

STA302H1 S

Methods of Data Analysis I

Winter 2024 Syllabus

Course Meetings

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Section	Day & Time	Delivery Mode & Location
LEC5101	Tuesday, 6:00 PM - 9:00 PM	In Person: BA 1160

Refer to ACORN for the most up-to-date information about the location of the course meetings.

Course Contacts

Instructor: Rohan Alexander

Email: rohan.alexander@utoronto.ca

Course Overview

Introduction to data analysis with a focus on regression. Initial Examination of data. Correlation. Simple and multiple regression models using least squares. Inference for regression parameters, confidence and prediction intervals. Diagnostics and remedial measures. Interactions and dummy variables. Variable selection. Least squares estimation and inference for non-linear regression.

“Methods”, “Data”, “Analysis”—we consider such loaded words in this course! What is data? What does it mean to do analysis? And what methods? The very core of statistical sciences!

This course develops in students an appreciation for how our world becomes data, what to do in the face of overwhelming options for the analysis of that data, and how to do all this in a way that provides value to others. In addition, by the end of the course, students should be able to understand the mathematical aspects of linear regression and inference for regression models.

Course Learning Outcomes

In this course you will use R, Python, Git and GitHub, and a little bit of SQL. Before class starts you should go through Chapter 1 and Appendix A of *Telling Stories with Data*.

Course Materials

Alexander, 2023, *Telling Stories with Data*, Chapman and Hall/CRC,
<https://tellingstorieswithdata.com/>

Marking Scheme

Assessment	Percent	Details	Due Date
Quiz	7%	Due at noon. Only best seven out of twelve count.	2024-01-09,2024-01-16,2024-01-23,2024-01-30,2024-02-06,2024-02-13,2024-02-27,2024-03-05,2024-03-12,2024-03-19,2024-03-26,2024-04-02
SQL quiz	1%	Due at noon.	2024-02-13
Personal website	1%	Due at noon. Create a personal website using Quarto and make it live via GitHub Pages. At a minimum, it must include a bio and a CV in PDF form	2024-03-12
Mini-essay	6%	Due at noon. Only best three out of twelve count.	2024-01-09,2024-01-16,2024-01-23,2024-01-30,2024-02-06,2024-02-13,2024-03-05,2024-03-12,2024-03-19,2024-03-26,2024-04-02,2024-02-27
Term papers	46%	Due at noon. Only best two of three term papers count. Marking starts, noon, on the Thursday after submission, and you can update until then i.e. submissions made by noon, Tuesday, Week 3 can be updated until noon, Thursday, Week 3 (this is to allow you to incorporate peer review comments). Please do not make any changes after marking starts.	2024-01-23,2024-02-13,2024-03-12

Assessment	Percent	Details	Due Date
Conduct peer review	3%	Due at noon. Conduct peer review for six other term/final papers, by creating a GitHub Issue or Pull Request. Papers will be distributed by a spreadsheet—add a link to the Issue/PR to a term paper that does not have four other entries. You will only have 24 hours to do this. Students are not assigning grades to other students, but are instead getting the mark based on the quality of the feedback they provide to other students	2024-01-24,2024-02-14,2024-03-13
Mid-term	6%	A mid-term consisting of a few questions in class.	2024-03-12
Final paper	30%	Due at noon. Marking starts, noon, Thursday 18 April and you can update until then i.e. submissions made by noon, Tuesday, Week 12 can be updated until noon, Thursday, 18 April (this is to allow you to incorporate peer review comments). Please do not make any changes after marking starts.	2024-04-02

Late Assessment Submissions Policy

If no extension has been granted and no accommodation applies, then late submissions will not be accepted.

Policies & Statements

Late/Missed Assignments

Late submissions

If no extension has been granted and no accommodation applies, then late submissions will not be accepted.

Missed submissions

Quizzes/mini-essays

Only the best seven/three count, respectively, and so if some are missed then it is not an issue. If you have a accommodation or situation that makes even this impossible, then please consult your faculty/department/college advisor and then email me.

Term Paper I

Please submit something for Term Paper I, even if it gets zero. That one is done individually, while the other term papers are (optionally) done in groups. If you have a situation or accommodation that makes it impossible for you to submit something for Term Paper I, then in that situation one of the remaining term papers must be done individually to ensure fairness with the rest of the class.

Term Papers II and III

If you cannot submit Term Paper II, then please submit Term Paper III. If you have an accommodation or situation which means you cannot submit Term Paper II and Term Paper III, then please consult your faculty/department/college advisor and then email me.

Peer review

There are many opportunities to get the peer review marks through Term Papers II and III and the Final Paper, so if you cannot do any for a particular paper, then just do the others. If you have a situation or accommodation that makes this impossible, then please consult your faculty/department/college advisor and then email me.

Mid-term

If you miss the mid-term in Week 9, due to a situation or accommodation, then you will have the opportunity to do it in Week 10.

Final paper

The Final Paper is a critical piece of assessment. It is also up against deadlines for submission of grades (especially for graduating students). If you have a situation or accommodation that makes it impossible for you to submit the final paper, then please email me before Week 12, and cc your faculty/department/college advisor so that we can work out a alternative plan. If you have an emergency situation, then please consult your faculty/department/college advisor and then email me.

Plagiarism Detection Tool

Normally, students will be required to submit their course essays to the University's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation web site (<https://uoft.me/pdt-faq>).

Students with Disabilities or Accommodation Requirements

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting <https://studentlife.utoronto.ca/departments/accessibility-services/>. Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructors will not reveal that you are registered with AS.

Re-marking Policy - Timeline and Protocol

Marking mistakes happen and I want to correct those. Requests to have your work re-graded will **not** be accepted within 24 hours of the release of grades. This is to give you a chance to reflect. Similarly, requests to have your work re-graded more than two weeks after the release of the grades will not be accepted. This is to ensure the course runs smoothly.

Inside that period if you would like to request a re-grade, please email rohan.alexander@utoronto.ca and use the subject line "STA302: re-grade request". Please specify where the marking mistake was made. The entire assessment will be re-marked and it is possible that your grade could reduce.

Plenty of students get 0 on the first paper, but go on to get an A+ overall in the course. The nature of the work in this course requires students to adjust from what is expected in other courses, and the forgiving assessment weighting is designed to allow this.

Accommodation for Personal Reasons

There may be times when you are unable to complete course work on time due to non-medical reasons. If you have concerns, speak to me or to an advisor in your College Registrar's office; they can help you to decide if you want to request an extension or other forms of academic consideration. They may be able to email your instructors directly to provide a College Registrar's letter of support and connect you with other helpful resources on campus.

Attendance and Absence Declaration

You do not have to attend class. But a reminder that FAS has a policy on declaring absence which may be relevant for assessment purposes:

<https://www.artsci.utoronto.ca/current/academics/student-absences>