STA221H1S: The Practice of Statistics II - Winter 2019
Department of Statistical Sciences - University of Toronto

Lectures: **Mondays 3:10pm – 5pm and Wednesdays 3:10pm – 4pm in MB128**

Instructor: **Thomas Yoon**
Office Hours: Mondays 5:00pm – 6:30pm, Wednesdays 1:30pm-3:00pm (EP103A)
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Note: Please use your U of T email address when sending me an e-mail

Tutorial Times: Wednesdays (Starting January 16th) 4:10pm – 5pm
Teaching Assistants, Tutorial Information:
Mingyan Chen (echo.chen@mail.utoronto.ca) WB219
Seo Woo Hong (pazinski.hong@mail.utoronto.ca) No Tutorial
Evgeny Levi (evgeny.levi@mail.utoronto.ca) AB107
Shawn Unger (shawn.unger@mail.utoronto.ca) SF3202
Teaching Assistants' Office Hours & Location: Tuesdays 12-1 (Pazinski); 5-6 (Evgeny) in SS623B

Welcome to STA221.

Course Description:

This course is a continuation of an introductory course in statistics. In the first week of the course, we will review some basic statistical concepts that we need to build on their ideas throughout the term. We will cover statistical methodologies that enables us describe relationships between two categorical variables (chi-square test of independence), two quantitative variables (simple linear regression), and a quantitative variable and a categorical variable with more than two classifications (multiple regression). We will also cover the concept of Analysis of Variance (ANOVA) and its application in designed experiments: Completely Randomized Design, Randomized Block Design, and Factorial Experiments. Additionally, we will introduce nonparametric statistical procedures if time allows.

The emphasis in this course will be on the application of statistical methods to real data. You will learn how to read and interpret statistical information, explore and analyze data using appropriate statistical methodologies, and check the validity of conclusions drawn from statistical analyses.

Course Text Book:

McClave, J., & Sincich, T. (2017). Statistics (13th Edition). Pearson, Inc.

Statistical Software:

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

- You need to first download R (a free statistical package) from: https://www.r-project.org/
- Then, download R Studio (its free version) from: https://www.rstudio.com/
- We will use various packages, some will be very useful for potential career in data cleaning/ data analysis

Calculator:

You will need a very basic (non-programmable) calculator for this course (test, and 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 quizzes, midterm test, and final exam.

Course Components:

- ### Lectures:

  Three hours a week class times will be used to cover important course materials and will guide you through statistical examples to develop your statistical literacy, reasoning and thinking. Every week we will build on the materials that we discussed in the previous week. This means that statistical ideas are logically connected. I highly recommend that you attend the lectures regularly.

- ### Weekly Tutorials (and Assignments + Quizzes):

  Tutorials start on Wednesday, January 16th. There are 11 tutorials scheduled in the course. On a weekly basis, I will post an assignment. These include a set of practice problems, which are related to previous week's lecture contents. Some of the assigned problems require that you use R to analyze a set of data. You need to bring the printouts of your statistical analyses (both code and output), which we refer to these as R outputs, to your tutorial. You will be asked to simply write specific values from the R output at the start of each tutorial as well as inference based on the R output. This will be your quiz. I shouldn't be saying this, but I can guarantee you that only some questions on each week's assignment require use of R, and weekly quizzes will be based on the R output, not on only-hands-on questions.

  The purpose of this is to provide you with the opportunity to analyze real data sets. You may work with others, but the codes must be significantly different. You will be asked to submit the R output as well. Catching similar or exact same code may result in academic offense.

  Specifically, the structure of your weekly tutorial is as follow:

  - In the first 10 minutes, you will get settled in, have the R output ready on your desk. TA will write the quiz question(s) on the board. You will write your student information (your full name, student number and tutorial section) on a piece of paper. You will answer the quiz question(s) using the R output and circle the value from your R output. Fold your R output and put your answer sheet inside and submit them to your TA. For this reason, it is very important students attend tutorials that you are enrolled in.

  - TA's will review important concepts and do examples relevant to what we discussed during last week's lectures. This will take 40 minutes.

- ### Tests and Final Exam:

  Two tests (duration: 1 hour and 45 minutes) are scheduled during our class time. Each test will be 20% of your final grade. A final exam (duration: 3 hours) will be scheduled during the exam period, which is cumulative and thus covers the entire course. The tests and final exam are closed book. You need to have a calculator for the test and the final exam. I am debating whether or not I should allow cheat sheets, or I provide you with one. You will be tested on mathematical statistics, statistical analyses, and interpreting R output.

Course Assessments:

Type	Number of Occurrence	Due Dates	Weight
Quizzes	10	Weekly (Starting Jan 16th)	10*1%
Midterm Tests	2	Monday, February 4th (in class) Monday, Mark 4th (in class)	2*20%
Final Exam	1	TBA (Scheduled During Examination Period)	50%
		Total	**100%**

Missed Tutorials and/or Midterm Test:

- There are no makeup quizzes or makeup test.
- If you miss a quiz, you will get a mark of 0.
- If you miss the tests with a valid reason in order to be excused you must submit to me (Thomas) 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 Please, print on it your name, student number, course number, and the date.
- If the 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% (if you missed one test), and 90% (if you missed both tests) of your total course grade.

Midterm Test Remark Policy:

Requests for test remaking must be submitted to TA (from tutorial section that you are enrolled in) at the time that the test is returned to you. During those tutorials, you will be given 10-15 minutes to look over and submit for a remark if you believe you are graded unfairly. Please write down **only** the question number (for example, 1b.) that you believe is marked unfairly, and **not justification**, so I can maintain consistency in marking. Then, TA's will forward the test papers to me (Thomas) and I will remark. I may remark your entire test which may result in lower mark than you initially got. I will not remark test papers written in pencil; I will only accept tests written in non-erasable ink for remarks. If you missed your tutorial, then most likely, I will have the test papers and exact same procedure will follow.

Stats Aid Centre (SS623A) – Teaching Assistants' Office Hours:

The Teaching Assistants for our course will hold weekly office hours in room SS623A, which is located in Sidney Smith Basement, level "G". I highly recommend that you take advantage of TA office hours on a regular basis regarding weekly assignments and course concepts.

- Please note that all tutorial times are scheduled on Wednesdays at 4:10pm – 5pm.
- Tutorials start on Wednesday, January 16th.
- There are four tutorial sections in this course.

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 wish you all the best in this course.