have a homework assignment or term test re-marked must be made in writing to me within one week of receiving your marks. Note that it is possible for a re-mark to result in a lower grade. Requests to re-mark the final exam will be handled at the department-level.

6. Intellectual Property

Course materials provided on Quercus, such as lecture slides, assignments, tests and solutions are the intellectual property of your instructor and are for the use of students currently enrolled in this course only. **Providing course materials to any person or company outside of the course is an unauthorized use.**

7. Accessibility

Students with diverse learning styles and needs are welcome in this course. If you have a disability/health consideration that may require accommodations, please feel free to approach me and/or Accessibility Services as soon as possible at 416-978 8060; studentlife.utoronto.ca/as. The Accessibility Services staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let them and me know your needs, the quicker we can assist you in achieving your learning goals in this course. More information can be found here: www.accessibility.utoronto.ca.

8. Accommodations

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 reasonable effort to make

accommodations at these times. More information: <https://www.viceprovoststudents.utoronto.ca/policies-guidelines/accommodation-religious/>.

9. Academic Integrity

The University treats cases of plagiarism and cheating very seriously. It is the students' responsibility for knowing the content of the University of Toronto's [Code of Behaviour on Academic Matters](#). All suspected cases of academic dishonesty will be investigated following the procedures outlined in the above document. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see <https://www.academicintegrity.utoronto.ca/>). Here are a few guidelines regarding academic integrity:

- You may consult class notes/lecture slides during homework, however sharing or discussing questions or answers with others is an academic offence.
- Students must complete all assessments individually. Working together is not allowed.
- Paying anyone else to complete your assessments for you is an academic misconduct.
- Sharing your answers/work with others is academic misconduct.
- Copying solutions to homework problems from online or a book is an academic offence.
- All work that you submit must be your own! You must not copy answers from anyone or anywhere else. Unacknowledged copying or unauthorized collaboration will lead to severe disciplinary action, beginning with an automatic grade of zero for all involved and escalating from there. Please read the UofT Policy on Cheating and Plagiarism, and don't plagiarize.

10. Class Schedule – Tentative

The Module numbers listed in the table below correspond to the modules and content found at <https://sta220.utstat.utoronto.ca/>

All content at the above link is fair game in terms of homework assignments and assessments. It is highly recommended to watch the pre-lecture videos or read the transcripts at the link above prior to lecture.

Any changes to the schedule will be announced and posted on Quercus.

Week		Lecture (Wednesday)	What's due/important?
1	Sept 7	<i>no class</i>	
2	Sept 14	Module 1	
3	Sept 21	Module 2	HW 1 due Sept 23
4	Sept 28	Module 3	
5	Oct 5	Module 4	HW 2 due Oct 7
6	Oct 12	Module 5	
7	Oct 19	Review (Practice Problem Set 1-5)	HW 3 due Oct 21
8	Oct 26	Monday: Midterm Test (coverage 1 to 5 modules) Wednesday: Module 6	Midterm test, Test location: Online (Wednesday, October 26, 2022) (6:20 – 7:50 pm; 90 mins)
9	Nov 2	Continued-- Modules 6 and 7	
10	Nov 9	No class (Reading Week)	Rest and relax 😊
11	Nov 16	Module 8	HW 4 due Nov 14
12	Nov 23	Module 9	
13	Nov 30	Modules 10	
14	Dec 7	Modules 11 & Practice Problem Set 6-11	HW 5 due Dec 8 (This is on Thursday) Final Assessment date TBD