

STA221H1S: The Practice of Statistics II
Summer 2018

Course Outline

LECTURES:

Lecture Times: Tuesday: 7-10 pm (SS1069)

Thursday: 7-10 pm (SS1069)

UPDATE: Lectures will be in SS 1071 starting July 10th due to construction!

Instructor: *Julia Dedic*

Office Location: 149 College Street (Stewart Building) Room 103A

E-mail Address: julia.dedic@mail.utoronto.ca

Office Hours: Tuesday: 5:15-6:50 pm

(Office hours may change before tests)

Course Web Site: <http://portal.utoronto.ca>

TUTORIALS:

Starts July 5th! 6-7 pm Tuesdays and Thursdays in SS 1070

Teaching Assistant: Boris Garbuzov

TA Office Hour Location: Stats Aid Centre SS 623B (Sidney Smith Basement in level 'G')

Office Hours and Email Address:

Boris Garbuzov

Email: boris.garbuzov@gmail.com

COURSE DESCRIPTION

This course emphasizes major methods of data analysis such as analysis of variance for one factor and multiple factor designs, regression models, categorical and non-parametric methods (Note: STA221H1 does not count as a distribution requirement course).

Prerequisite: STA220H1/STA288H1/PSY201H1/GGR270H1/EEB225H1

Exclusion: ECO220Y1/ECO227Y1/GGR270Y1/PSY202H1/SOC300H1/SOC202H1/SOC252H1/STA261H1/STA248H1

Breadth Requirement: The Physical and Mathematical Universes (5)

Students who lack a pre/co-requisite can be removed at any time unless received explicit waiver from department.

TEXTBOOK

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

STATISTICAL COMPUTING

This course uses R. R is an open-source computing package which has seen a huge growth in popularity in the last few years. R can be downloaded from <https://cran.r-project.org>

ASSESSMENT AND DEADLINES

Type	Due date	Weight
Term Test 1	July 17,2018	25%
Term Test 2	July 31,2018	25%
Final Exam	TBA	50%

TESTS

The term tests are held from 7:30 to 9 pm on the test dates. There is no extra time for late entrants. **The final exam covers material from the entire course.** Note: test solutions may be photocopied before they are returned.

Missed Term Test Policy:

If you miss a term test for medical reasons, submit a U of T medical certificate indicating that you saw the doctor on the date of the missed test. If you miss a term test for any other reason, submit appropriate official documentation. Also **include your name, student number, and course number at the top of the page.** All documentation must be official and written in English. It is your responsibility to submit documentation to the professor within one week of the missed test. The professor determines if the absence is legitimate and is entitled to refuse your documentation if it does not meet these standards.

If you miss one term test, a make-up test will not be scheduled; your final mark will be calculated by re-weighting the other test and final exam by a factor of 100/75.

If you miss both term tests, a make-up test combining **all material covered in the course** will be held on Tuesday August 14th from 5:30 - 7pm. It is your responsibility to (i) submit documentation to the instructor within one week of each missed test, (ii) find out if your absence has been classified as legitimate and (iii) attend the makeup test on the given date- further makeup tests will not be given if you do not attend the scheduled makeup test. Failure to complete (i)-(iii) guarantees you earn zero on all missed tests.

Test Re-Mark Policy:

Requests for test remarking must be made in writing. Submit a note to the instructor (not the TA) explaining why you believe your solutions deserve more marks. Submit this note and your marked test during the tutorial when tests are returned. Your TA will give your remark request to the professor. **Late remark requests will not be accepted.**

HOMEWORK

Homework and readings will be assigned **but not graded.** However, homework problems will form the basis for tests and will be essential to your understanding of the topics covered in class. You are encouraged to work together in groups on homework to solidify your knowledge of the material. If you miss a class, be sure to check with your work group to see what you missed.

TUTORIALS

Tutorials are held every week and begin on July 5th. Tutorials will be used for your TA to review topics, take up homework problems, and help with assignments.

EMAIL POLICY

Email is most appropriate for personal questions. In general, we are unable to answer technical questions about the course material by e-mail. Before you send an e-mail, make sure that you are not asking for information that is already on the course outline/website/announcements, or questions about the course material that are more appropriately discussed during office hours. If you do not get a response, this may be why. If your question is conceptual and does not require calculations or an elaborate answer, you can ask by email. Any questions regarding the tutorials should be addressed to your TA. For all other matters, contact the instructor. Please email the instructor and TAs using your *@utoronto.ca address. **The subject line should contain the course number, lecture section number, and a relevant subject** (indicating what the email is about). Be sure to **include your full name and student number in the body of the message**. You will not get a response if you email from other email addresses or do not follow the email policy.

OFFICE HOURS

There are plenty of office hours offered by the TAs and instructor. The TAs and instructor are here to help you! Ask questions and let the instructor know if there are any concerns.

ACCESSABILITY NEEDS

The University of Toronto is committed to accessibility. If you have a disability/health consideration that may require accommodations, please feel free to contact the AccessAbility Services Office as soon as possible at <http://www.accessibility.utoronto.ca>.

STUDENT RESPONSIBILITIES

- It's up to you to know all course policies and important dates - read the course outline. It's up to you to know about any important announcements - these will come to your inbox. Check the portal regularly! Check your *@utoronto.ca inbox regularly!
- You're responsible for your own learning. We're happy to help you learn, but in the end it's up to you! Use office hours early, and use them often. Make an appointment with the professor. Keep asking questions until you're satisfied. Ask about big concepts or small details - there is no such thing as a stupid question! Always take advantage of extra help - don't wait until it's too late!
- You must follow the U of T code of Behaviour - this means that cheaters will be prosecuted. The Academic Regulations of the University are outlined in the Code of Behaviour on Academic Matters. You are expected to be familiar with, and to abide by, all components of the Code of Behaviour on Academic Matters. Full details can be found online at <http://www.governingcouncil.utoronto.ca/policies>

What you get out of the course depends on what you put into the course!

INSTRUCTOR RESPONSIBILITIES

- Lectures will be clearly presented, organized, and have plenty of examples.
- Extra help, remedial and acceleration, is always available - in office hours, by appointment, and by email.
- Your emails will be answered in a timely fashion.
- Every student in the class will be treated with fairness and respect. Students who wish to excel are encouraged to consult regularly with the instructor. Students who abuse the U of T code of behavior will be dealt with appropriately.
- The lecturer works closely with your TAs. TAs are trained to offer quality tutorials and mark all work consistently and fairly.

COURSE TOPICS

Chapter 19: Comparing Means

Comparing Means of Independent Samples, The two-sample t-test, the pooled t-test, determining sample size

Chapter 20: Paired Samples and Blocks

Paired t-test, paired t confidence intervals, effect and sample size, blocking.

Chapter 21: Comparing Two Proportions

standard deviation of the difference between two proportions, confidence interval for the difference between two proportions, the z-test for the difference between proportions

Chapter 22: Comparing Counts

Goodness-of-fit, chi-square test for homogeneity, examining residuals, chi-square test of independence

Chapter 23: Inferences for Regression

regression model, standard errors of parameter estimates, regression inference.

Chapter 24: Analysis of Variance

analysis of variance (ANOVA), testing whether the means of several groups are equal, comparing means, ANOVA on observational data

Chapter 25: Multifactor Analysis of Variance

Two-factor ANOVA model, adding interaction to the model

Chapter 26: Multiple Regression

multiple regression, interpreting multiple regression coefficients, multiple regression inference, comparing multiple regression models .

Chapter 27: Multiple Regression Wisdom

Indicator variables, diagnosing regression models.

Chapter 28: Nonparametric Tests

Wilcoxon Rank Sum test, Kruskal-wallis test, wilcoxon signed rank test for paired data, friedman test for a randomized block design, rank correlation.

SUGGESTED HOMEWORK PROBLEMS

Note: Will be updated weekly

Chapter 19: Comparing Means

Problems: 11, 12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 25, 29, 31, 32, 48, 49, 50

Chapter 20: Paired Samples and Blocks

Problems: 1, 2, 5, 7, 13, 17, 18, 21, 25, 27, 30, 34, 37, 42

Chapter 21: Comparing Two Proportions

Problems: 1,2,9, 11, 17, 18, 19, 22, 24, 26, 28, 31, 36, 40, 41, 42, 46, 48

