

STA220H1F: The Practice of Statistics I - Summer 2018
Department of Statistical Sciences - University of Toronto

Lectures: Tuesdays and Thursdays 7:10pm – 10:00pm in Earth Sciences Centre ES1050

Instructor: Asal Aslemand

Office Hours: Tuesdays and Thursdays 5:00pm – 6:00pm in Sidney Smith **S623B**

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Note: Please use your U of T email address when sending me an e-mail

Tutorial Times: Tuesdays and Thursdays (Starting Thursday, May 10th) 6:10pm – 7pm

Tutorial Rooms and Teaching Assistants: Please see page 5 in this document.

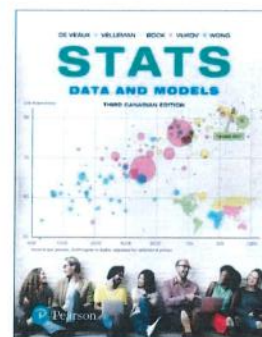
Welcome to STA220.

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.

Course Text Book:

Stats: Data and Models. DeVeaux, Velleman, Bock, Vukov, & Wong.
Third Canadian edition, Pearson Canada Publication.



Statistical Software:

We will use R Studio (its free version) for performing basic statistical analysis.



- ❖ You need to first download R (a free statistical package) from: <https://www.r-project.org/>
- ❖ After downloading R, download RStudio (its free version) from: <https://www.rstudio.com/>
- ❖ I will provide you with video instructions regarding how to download R on your computer and any course activity that you need to use R for completing it. The instructions will be posted on portal.

Calculator:

You will need to use a very basic calculator for tutorials, test, and final exam.



One that allows you to add, subtract, multiply, divide, and take a square root. **Note:** Phone calculators or any other communicating devices are **NOT** allowed during the midterm test, and the final exam.

Course Components:

- **Lectures:**

Each lecture will introduce you to important statistical ideas and will guide you through illustrating statistical examples to develop your statistical literacy, reasoning and thinking. Moreover, every lecture will build on the materials discussed in the previous one. This means that statistical concepts are logically connected. I highly recommend that you attend the lectures regularly.

- **Weekly Tutorials (Preparations and Worksheets):**

Tutorials start on Thursday, May 10th. There are 11 tutorials scheduled in the course. Prior to each tutorial, I will post on portal – in the “Tutorial Preparation” content folder – information regarding your upcoming tutorial preparation. These include a set of practice problems, which are related to the previous lecture’s contents. Some of the assigned problems require that you use RStudio to analyze a set of data. You need to bring the printouts of your statistical analyses, which we refer to them as R outputs, to your tutorial and will be required to hand them in at the end of your tutorial. I will provide you with the necessary instructions – both in text and video formats – that you need for completing each tutorial’s R activity.

In each tutorial you will receive a worksheet, which is based on the previous lecture’s contents. You may need to refer to your R outputs to answer questions on tutorial worksheets. You may work on each worksheet with smaller group of peers in your tutorial and your TA will facilitate group collaboration and discussion. You are expected to complete your own worksheet during each tutorial session, but you may discuss ideas with your peers. The completion of each tutorial worksheet will account for your weekly tutorial participations. Your TA will mark your completed weekly worksheets and will return them to you at the next tutorial. Please keep all your marked worksheets for your record in case of any discrepancy of mark input on your Portal’s Grade Centre.

- **Data Analysis Project:**

There is one data analysis project in this course, which is due in your tutorial on Thursday, June 7th. Details regarding the project will be made available two weeks prior the due date. The objective of this project is to give you the opportunity in using some of the statistical techniques that you have learned in exploring a real data set. You may work individually or in groups of three or four students from the class (your group members can be from different tutorials). You are required to submit a concise written report of your data analysis. Instructions will be provided in advance of the project’s due date.

Course incentive up to 2% (added to course grade): In addition to submitting the written report of this project, you are welcome to make a visual presentation (e.g., 3-D model, video, painting, drawing, music, pamphlet, concept map, mind map) or to create a song, that can convey the statistical information obtained from your analysis. I invite you to think of this as thinking beyond numbers. Some creative examples of former students of a similar course are posted on portal.

If your creative work is:

- like any of these forms: 3-D model, painting, drawing, concept map, or mind map, please take a picture of your work. Print your picture in COLOUR, and state on it your first and last name and student number and submit it to me (Asal) in class on Thursday, June 7th. After viewing the picture of your work, I may ask you to bring it with you to our class on Tuesday June 12th.
- in a form of an audio or video format, you can email your link to me on Thursday, June 7th.
- a pamphlet, you can submit it to me in class or electronically on Thursday, June 7th.

- **Midterm Test and Final Exam:**

A 1-hour and 45-minutes midterm test will be given, which covers topics from lectures 1 to 6. It will consist of 30 multiple-choice questions. A three-hour final exam will be given during the final exam period, which covers the entire course. It will consist of 50 multiple-choice questions.

You are allowed “aid sheet(s)”: **one** for the midterm test, and **two** for the final exam, but no other books/notes. The aid sheet(s) must be handwritten by you and you may use both sides of the sheet. You need to have a calculator for the test and the final exam.

Course Assessments:

Type	Number of Occurrence	Due Dates	Weight
Tutorial Worksheets	10 (best 9 of 10 are counted)	Before Lectures: 6:10pm – 7pm in Tutorials Starting Thursday, May 10 th <i>No Tutorial Session on the Day of the Test</i>	20%
Midterm Test	1	Thursday, May 31st Midterm test starts at 6:15pm	30%
Data Analysis Project	1	Thursday, June 7 th (in Tutorials)	10%
Final Exam	1	TBA (Scheduled During Examination Period)	40%
Total			100%

Missed Tutorials and/or Midterm Test:

- There are no makeup tutorials or makeup test.
- If you miss a tutorial, it will become your lowest tutorial worksheet mark (mark of zero), but it will be the one you drop.
- If you miss more than one tutorial or if you miss the midterm test with a valid reason in order to be excused you must submit to me (Asal) an appropriate documentation (e.g., U of T medical certificate) within one calendar week of the missed tutorial and/or missed midterm test.
- U of T medical certificate can be retrieved from this link:

[http://www.illnessverification.utoronto.ca/document/Verification%20of%20Student%20Illness%20\(VOI\)%20-%20Oct%2027%202016.pdf](http://www.illnessverification.utoronto.ca/document/Verification%20of%20Student%20Illness%20(VOI)%20-%20Oct%2027%202016.pdf)

Please, print on it your name, student number, course number, and the date.

- If the midterm test is missed for a valid reason, its weight will be shifted to the final exam. In that case, your final exam will account for 70% of your total course grade.
- If a tutorial is missed for a valid reason, I will still drop your lowest tutorial worksheet mark among the remaining tutorials and will calculate your tutorial worksheet average accordingly.
- Note that I will put the **code: “-1”** for an excused missed assessment (e.g., worksheet, midterm test) in your Grade Centre (Portal). This code means that at the end of the term, I will not take that missed grade into your course grade calculation.

Tentative Lecture Coverage:

Lecture	Chapter	Chapter Content
1	1	Statistics Starts Here
	2	Displaying and Describing Categorical Data
2	3	Displaying and Summarizing Quantitative Data
	4	Understanding and Comparing Distributions
3	5	The Standard Deviation as a Ruler and the Normal Model
4	6	Scatterplot, Association, and Correlation
	7	Linear Regression
5	7	Linear Regression
	8	Regression Wisdom
6	9	Sample Surveys
	10	Experiments and Observational Studies
7	11	From Randomness to Probability
	12	Probability Rules!
	13	Random Variables
8	<i>Midterm Test: Thursday, May 31st (Starts at 6:15pm)</i>	
	<i>Note: No Tutorial before the test but a short lecture after the test at 8:30pm</i>	
9	13	Random Variables
	14	Sampling Distribution Models
9	15	Confidence Intervals for Proportions
	<i>Course Project Due: Thursday, June 7th</i>	
10	16	Testing Hypotheses About Proportions
	17	More About Tests
11	18	Inference About Means
12	19	Comparing Means
	20	Paired Samples and Blocks
	21	Comparing Two Proportions

Tutorial Information:

- Please note that tutorials start on Thursday, May 10th.
- There is a tutorial session before each lecture (except for the first lecture and for the day of the test).
- There are six tutorial sections in this course and all are scheduled from 6:10pm to 7:00pm.
- Students are assigned to a tutorial section by their last names alphabetically.

Tutorial Room & Building Name	Student Last name Beginning with letter(s)	Teaching Assistant (TA)
AB114 – Astronomy & Astrophysics Building	A – D	Boris Garbuzov
BF215 – Bancroft Building	E – Ji	Bo Chen
BF323 – Bancroft Building	Jo - Ma	Armaan Farhadi
LM155 – Lash Miller Chemical Laboratories	Mo – Si	Tadeu Ferreira
LM157 – Lash Miller Chemical Laboratories	So – X	Hamed Zakeri
ES B149 – Earth Sciences Centre	Y- Z	Tinale Chen

Accessibility Centre:

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 the AccessAbility Services Office as soon as possible at accessibility.services@utoronto.ca or visit <http://www.accessibility.utoronto.ca> I will work with you and U of T Accessibility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential.

Academic Integrity Statement:

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Please refer to the following U of T sites related to:

Code of Behaviour on Academic Matters: <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>

Academic Integrity: <http://academicintegrity.utoronto.ca/>

Final Note:

I appreciate your *effort* and *willingness to work hard* on statistical concepts that we will cover in this course. Try to stay on tasks and attend all lectures, tutorials, and visit office hours. Research has shown that motivation to achieve is determined by extent in which one *values* the reward of *succeeding at a task* (e.g., learning statistics will better enable me understand research in my field of study), and having a *growth mind set* [believing that by working hard on doing a task (e.g., statistical problems) abilities (e.g., ability to doing statistics) can be developed]. Thus, the best learning strategy in this or any course is to work regularly throughout the term. Also, keep in mind that learning quantitative methods is not just about doing maths and calculations, however, it is about understanding concepts. Make sure that you know why you are doing a statistical calculation and what the results will tell you; when in doubt seek help from me (Asal) or your Teaching Assistants. I wish you all the best in this course.