POL419H1S: Quantitative Methods and Data Analysis

University of Toronto
Fall 2021

Meeting Room:	SS 561
Meeting Time:	Monday, 10:00am-12:00pm
Instructor:	Kenichi Ariga
Email:	kenichi.ariga@utoronto.ca
Office:	SS 3047
Office Hours:	TBA (Online office hours will be scheduled. Details will be announced on the class Quercus site)

Overview

This is a seminar on quantitative empirical research methods for political science for those who have taken the POL 222-232 sequence, or equivalent, and have a basic understanding of statistical inference and linear regression model. The course will provide students with opportunities to conduct quantitative empirical analysis for a causal theory of their interest and write a research paper based on the analysis. For this purpose, it will also review theoretical foundations of quantitative methods and provide an introduction to statistical computing language, R, which has become increasingly popular among social scientists, policy experts, and data analysts.

In the first half of the semester, students will learn a basic use of R to conduct quantitative analysis of political science data and write a quantitative empirical research paper, which is the main assignment of the seminar. In the second half of the semester, students will present their own research to the class and receive feedback and critically assess other students' analyses. By the end of the semester, students will revise and resubmit their paper based on the feedback received from their peers and the instructor.

Course Objectives

The primary objectives of this course are:

1. To learn the basic use of R, popular statistical software (http://www.r-project.org), to process and analyze social science data;
2. To develop an empirical research paper featuring quantitative empirical analysis of social science data; and
3. To develop abilities to critically assess a quantitative empirical research paper, which examines a causal relationship.

Quercus

Quercus (https://q.utoronto.ca/) is the primary means through which class announcements and assignments will be distributed. All course materials will be made available on the class Quercus site as well. Discussion Board on the class Quercus site will be the primary medium by which you will ask questions and get them addressed (more on this below). It will be your

responsibility to obtain access to Quercus and regularly check it. There will be an important update to the class Quercus site at least once a week**.**

Textbook and Readings

There is no required textbook to purchase. All required readings will be posted on the class Quercus site.

Discussion Board

We will use the Discussion Board in the class Quercus site as the main medium through which you can ask questions and get them addressed. Given the nature of the course, other students may have the same question as yours and they would benefit from your posting your questions and getting them addressed on the Discussion Board.

You are also encouraged to post an answer to the questions posted by your classmates so that we can maintain a mutually-supporting learning community from which all of you will benefit. As specified below, your response to your classmate's questions on the Discussion Board will be reflected on your class participation mark. The instructor will regularly check the Discussion Board and address questions which have not been adequately addressed by peers.

Course Requirements

Your grade will be determined by the following components:

1. R Exercises (due every week in lectures): 10%

In the first half of the semester, a series of R tutorials will be assigned every week. You are required to complete these tutorials before the beginning of lectures. Then, R exercises based on these tutorials will be given during the lectures. Some of these exercises are due by the end of the lectures, and others are due by the beginning of the next lecture. These R exercises will be graded on a three-tier basis — full credit, partial credit, and no credit. If the exercises are completed in a reasonably sufficient manner, you will be given full credit. If they are not completed sufficiently, you will receive half credit. If you don't submit the exercises before their deadline, you will be given no credit.

There may also be some additional R tutorials in the second half of the semester. All R exercises will together count toward 10% of your final mark, and each exercise will be weighted equally.

2. Quantitative Empirical Research Paper: 60%

Initial Submission:	30%	Due Wednesday, Oct. 27th, 5:00PM, EST
Revise & Resubmit:	30%	Due Wednesday, Dec. 8th, 5:00PM, EST

As the main assignment of this course, you will write an empirical research paper based on a linear regression analysis using R and a dataset of your choice, which addresses the causal theory of your interest.

You are required to complete and submit the initial draft by Wednesday, October 27th. Then, based on the instructor's comments/suggestions and your classmates' feedback, you will revise your paper and resubmit it by Wednesday, December 8th. The initial submission counts toward 30% of your final mark and the revision 30%.

3. Empirical Research Presentation and Discussion: 15%

In the second part of the semester — after you submit an initial draft of the research paper assignment — you will present your research to the class. Each week, up to four presentations will be scheduled. Presenters will introduce the main points of their research briefly and address questions and feedback from the class. The presentation and discussion of your research paper will count toward 15% of your final mark.

4. Class Participation: 15%

Your class participation marks will be determined by the following items.

a. Questions and comments on other students' papers: 10%

Students' initial drafts of their paper will be posted on the class Quercus site before their presentation. You will be required to read these papers and post your response, which addresses your questions and constructive feedback to the papers, on the class Quercus site by the beginning of the lectures in which the presentations of these papers are scheduled.

If you upload your response by the deadline and your response raises questions and offers feedback in a reasonably sufficient manner, you will be given full credit. If your response is not sufficient, you will receive half credit. If you don't submit the response before their deadline, you will be given no credit. All responses will together count towards 10% of your final mark, and each response will be weighted equally.

b. Engagement in class sessions and discussions: 3%

Engagement here includes regularly attending the class, actively raising questions, participating in class discussions, and helping your classmates during lab sessions.

c. Response to your classmates' questions on the Discussion Board on Quercus: 1%

As mentioned before, how often and well you respond to your classmates' questions on the Discussion Board on the class Quercus site will count toward your participation mark.

d. Participation in an online feedback survey on the class through the class Quercus site at the end of the semester: 1%

Group Work and Collaboration

Group work and collaboration is encouraged in this class. Given somewhat technical nature of the class subjects, it is essential to have an opportunity to discuss with your classmates the

concepts and methods you learn and how to apply them. Everyone has different strengths and weaknesses in their understanding and learning style. Through working together, you are expected to facilitate learning for each other and deepen your understanding of the class subjects, which would be difficult if you worked alone.

Collaboration in a team is encouraged in this class so much so that the submission by a team of two students is allowed for an empirical research paper assignment. If you submit your assignment as a group, everyone in the group will receive the same mark for that assignment.

Collaboration in a team of multiple scholars is a norm for contemporary quantitative social science and data science research. As a course on the methods of such research, this class will provide you with an opportunity to practice scholarly collaboration by allowing the group submission of the empirical research paper assignment.

Note that a group submission is voluntary. There will be neither credit nor penalty for submitting your empirical research paper assignment in a group or individually. The instructor cannot help you organize your group or resolve any conflicts related to the group work. Conflicts or difficulties in coordinating the group work will not be considered as an acceptable reason to request an extension or a waiver of late penalty. It is your responsibility to coordinate all group work appropriately and submit your empirical research paper assignment in time.

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 who wish to not use the University's plagiarism detection tool may make an alternative arrangement. If you want to make an alternative arrangement, you need to send an email to the instructor at least one week before the deadline of the assignment and ask for an alternative way to submit the essay. If you choose an alternative arrangement, you may be asked, for example, to submit all of your rough work for an assignment and to have a short meeting with the instructor in which you will be asked about your research.

Late Penalties and Extension

All work is late if submitted after the date and time specified as due. To ensure fairness, the late-penalty policy specified below will be strictly enforced. Conflict with other class's assignment/exam schedule, leaving for a non-academic trip, or vacation is not an acceptable reason to miss the assignments or request an extension.

- Empirical Research Paper Assignment

  Extension for the empirical research paper assignment may be made only when there is a

legitimate reason, such as an unforeseeable medical emergency, an accessibility issue, religious observances, and a family emergency. If you need an extension for accessibility reasons, the extension may be granted based on your Accessibility Services Letter. Given the current COVID-19 situation, the Verification of Illness or Injury form (or "doctor's note") is not required in 2021-22. Instead, if you need an extension for a legitimate reason except for accessibility (e.g., COVID, cold, flu and other illness or injury, family situation, religious observances), you should record your absence through the ACORN online absence declaration and then make a request for an extension to the instructor.

Students who know in advance they will need an extension for a legitimate reason should make a request to the instructor via email as early as possible before the deadline. Those who missed the deadline for a legitimate, unforeseeable reason should contact the instructor as soon as possible and no later than one week after returning to class.

Empirical research paper assignments handed in late will result in a penalty of 2-percentage-point reduction per day (e.g., from 72% to 70%). Submitting the assignments within 24 hours from the due date and time will be considered one day late; submitting after 24 hours but before 48 hours will be two days late, and so forth.

Since you will submit your assignments to Quercus, your submission must be accepted and recorded on Quercus before the due date and time. Note that the date and time recorded on Quercus will be your submission date and time. If this is after the deadline even only by one minute, then your submission will be considered late. In other words, completing your paper and start uploading it to Quercus before the due date and time is not enough. Your upload must be complete before the due date and time.

Computer-related problems, such as the crash of your computer, a slow Internet connection, and an occasional slow response of the server, will not be considered as an acceptable reason to request for extension or waiver of a late penalty. Also sending your assignment to the instructor via email will not be considered as a submission. For these reasons, I strongly suggest you avoid a last-minute completion or submission of assignments. I also suggest you frequently take a backup of the electronic files of your draft essay in an electronic storage other than your computer. If you have a UTmail+ account, you have access to 1TB of storage in your OneDrive at the UofT. You may take a backup in your OneDrive.

- Other Requirements

  There will be no extension for other requirements, such as R exercises and the questions and comments on your peers' papers. Instead, if you miss these requirements for a legitimate reason, you will be given a waiver for them.

Grade Appeals

Grade appeals must be received within two weeks from when the grade is assigned. When you appeal your grade, you are required to submit a brief documentation substantiating why you believe the grade is not appropriate.

Office Hours

You are welcome to visit the instructor's office hours, if you have any questions on the class subjects and materials. Details of the instructor's office hours will be posted on Quercus.

Email Policy

If you have questions of personal nature (e.g., accessibility, deadline extension for legitimate reasons), you may email the instructor and expect a response within two working days. Please start the subject heading of your email with "POL419:..."

If your questions are of substantive nature, please post these questions on the Discussion Board of the class Quercus site instead of sending them via email to the instructor.

Please note that I will not be able to answer emails or questions on the Discussion Board during weekends.

In the case of your questions of substantive nature on the Discussion Board or those of personal nature over email not answered within two working days (excluding weekends), send me an email to let me know they have not been addressed. Please include "POL419: Unanswered Question" in the subject heading of your email.

Accessibility

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 http://www.studentlife.utoronto.ca/as/new-registration. 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.

Academic Integrity

Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the U of T degree that you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

You are expected to be familiar with the Code of Behaviour on Academic Matters, available at https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity, which is the rule book for academic behaviour at the U of T. Another website (https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity/academic-misconduct) lists nine categories of academic offences defined

in the Code. Potential offences include, but are not limited to, plagiarism, cheating on tests and exams, fraudulent medical documentation and improper collaboration on marked work.

For specific examples of the potential academic offences, please read The Scope of Academic Integrity (https://www.academicintegrity.utoronto.ca/perils-and-pitfalls/). Please note that, in general, not knowing the University's expectations cannot be an excuse. **Under the Code, "the offense shall likewise be deemed to have been committed if the person ought reasonably to have known"** (Code of Behaviour on Academic Matters, web version, p.2).

For further information on plagiarism, visit the pages available from the links listed at http://advice.writing.utoronto.ca/using-sources/. This list is part of the Advice on Academic Writing at the University of Toronto (http://advice.writing.utoronto.ca/). You may also find other resources available on this website helpful.

To learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at http://www.writing.utoronto.ca.

The University of Toronto treats cases of academic misconduct very seriously. All suspected cases of academic dishonesty will be examined following the procedures outlined in the Code. The consequences for academic misconduct can be severe, including a failure in the course and a notation on your transcript. If you have any questions about what is or is not permitted in this course, do not hesitate to contact the instructor or teaching assistants.

Class Schedule

The class schedule may be adjusted according to the actual progress of the class. In addition, some assigned readings may be replaced by others, and there may be additional readings.

Week 1 (Sep. 13) Introduction

Part 1. Statistical Computing

Week 2 (Sep. 20)
Lecture & R Session: Descriptive Statistics and Visualization for Single Variable

Week 3 (Sep. 27)
Lecture & R Session: Linear Regression As Descriptive Tool

Week 4 (Oct. 4)
Lecture: Statistical Inference
R Session: Edit Dataset

Oct. 11 Thanksgiving Holiday

Week 5 (Oct. 18)

Lecture & R Session: More Topics on Linear Regression

Week 6 (Oct. 25)
Empirical Research Paper Consultation

Empirical Research Paper, Initial Submission, Due Oct. 27 (Wed.), 5:00PM, EST.

Part 2. Student's Research Seminar

Up to four student presentations per week will be scheduled. Also, there may be R sessions when the presentations are not scheduled.

Planned R session: Simulation.

Week 7. (Nov. 1) Student's Research Seminar 1

Fall Reading Week: Nov. 8 – 12

Week 8. (Nov. 15) Student's Research Seminar 2

Week 9. (Nov. 22) Student's Research Seminar 3

Week 10. (Nov. 29) Student's Research Seminar 4

Week 11. (Dec. 6) Student's Research Seminar 5

Empirical Research Paper, Revise & Resubmit, Due Dec. 8 (Wed.), 5:00PM, EST.

Syllabus Change Policy

The policies and contents of this syllabus may be changed by the instructor with advanced notice. If any, such a change will be announced during lectures and on the class Quercus site.