POL222H1F: Introduction to Quantitative Reasoning I
University of Toronto
Fall 2021

Meeting Room: LEC 0101: MP 203
LEC 0201: KP 108
LEC 5101: LM 159

Meeting Time: LEC 0101: Monday, 2:00pm-4:00pm
LEC 0201: Wednesday, 2:00pm-4:00pm
LEC 5101: Tuesday, 6:00pm-8:00pm

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

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Course Description and Objectives
Quantitative empirical analysis has become increasingly 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 the scientific studies of political science, especially those
employing 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 elective for majors. Students who will 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 yet widely used methods to empirically investigate the relationship between political, economic, social and policy phenomena; and

6. 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 social science research and public policy debates.

**Required Textbook**


The 2nd edition is available online in *Scholars Portal Books* through the University of Toronto Libraries. The 3rd edition is available for purchase at the UofT BookStore. All other readings on the syllabus will be made available on Quercus.

**Quercus**

Quercus ([https://q.utoronto.ca/](https://q.utoronto.ca/)) is the primary means through which class announcements and assignments will be distributed. Readings, lecture slides, and assignments will all be made available on the class Quercus site. 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. There will
be an important update to the class Quercus site at least once a week.

**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 set made available on Quercus; however, all information essential for review will be kept in these slides.

**Teaching Assistants**

There are nine 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 a couple of weeks before essay assignments are due.

Normally, a teaching assistant for your tutorial section will be a grader of your essay. All requests for 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 starting in the week of Sep. 27th, 2021. Most of you have already registered for a tutorial section (e.g., TUT0101) on ACORN. If you have not, you need to do so no later than Friday, September 24th.

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, as long as the reason is legitimate and official documentation, which verifies the specific reason given, is provided. To make this arrangement, register for a tutorial section, which you cannot attend but still available on ACORN, and then contact a teaching assistant who leads this tutorial section. Information about tutorial instructors for each tutorial section will be announced on Quercus.

**Grading and Evaluation**

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

1. Three Essay Assignments

<table>
<thead>
<tr>
<th>Essay</th>
<th>Weight</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essay 1</td>
<td>30%</td>
<td>Oct. 14th (Thu.), 5:00PM, EST</td>
</tr>
<tr>
<td>Essay 2</td>
<td>30%</td>
<td>Nov. 5th (Fri.), 5:00PM, EST</td>
</tr>
<tr>
<td>Essay 3</td>
<td>25%</td>
<td>Dec. 8th (Wed.), 5:00PM, EST</td>
</tr>
</tbody>
</table>

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. As detailed later in this syllabus, the class is divided into three parts. Each essay assignment corresponds to each part of the course. In Essay 1, you will apply the basic logic you will have learned about causal theory to the research question of your choice. In Essay 2 and 3, you will examine experimental research and observational research designs, respectively, to test a causal theory.

For the last two essay assignments, you will have the option to submit only one of these essay assignments. If you choose this option, the essay assignment of your choice counts toward
55% of your final mark. More specifically, you may choose either 1) to submit both Essay 2 and 3 with weights 30% and 25%, respectively; 2) to submit Essay 2 only with weight 55%; or 3) to submit Essay 3 only with weight 55%. You need to make this choice before you submit essay assignments. That is, you cannot choose one of the essays after you submit both Essay 2 and 3.

You don’t need to let us know your choice. Instead, if you submit both Essay 2 and 3, the 30% weight for Essay 2 and the 25% weight for Essay 3 will be automatically applied. If you submit Essay 2 only or Essay 3 only, the 55% weight for this essay will also be automatically applied.

2. Participation Mark: 15%

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

(1) iClicker Participation during Lectures: 8%

Your iClicker participation during lectures will count toward 8% of your final mark. I plan to include iClicker opportunities in nine lectures from the second week of the semester (Sep. 20th [L0101], 21st [L5101], and 22nd [L0201]) until the penultimate week. Your final mark on iClicker participation will be based on your participation in iClicker opportunities in eight out of nine lectures, with each lecture weighted equally.

Your iClicker participation mark 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 iClicker response was recorded properly. If you find your iClicker participation mark for a particular lecture is not recorded properly, you need to contact the instructor within two weeks from when the mark for this lecture is posted on Quercus. Any claims after two weeks will not be addressed.

(2) Tutorial Participation: 5%

There will be five tutorial sessions scheduled during the semester. Your tutorial participation mark (5% of your final mark) will be determined by your participation in these tutorial sessions, with each tutorial session weighted equally.

The total number of tutorial sessions may change due to the actual progress of the class. If this happens, the number of tutorial sessions that will be the basis of your tutorial participation mark will be the new total number of tutorial sessions, and each tutorial session weighted equally.

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

There will be two online feedback surveys on 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 want to make an alternative arrangement, you need to 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 an assignment and to have a short meeting with the teaching assistant or the instructor in which you will be asked about your essay.

**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.

- **Essay Assignments**

  Extension for the essay assignments 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 teaching assistant who will grade your essay (normally, your tutorial instructor).

  Students who know in advance they will need an extension for a legitimate reason should make a request to the teaching assistant who will grade your essay (normally, your tutorial instructor) via email as early as possible before the deadline. Those who missed the deadline 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, don’t forget to include your full name, student number, and tutorial section (e.g., TUT0101).

  Essay assignments handed in late will result in a penalty of 2-percentage-point reduction per day (e.g., from 72% to 70%). 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 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 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 the UofT. You may take a backup in your OneDrive.

➢ Tutorial Participation

If you will have to miss a tutorial session for a legitimate reason, the participation in that tutorial session may be waived. If this is for accessibility reasons, the waiver may be granted based on your Accessibility Services Letter. If this is 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 to your teaching assistant. The tutorial participation mark will then be determined by your participation in the rest of the tutorial sessions with each session weighted equally.

The request for a waiver for tutorial participation should be made to the teaching assistant who leads your tutorial section via email.

➢ iClicker Participation

Since your iClicker participation mark is based on your participation in eight out of nine lectures with iClicker opportunities, missing up to one lecture with iClicker opportunities will not affect your final mark.

If you will have to miss two or more lectures with iClicker opportunities for a legitimate reason, your iClicker participation in these lectures may be waived. If this is for accessibility reasons, the waiver may be granted based on your Accessibility Services Letter. If this is 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 a waiver to your teaching assistant. Your iClicker participation mark will then be determined by your participation in the rest of the lectures with iClicker opportunities with each session weighted equally.

The request for a waiver for iClicker participation must also be made to the teaching assistant who leads your tutorial section via email.
Grade Appeals
Grade appeals must be received within two weeks from when the grade is assigned. Before making a formal grade appeal, you are required to raise your questions to and discuss with your grader, who is normally your tutorial instructor. If you still believe the grade you received is not appropriate after discussing with the grader, you may make an appeal to the instructor. When you make an appeal, you are required to submit a brief documentation substantiating why you believe your grade is not appropriate. Once the grade appeal is received, your assignment will be re-graded with fresh eyes by another teaching assistant who did not give your original mark. Please note that the re-graded 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.

Outside Class Communication Policy
A 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
   o 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.
   o 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
   o We will also 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 a large size of the class, others may have the same question as yours and they would benefit from your posting your questions and getting them addressed through the Discussion Board.
   o 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.
   o Questions posted on the Discussion Board will be normally 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
   o If you have any questions of 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:...”
   o All requests for extension or waiver regarding the required assignments 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.
   o 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 want to ask questions of substantive nature anonymously, you may send your questions via email to the teaching assistants or the instructor, but note that your questions will be posted by them on the Discussion Board without your name, and that these questions will be addressed by the teaching assistant in charge of addressing questions posted on the Discussion Board on that day. If you don’t mind asking questions non-anonymously, 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 on 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 your draft essay when you seek advice.

5. Non-response
- Please note that the instructor and teaching assistants may not be able to answer email or questions posted on the Discussion Board of the class Quercus site during weekends.
- 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), 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 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](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](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, misuse of iClickers (e.g., using someone else’s iClicker 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, please read *The Scope of Academic Integrity* ([https://www.academicintegrity.utoronto.ca/perils-and-pitfalls/](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/](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/](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, also see the U of T writing support website at [http://www.writing.utoronto.ca](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 and Readings**

Class schedule and the assigned readings for each lecture are 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. In addition, some assigned readings may be replaced by others, and there may be additional readings. If these are to happen, you will be given an advance notice at the class Quercus site.

Readings listed for each class are required unless explicitly stated that they are recommended. In addition to the chapters of Kellstedt and Whitten, the readings include actual empirical research articles published in academic journals, which will be used as examples in the lectures to illustrate the variety of quantitative empirical research designs and data analysis methods. When you read these articles, skip the technical details but focus on the big picture of how the authors designed their empirical research to answer the causal question of their interest.
PART I. SCIENTIFIC STUDY OF POLITICS AND CAUSAL THEORY

Sep. 13 (L0101), 14 (L5101) & 15 (L0201)
What Will We Learn and Why?
Basics of Quantitative Empirical Political Science Research

Sep. 20 (L0101), 21 (L5101) & 22 (L0201)
How Do We Study Politics Scientifically?
- Kellstedt and Whitten, Chapter 1
- Recommended: Kellstedt and Whitten, Chapter 2.

Sep. 27 (L0101), 28 (L5101) & 29 (L0201)
How Do We Evaluate Causal Relationship?
- Kellstedt and Whitten, Chapter 3.
  ❖ Tutorial Session 1: Causal Relationship (Sep. 27 - 30)

PART II. EXPERIMENTAL RESEARCH

Oct. 4 (L0101), 5 (L5101) & 6 (L0201)
Basic Logic of Experimental Research & Laboratory Experiments
- Kellstedt and Whitten, Chapter 4.1-4.2.
  ❖ Tutorial Session 2: Peer Discussion on Essay 1 (Oct. 4 - 7)

Oct. 11 (L0101) Thanksgiving Holiday

Oct. 12 (L5101) & 13 (L0201) Essay Assignments Consultations During Lecture Hours
  o Students in all sections (L0101, L0201, and L5101) are welcome.
  ❖ Essay 1 Due (Oct. 14, Thu., 5:00PM, EST)

Oct. 18 (L0101), 19 (L5101) & 20 (L0201)
Experimental Research in Real World Setting: Field Experiments
- Kellstedt and Whitten, Chapter 4.1-4.2. (Reread)
Experiment in Benin.” *World Politics* 55.


- Tutorial Session 3: Experimental Research (Oct. 18 - 21)

**Oct. 25 (L0101), 26 (L5101) & 27 (L0201)**

Enhancing External Validity of Experimental Research: Survey Experiments

- Kellstedt and Whitten, Chapter 4.1-4.2. (Reread)


**PART III. OBSERVATIONAL RESEARCH**

**Nov. 1 (L0101), 2 (L5101) & 3 (L0201)**

Basic Logic of Observational Research

- Kellstedt and Whitten,
  - 3rd Edition: Chapter 4.3 and 4.5, or
  - 2nd Edition: Chapter 4.3-4.4.

- Essay 2 Due (Nov. 5, Fri., 5:00PM, EST)

**Fall Reading Week: Nov. 8 - 12**

**Nov. 15 (L0101), 16 (L5101) & 17 (L0201)**

How Can We Examine the Relationship Between Variables? Linear Regression

- Recommended: Kellstedt and Whitten,
  - 3rd Edition: Chapter 9.1-9.2, 10.1-10.2, 10.4, 10.8, 10.10, or

**Nov. 22 (L0101), 23 (L5101) & 24 (L0201)**

Alternative Methods & Validity of Observational Research

on Political Participation.” *Journal of Politics* 70(3).

- Tutorial Session 5: Observational Research (Nov. 22 – 25)

**Nov. 29 (L0101), 30 (L5101) & Dec. 1 (L0201)**

How Can We Measure Variable of Our Interest? Measurement & Statistical Inference
- Kellstedt and Whitten,
  - 3rd Edition: Chapter 5 and 7.1 or
  - 2nd Edition: Chapter 5.1-5.3 and 6.1.

**Dec. 6 (L0101), 7 (L5101) & 8 (L0201)**

Wrap-Up

- Essay 3 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.

**Notice of Video Recording**

The course lectures, including your participation, will be recorded on video and will be made available to students in the course who cannot attend in-person lectures through the class Quercus site. The recording will be made in the first two lectures and may be continued in the rest of the semester.

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

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