

POL222H1F: Introduction to Quantitative Reasoning I

University of Toronto

Fall 2023

LEC 0101: Monday, 1:00pm-3:00pm

LEC 0201: Tuesday, 1:00pm-3:00pm

LEC 5101: Tuesday, 5:00pm-7:00pm

Instructor: Kenichi Ariga

Email: kenichi.ariga@utoronto.ca

Office Hours: TBA (Online office hours will be scheduled.
Details will be announced on the class
Quercus site)

Teaching Assistants:	Ayub Khan	ayub.khan@utoronto.ca
	I Younan An	i.an@mail.utoronto.ca
	Jesslene Lee	jesslene.lee@mail.utoronto.ca
	Joel Canto Roche	joel.cantoroche@mail.utoronto.ca
	Marte, Vroom	m.vroom@mail.utoronto.ca
	Mauricio Vargas Sepúlveda	m.sepulveda@mail.utoronto.ca
	Md. Mujahedul Islam	mujahed.islam@mail.utoronto.ca
	Natasha Goel	natasha.goel@mail.utoronto.ca

Course Description and Objectives

Quantitative data analysis has increasingly become an important part of political science research — and social sciences in general — and public policy debates. The results of statistical analysis on quantitative data (such as opinion polls, election results, frequency of armed conflicts, and incidence of violence) can be seen in many research articles and books on political science and various reports on divergent policy issues published by governments, think tanks, non-profit organizations, and news media. Ability to properly understand and critically assess the results of quantitative data analysis has become an invaluable asset for any individuals who are interested in a wide range of political, economic, social, and policy issues.

For political science students, two consecutive introductory courses on quantitative empirical methodology are offered (POL222 & 232). This course, “POL222 Introduction to Quantitative Reasoning I,” is the first of the sequence and required for all political science specialists and majors. By the end of this course, students are expected to have developed a basic understanding of:

1. The characteristics of political science studies that employ quantitative empirical analysis, and the inherent difficulties of establishing a causal relationship empirically between the political, economic, social and policy phenomena of interest;
2. Representative empirical research designs, both in experimental and non-experimental (observational) varieties, to investigate the causal relationship of political, economic, social and policy phenomena of interest, and various threats to the validity of different

research designs; and

3. Introductory knowledge of the data analysis methods employed in political science research — namely, statistical inference and linear regression — which will be studied more in depth in POL232.

“POL232 Introduction to Quantitative Reasoning II” in the Winter semester will be the follow-up course and continue to introduce important foundations of quantitative empirical methodology. POL232 is required for political science specialists and is an elective for majors. Students who take POL232 will be exposed to:

4. Theoretical foundations of *statistical inference*, in which we learn about the characteristics and relationships in a large population from sample observations;
5. *Linear regression* analysis, which is one of the most basic methods to empirically examine the relationship between political, economic, social and policy phenomena; and
6. The very basics of statistical computing to conduct simple quantitative analyses of social science data.

The common objective of these classes is to better prepare the students to become educated readers and active participants in political science research and public policy debates.

Quercus

[Quercus](#) is the primary means through which class announcements and assignments will be distributed. Lecture slides, readings, and assignments will all be made available on the class Quercus site. The Discussion Board on the class Quercus site will be the primary method by which you will ask questions about the course materials and get them addressed (more on this below).

Please note that all important announcements and updates will be posted on the class Quercus site. It will be your responsibility to obtain access to Quercus and regularly check it. Normally, there will be an important announcement to the class Quercus site at least once a week.

Weekly Cycle of Your Study

There is no textbook for this course, and for most of the lectures, there is no assigned reading required to be read before the lectures. Therefore, attending and understanding the lectures is an indispensable component of your study and normally the beginning of your study in each week. From the second week of the semester (the week of Sep. 18th), there will be a weekly online review quiz by which you will review the materials covered in the lectures (more on this below). After the due date of the quiz in each week, general feedback to the quiz questions will be made available on Quercus, which you will use to confirm your understandings and further review the course materials of that week. In some weeks, there may be readings, either required or recommended to read, after the lectures.

There will be six tutorial sessions scheduled throughout the semester (see the Class Schedule

section below). In these tutorial sessions, you will work on various tutorial exercises to review and understand the course materials further. In some of these tutorial sessions, there will be assigned readings or exercises required to be finished before these sessions.

There will be two essay assignments and a final exam, and therefore, you are expected to accumulate your knowledge and develop your understandings of the class materials in order to complete them.

Lecture Slides

Lecture slides will be made available on the class Quercus site. Some slides, such as graphics and in-class problems/exercises, may be taken out from the slides made available on Quercus; however, all information essential for review will be kept in these slides.

Lecture Recordings

Lectures will be recorded using the OCCS system provided by the University. Lecture recordings will be made available on the class Quercus site. You may watch these recordings to review the lectures or to catch up if you miss any lectures.

Teaching Assistants

There are eight teaching assistants for this course, whose main duties are leading tutorial sessions, grading assignments, and other student contacts. There will also be office hours held by teaching assistants during the couple of weeks before essay assignments are due.

Normally, the teaching assistant for your tutorial section will be the grader of your essay. **All requests for an extension or waiver regarding required assignments must be made to the teaching assistant who leads your tutorial section.**

Tutorials

There will be tutorial sessions led by teaching assistants beginning in the third week of the semester (the week of Sep. 25th). Tutorial sessions are scheduled for six weeks throughout the semester. You can find the schedule of these six tutorial sections below in the Class Schedule section.

Most of you have already registered for a tutorial section (e.g., TUT0101) on ACORN. If you have not, you must do so as soon as possible and no later than the last day to enroll, Wednesday, September 20th.

If you cannot attend any one of the available tutorial sections for a legitimate reason, you may make an alternative arrangement for the tutorial participation marks. To make this arrangement, register for a tutorial section, which you cannot attend but is still available on ACORN, and then contact the teaching assistant who leads this tutorial section. Information about tutorial instructors for each tutorial section will be announced on Quercus. An official documentation, which verifies the specific reason given, will be asked to make an alternative arrangement.

Grading and Evaluation

Your grade for the course will be based on the following materials, with the weights given:

1. Weekly Online Review Quiz: 5%

Starting in the second week of the semester (the week of Sep. 18th), there will be a weekly review quiz administered on the class Quercus site. The weekly quiz will be made available after the lectures of all three sections are over — normally in Tuesday evening or Wednesday morning — and due Friday, 5:00pm in the same week.

All weekly review quizzes will together count toward 5% of your final mark, with each weekly quiz weighted equally. Therefore, as this review quiz is scheduled for ten weeks, each quiz will worth 0.5% of your final mark. The total number of weekly review quizzes may change due to the actual progress of the class. If the total number of weekly quizzes changes (e.g., from ten to nine weeks), the total mark for all the weekly review quizzes will still be 5% of your final mark, with each quiz reweighted equally (e.g., $5\%/9 = 0.55\dots\%$ if the total number of weekly review quizzes becomes nine).

2. Two Essay Assignments

Essay 1	25%	Due:	Oct. 12th (Thr.), 11:59PM, EST
Essay 2	25%	Due:	Nov. 23th (Thr.), 11:59PM, EST

In these essay assignments, you will be given an opportunity to practice applying the concepts and methods of quantitative empirical methodology for political science research that you will have learned in class.

3. Final Exam: 35%

There will be an in-person, closed-book, closed-note final exam. The exam will take place during the Final Exam Period in December administered by the Faculty of Arts and Science. Its date and place will be determined and announced by the Faculty later in the semester. A sample final exam will be made available on the class Quercus site later in the semester.

4. Participation Mark: 10%

Your class participation mark will be based on the following three items:

(1) Response to Questions during Lectures through Classroom Response System: 5%

We will use a classroom response system, through which you will respond to the questions posed during the lectures (more details on the classroom response system will be posted on the class Quercus site). I plan to include these questions in ten of our lectures, starting from the second week of the semester (Sep. 18th [L0101] or 19th [L0201, L5101]).

Your participation in responding to the questions through the classroom response system during the lectures will together count toward 5% of your final mark, with your participation in each lecture weighted equally. As the classroom response system is scheduled to be used in ten lectures, your participation in the classroom response questions

in each lecture will be worth 0.5% of your final mark. The total number of lectures which use the classroom response system may change due to the actual progress of the class. If the total number of lectures which use the classroom response system changes (e.g., from ten to nine lectures), the total participation marks for the classroom response system questions in the lectures will still be 5% of your final mark with each lecture reweighted equally (e.g., $5\%/9 = 0.55\dots\%$ if the total number of lectures with the classroom response system questions becomes nine).

It is your responsibility to bring a device for the classroom response system to each lecture. As this is a participation mark (accomplished via responding to the in-class questions), simply attending the lecture will not count. If you forget a device, you will not earn a participation mark in that lecture. Failure to bring the device with you will not be considered a reason to waive or make up your participation mark.

Your participation mark for the classroom response system in each lecture will be posted on the Grades section of the class Quercus site regularly. It is your responsibility to check the mark regularly and confirm if your response was recorded properly. If you find your participation mark for a particular lecture is not recorded properly, you must contact the instructor within three weeks from when the mark for this lecture is posted on Quercus. Any claims after three weeks will not be addressed.

(2) Tutorial Participation: 3%

There will be six tutorial sessions scheduled during the semester. Your participation in all tutorial sessions will together count toward 3% of your final mark, with each tutorial session weighted equally. As six tutorial sessions are scheduled, each tutorial session will be worth 0.5% of your final mark. The total number of tutorial sessions may change due to the actual progress of the class. If the total number of tutorial sessions changes (e.g., from six to five), the total mark for all the tutorial sessions will still be 3% of your final mark, with each tutorial session reweighted equally (e.g., $3\%/5 = 0.6\%$ if the total number of tutorial sessions becomes five).

(3) Two Online Feedback Surveys: 2% (1% each)

There will be two online feedback surveys about the class through the class Quercus site at the beginning and the end of the semester. Your participation in each of the surveys before its due date counts toward 1% of your final mark.

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 would like to make an alternative arrangement, you must send an email to the teaching assistant who will grade your essay (normally, your tutorial 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 the assignment and to have a short meeting with the teaching assistant or the instructor in which you will be asked about your essay.

Late Assignment/Late Penalty Policy

All work is late if submitted after the date and time specified as due. To ensure fairness, the late assignment/late penalty policy specified below will be strictly enforced to everyone in class.

➤ **Weekly Online Review Quiz / Online Feedback Surveys**

A late submission of weekly online review quizzes and online feedback surveys after their respective due date and time will not be accepted.

➤ **Essay Assignments**

Essay assignments handed in late will result in a penalty of 1-percentage-point reduction per day (e.g., from 72% to 71%). Submitting an essay 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 starting to upload it to Quercus before the due date and time is not enough. Your upload must be fully complete before the due date and time.

Computer-related problems, such as the crash of your computer, a slow Internet connection, or 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. In addition, sending your assignment to the instructor and/or the teaching assistants 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 UofT and you can make a backup there.

Extension and Waiver of Assignments

Below is the policy about the type of accommodations (extension/waiver) considered for each assignment/requirement, acceptable reasons for accommodations, acceptable official documentations, and the procedure to request these accommodations. To ensure fairness, this policy will be strictly enforced to everyone in class.

➤ **Type of Accommodations**

An extension (or a waiver of a late penalty) may be considered for the essay assignments, and a waiver may be considered for a weekly online review quiz, participation in the

classroom response system questions during lectures, tutorial participation, and online feedback surveys.

If a weekly online review quiz is waived, then the total mark for the review quizzes will be determined by the rest of the weekly quizzes, with each week's quiz weighted equally. If participation in the classroom response system questions during a lecture or participation in a tutorial session is waived, the total mark for the classroom response system participation or tutorial participation will be determined by your participation in the rest of lectures with the classroom response system questions or tutorial sessions with each lecture or tutorial session weighted equally.

➤ Acceptable Reasons for Accommodations

The above accommodations (extension/waiver) may be considered only for a legitimate reason, such as a medical emergency, an accessibility issue, religious observances, and a family emergency, and there is an acceptable official documentation, which verifies the specific reason given (more on documentation below). Conflict with other class's assignment/exam schedule, leaving for a non-academic trip, or vacation is not an acceptable reason to request an extension or a waiver of the requirements. Computer-related problems, such as the crash of your computer, a slow Internet connection, or an occasional slow response of the server, will not be considered as an acceptable reason to request for an extension or waiver of the requirements either.

➤ Acceptable Official Documentation

- If you need an accommodation for accessibility reasons, you may use your Accessibility Services Letter as a documentation.
- If you need an accommodation for a health condition or injury, a personal or family emergency, or bereavement, you may use the Absence Declaration Tool on ACORN. Note that starting in 2023-24, students may only use the Absence Declaration once per academic term (e.g., the fall term) for a maximum period of 7 consecutive calendar days.
- For an accommodation for a health condition or injury, you may also use [the UofT Verification of Illness or Injury Form \(VOI\)](#). The VOI indicates the impact and severity of the illness, while protecting your privacy about the details of the nature of the illness.
- For an accommodation for religious observances, you don't need to submit a documentation if your occasion for religious observances is listed in either one of the following two webpages: [Accommodations for Religious Observances](#) or [Learn about Significant Religious and Cultural Days](#). In your accommodation request email, simply state the occasion and indicate where it can be found in either one of the above two webpages.
- For an accommodation for any other reasons, including a personal or family emergency or bereavement, you may use your College Registrar's letter supporting your request. For extended absences and absences due to non-medical reasons, make sure to contact your [College Registrar's Office](#).

➤ Procedure

All the above requests of accommodations must be made to your teaching

assistant via email. If you use the Absence Declaration as official documentation, make sure you specify the email address of your teaching assistant as a recipient of a copy of your Absence Declaration.

The accommodation requests must be made in advance as much as possible. Those who missed the deadline or participation for a legitimate, unforeseeable reason should contact their teaching assistant as soon as possible and no later than one week after returning to class.

In the request email, please include your full name, student number, and tutorial section (e.g., TUT0101).

Grade Appeals

There are two stages in the process of grade appeals on the essay assignments in this class.

First, you may appeal to your grader, who is normally the teaching assistant for your tutorial section. You are required to raise specific and substantive questions regarding the grades and feedback you received, so that your grader can double check their assessment based on them and address your questions. The grader may adjust the grade if they find it appropriate.

Second, if you still believe the grade you received is not appropriate after appealing to the grader, you may request a regrading to the instructor. You are required to submit a brief documentation substantiating why you believe your grade is not appropriate. The justification you give for regrading will be used by the instructor to consider if there are reasonable grounds for regrading. If your regrading request is considered reasonable, another teaching assistant who did not give your original mark will be assigned to regrade your essay with fresh eyes. This second grader will regrade your paper without knowing your original mark, the feedback given by the first grader, or the justification you gave for regrading. This is because your essay should be marked only on its quality based on the essay requirements and evaluation criteria. The regraded mark may go up or down from the original mark. The new mark will be your final mark whether it goes up or down from the original.

The grade appeal to the first grader and the regrading request to the instructor must be made within two weeks from when the original grade is assigned.

Outside Class Communication Policy

The large size of this class makes it necessary to maintain the following policy with respect to outside-class communication with the instructor and teaching assistants. Please follow the policy specified below when you contact the instructor or teaching assistants outside class.

1. Office Hours

- You are welcome to visit the instructor's office hours if you have any questions on the class subjects and materials. Details about the instructor's office hours will be posted on Quercus.
- There will also be office hours held by teaching assistants before the essay assignments' due dates. Details of the teaching assistants' office hours will also be posted on

Quercus.

2. Discussion Board on Quercus

- We will use the Discussion Board on the class Quercus site as the main medium through which you can ask questions and get them addressed. Given the nature of the course subjects and the large size of the class, other students may have the same question as you and they would benefit from your posting your questions and getting them addressed through the Discussion Board.
- You are also encouraged to post an answer to the questions posted by your classmates on the Discussion Board so that we can maintain a mutually-supporting learning community from which all of you will benefit.
- Questions posted on the Discussion Board will normally be addressed within 24 hours, except on weekends, by one of the teaching assistants in charge of addressing questions posted on the Discussion Board on that day.

3. Email Communications

- If you have any questions of a personal nature (e.g., grade appeal, deadline extension for a legitimate reason), you may email teaching assistants or the instructor and expect a response within two working days. Please start the subject heading of your email with “POL222:...”
- All requests for extension or waiver regarding the required assignments and participation must be made to the teaching assistant who leads your tutorial section. Please include your full name, student number, and tutorial section (e.g., TUT0101) in your email on these requests.
- If your questions are of substantive nature, please post these questions on the Discussions Board of the class Quercus site or visit office hours or tutorial sessions to get them addressed.
- If you ask questions of substantive nature via email to the teaching assistants or the instructor, you will be asked to post them on the Discussion Board on the class Quercus site. You are best advised to post your questions directly on the Discussion Board rather than sending them to the teaching assistants or the instructor by email, as your questions may be addressed more quickly if you post them directly on the Discussion Board.

4. Essay Assignments

- You may post relatively simple questions about the essay assignments on the Discussion Board of the class Quercus site. If you have detailed questions on your essay idea, you are best advised to visit office hours of the teaching assistants or the instructor.
- Please note that neither the instructor nor teaching assistants will be able to review drafts of your essay.

5. Non-response

- Please note that the instructor and teaching assistants may not be able to answer emails or questions posted on the Discussion Board of the class Quercus site during weekends and statutory holidays.

- Please also note that the instructor and teaching assistants may not be able to answer last minute questions on the assignments on their due date.
- In the case of your questions of substantive nature on the Discussion Board of the class Quercus site or those of personal nature over email not addressed within two working days (excluding weekends and holidays), send the instructor or teaching assistants an email to let them know your questions have not been addressed. Please include “POL222: Unanswered Question” in the subject heading of your email.

Accessibility

Students with diverse learning styles and needs are welcome in this course. If you need accommodation, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting [their website](#). 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.

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 [this website](#), which is the rule book for academic behaviour at the U of T. [Another website](#) lists nine categories of academic offences defined in the Code. Potential offences include, but are not limited to, plagiarism, cheating on tests and exams, misuse of the classroom response system (e.g., using someone else’s classroom response system during lectures to earn a participation credit for that student), fraudulent medical documentation, and improper collaboration on marked work.

For specific examples of the potential academic offences, you may read [this website](#). Please note that 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 [this site](#). This list is part of *the Advice on Academic Writing* at the University of Toronto. 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, also see [the U of T writing support website](#).

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.

Generative Artificial Intelligence Tools

The use of generative artificial intelligence tools and apps is prohibited in all course assignments (unless explicitly stated otherwise by the instructor in this course). This includes ChatGPT and other AI writing and coding assistants. Use of generative AI in this course may be considered use of an unauthorized aid, which is a form of academic offence under *the Code of Behaviour on Academic Matters*.

Class Schedule

The class schedule is specified below. During the semester, the lecture schedule may be adjusted according to the actual progress of the class. If this is the case, the due dates of assignments may also be modified. If these are to happen, you will be given an advance notice on the class Quercus site.

PART I. QUANTITATIVE STUDY OF POLITICS AND CAUSAL THEORY

Week 1: Sep. 11 (L0101) & 12 (L0201 & L5101) What Will We Learn and Why? Basics of Quantitative Empirical Political Science Research
Week 2: Sep. 18 (L0101) & 19 (L0201 & L5101) How Do We Study Politics Quantitatively?
Week 3: Sep. 25 (L0101) & 26 (L0201 & L5101) How Do We Evaluate Causal Relationship? Part 1 Tutorial Session 1: Causal Relationship (Sep. 25 - 27)

PART II. EXPERIMENTAL RESEARCH

Week 4: Oct. 2 (L0101) & 3 (L0201 & L5101) How Do We Evaluate Causal Relationship? Part 2 Tutorial Session 2: Peer Discussion on Essay 1 (Oct. 2 - 4)
Week 5: Oct. 9 (L0101) Thanksgiving Holiday Oct. 10 (L0201 & L5101) Essay 1 Consultation Essay 1 Due (Oct. 12, Thr., 11:59PM, EST)
Week 6: Oct. 16 (L0101) & 17 (L0201 & L5101) Basic Logic of Experimental Research & Laboratory Experiments
Week 7: Oct. 23 (L0101) & 24 (L0201 & L5101) Validity of Experimental Research & Field Experiments
Week 8: Oct. 30 (L0101) & 31 (L0201 & L5101) Survey Experiments & Discussion on Experiments Tutorial Session 3: Experimental Research (Oct. 30 – Nov. 1)

Fall Reading Week: Nov. 6 - 10

PART III. OBSERVATIONAL RESEARCH

Week 9: Nov. 13 (L0101) & 14 (L0201 & L5101) How Do We Analyze Sample and Infer about Population? Tutorial Session 4: Peer Discussion on Essay 2 (Nov. 13 – 15)
Week 10: Nov. 20 (L0101) & 21 (L0201 & L5101)

<p>Basic Logic of Observational Research & Regression Adjustment Tutorial Session 5: Descriptive Statistics, Confidence Interval, Basic Logic of Observational Research (Nov. 20 – 22) Essay 2 Due (Nov. 23, Thr., 11:59PM, EST)</p>
<p>Week 11: Nov. 27 (L0101) & 28 (L0201 & L5101) How Can We Examine the Relationship Between Variables? Linear Regression Model</p>
<p>Week 12: Dec. 4 (L0101) & 5 (L0201 & L5101) Wrap-Up Tutorial Session 6: Linear Regression (Dec. 4 – 6)</p>

Final Exam: During the Final Exam Period

Syllabus Change Policy

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

Notice of Video Recording

This course, including your participation, will be recorded on video and will be made available on the class Quercus site.

Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation, and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the instructor.

For questions about recording and use of videos in which you appear please contact your instructor.

Students may not create audio or video recordings of classes, with the exception of those students requiring an accommodation for a disability, who should speak to the instructor prior to beginning to record lectures.

Students creating unauthorized audio or video recording of lectures violate an instructor's intellectual property rights and the Canadian Copyright Act. Students violating this agreement will be subject to disciplinary actions under the Code of Student Conduct.