

**POL232H1S: Introduction to Quantitative Reasoning II**  
University of Toronto  
Winter 2016

Meeting Room:	SS 561
Meeting Time:	Thursday, 10:00am–12:00pm
Instructor:	Kenichi Ariga
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Office Hours:	Tuesday, 1:00pm-3:00pm
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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 statistical 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 majors, two consecutive introductory courses on quantitative empirical methodology are offered (POL222 & 232). This course, “POL232 Introduction to Quantitative Reasoning II,” is an elective second course and continues to introduce important foundations of quantitative empirical methodology.

Students taking this course will learn:

1. Theoretical foundations of *statistical inference* to learn about the characteristics and relationships in a large population or a general social process which generates the events of our interest from sample observations; and
2. Very basics of statistical computing to conduct simple quantitative analyses of social science data.

The objective of the class is to better prepare the students to become educated readers and active participants in social science research and public policy debates.

## Required Textbooks

Alan Agresti and Barbara Finlay, *Statistical Methods for the Social Sciences*, Fourth Edition (Prentice Hall, 2009).

Pollock, Phil H. III, *An R Companion to Political Analysis* (CQ Press, 2013).

The textbooks are available at the UofT BookStore. All other readings on the syllabus will be made available through the class Blackboard site.

## Computer Software

Quantitative social science research requires the use of computer and computer software. In this class, you will learn an elementary use of a software package called R, which is free to download at <http://www.r-project.org> and is getting popular among many social scientists. By the end of the semester, you are expected to be able to conduct a very basic quantitative empirical analysis using R.

## Class Structure

This class is designed with a mutually learning community in mind and two-hour weekly lectures should be only part of your entire learning experience. Every student is expected to take initiative in his or her own learning. All class requirements are designed to facilitate and help his/her initiative. Students are expected to ask questions proactively during the instructor's lectures and are encouraged to discuss the class materials with each other outside the classroom as well. As elaborated below, collaboration with your classmates will also be encouraged.

## Blackboard / Learning Portal

The class Blackboard site (<https://portal.utoronto.ca/webapps/portal/frameset.jsp>) or the Learning Portal will be the primary means through which class announcements and assignments will be distributed. Readings other than the above textbooks, lecture slides, and assignments will be made available in the class Blackboard site. Its Discussion Board will be the primary method by which you will ask simple questions about the course materials and get them answered (more on this below).

Please note that important announcements and updates will not be sent to you via email but posted on the class Blackboard site. It will be your responsibility to obtain access to the class Blackboard site and regularly check it. There will be an important update to the class Blackboard site at least once a week.

## Lecture Slides

Lecture slides will be made available on the class Blackboard site. Note that some slides, such as graphics and visual effects, may be taken out from the set made available on the class Blackboard site. If substantively important slides are taken out, you will be notified of this during lectures.

## Teaching Assistants

There is a teaching assistant for this course, whose main duties are leading tutorial sessions, grading assignments and other student contacts. There will also be office hours held by the

teaching assistant. When you contact the teaching assistant, please follow the specific guidance set forth later.

### **Tutorials**

There will be tutorial sessions led by a teaching assistant during the semester. The schedule of these tutorial sessions will be made available separately on the class Blackboard site.

### **Grading and Evaluation**

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

1. Essay/Paper Assignments: 60%
  - a. Two Short Data Analysis Essays: 35%
    - Best scored essay: 20%
    - Second-best essay: 15%
  - b. Final Paper: 25%

There will be two short essay assignments involving data analysis using a dataset provided in class. In each assignment, you will conduct data analysis using R and write up a short essay based on it.

You will also write a research paper based on a linear regression analysis using a dataset provided in class, which addresses the causal theory of your interest.

Through the first two short essays, you will gradually develop your data analysis and practice writing on the results of quantitative analysis. You will make these analyses and short essays into a full-length research paper in the final paper assignment.

2. Final Test: 20%

There will be a closed-book final test scheduled on Mar. 31st in class. Please note that the date of the final test may be adjusted depending on the actual progress of the class. While it is closed-book, you will be given a list of formulas needed for the test.

3. Class Participation: 20%

Your class participation marks will be determined by the following four items:

- a. Weekly Homework Assignments: 10%

There will be weekly homework assignments throughout the semester (with a few exceptional weeks). The homework questions will assess your understanding of important concepts and methods covered in class. Each homework assignment will be weighted equally.

The homework assignments are considered as participation in class as the number of correct answers will not be counted but the extent to which you give efforts to complete the assignments will be evaluated. Accordingly, all homework

assignments will be graded on a pass/fail basis. If it is determined that you gave it reasonable efforts to answer all the questions, you will be given a full credit for that homework, regardless of the number of correct answers. If you do not show a reasonable amount of work, however, your homework will be given a fail or a marginal pass. You will receive no credit in the former case and will receive half the credit in the latter.

All homework assignments are due at the beginning of your tutorial sessions, and will be returned, preferably during the same tutorial session, after the teaching assistant recorded their marks (pass, marginally-pass, or fail). Note that the teaching assistant will not mark each individual problem but give a quick scan to determine whether you have shown reasonable effort to answer all questions. You are expected to check your answers based on the answer key posted at the class Blackboard site at the beginning of your tutorial session and raise questions on the homework problems during the tutorial.

b. Lectures, Tutorials, Discussion Board Answers, and Collaboration: 9%

This component of the participation mark will be determined by:

- a) whether you are actively engaged in class lectures and tutorial sessions (i.e., regularly attend the class, actively raise questions, and participate in class discussion);
- b) how often and well you respond to your classmates' questions on the class Discussion Board; and
- c) whether you collaborate with your classmates in essay/paper assignments.

c. Feedback Survey: 1%

There will be an anonymous online feedback survey on the class through the Blackboard at the end of the semester. Your participation in the survey will count toward 1% of your final mark.

### **Group Work and Collaboration**

Group work and collaboration is encouraged in this class. Given somewhat technical nature of the class materials, it is essential to have an opportunity to discuss with your classmates the concepts and methods you learn in class and how to apply them. Everyone has different strengths and weaknesses in their understanding of materials and learning style. Through working together, you are expected to facilitate learning for each other and deepen your understanding of the materials, 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 is allowed for the essay/paper assignments and weekly homework assignments.<sup>1</sup> At most three students may participate in one group. If you submit your assignment as a group, everyone in the group will receive the same mark for that assignment. The group submission of the essay/paper assignments will also be taken into consideration when the "Lectures,

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<sup>1</sup> Given the nature of the class organization, if you want to submit weekly homework assignments with your peers, you should do so with students in the same tutorial session. For the essay/paper assignments, you may submit your assignments with those who are in a different tutorial session.

Tutorials, Discussion Board Answers, and Collaboration” component of your class participation mark is determined.

Collaboration in a team of multiple scholars is a norm for contemporary social science research in general, and quantitative empirical political science research in particular. As an introductory 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 assignments.

### **Turnitin**

Normally, students will be required to submit their course essays to Turnitin.com 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 Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University’s use of the Turnitin.com service are described on the Turnitin.com web site.

Students who wish to not use Turnitin.com may make an alternative arrangement with the instructor. They will need to let the instructor know well before the deadline of the assignment and ask for an alternative way to submit the essay. They will be required to save every version/draft of their essay electronically, and submit all of them at the time they submit the essay. They will also be required to hand in all notes, outlines, and bibliographic research at the same time.

### **Late Penalties and Extension**

All work is late if submitted after the date and time specified as the due date.

#### ➤ Short Essay / Final Paper Assignments

Short essay/final paper assignments handed in late will result in a penalty of 10-percentage-point reduction per day (e.g., from 80% 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. Essays handed in more than five calendar days late will receive a zero grade.

Extension for the short essay/final paper assignments may be made only when there is a legitimate reason, such as an unforeseeable medical emergency and an accessibility issue, and there is an acceptable official documentation, which verifies the specific reason given, such as the UofT Medical Certificate, the Accessibility Services Letter, and the College Registrar’s Letter. Students who know in advance they will need an extension for a legitimate reason should contact the instructor 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.

## ➤ Homework Assignments

Homework assignments not completed before the tutorial in which they are due will receive a zero grade as they are considered as participation marks.

Those who missed a tutorial session for a legitimate reason will be waived for a homework assignment due in that tutorial session rather than being given an extension, and their participation mark for the homework assignments will be determined by the rest of the assignments with each readjusted to weigh equally. An official documentation to verify the specific reason given, such as the UofT Medical Certificate, the Accessibility Services Letter, and the College Registrar's Letter, will be required for this waiver.

Conflict with other class's assignment/exam schedule, leaving for a non-academic trip, or vacation is not an acceptable excuse to miss the assignments or request an extension.

Computer-related problems will not be an acceptable excuse for submitting your work late. For this reason, 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.<sup>2</sup>

To ensure fairness, this policy will be strictly enforced.

## **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 a grader (a teaching assistant). 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 documentation substantiating why you believe your grade is not appropriate.

## **Outside Class Communication Policy**

Please follow the policy specified below when you contact the instructor or teaching assistants outside class.

### **1. Office Hours**

- You are welcome to visit during the instructor's office hours, which will be held during the time and date specified at the beginning of the syllabus, if you have any questions on the class materials.
- There will also be office hours held by teaching assistants. Specific schedules of the teaching assistants' office hours will be posted on the class Blackboard site.

### **2. Discussion Board**

- We will also use the Discussion Board on the class Blackboard site as the main

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<sup>2</sup> For example, you may send your draft to your email address. Then your draft file will be stored in your mailbox of the UofT server.

medium through which you can ask relatively simple questions regarding class materials and get answers. Given the nature of the course materials, someone else may have the same question as yours and s/he would benefit from your posting the question and getting an answer 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. Answering the questions posted by your peers will count toward the “Lectures, Tutorials, Discussion Board Answers, and Collaboration” component of your class participation mark.
- Teaching assistants or the instructor will regularly check the Discussion Board (once on Mondays, Wednesdays, and Fridays) and answer questions which have not been adequately addressed by peers.
- While relatively simple questions may be posted on the class Discussion Board, you are best advised to visit the office hours or tutorial sessions for complex questions or those that would require an extensive treatment.

### **3. Email Communications**

- If you have any questions of personal nature (e.g., deadline extension for a legitimate reason), you may email the instructor or teaching assistants and expect a response within two working days. Please start the subject heading of your email with “POL232:...”
- The instructor and teaching assistants will not answer, however, any questions over email that are of substantive nature concerning the class materials. You will need to post those questions on the Discussion Board or visit office hours or tutorial sessions to get them answered.

### **4. Non-response**

- As stated above, the instructor and teaching assistants will not respond to questions of substantive nature over emails. Please make sure that you follow the policy set up above to post these questions on the Discussion Board.
- Please note that the instructor and teaching assistants will not be able to answer email or Discussion Board questions 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 the instructor or a teaching assistant an email to let him know they have not been addressed. Please include “POL232: Unanswered Question” in the subject heading of your email.

### **Accessibility**

The University of Toronto is committed to accessibility. If you require accommodation for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services at [www.accessibility.utoronto.ca](http://www.accessibility.utoronto.ca) or (416) 978-8060 as soon as possible.

### **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 <http://www.artsci.utoronto.ca/osai/students>, which is the rule book for academic behaviour at the U of T. Potential offenses 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 *What is Academic Misconduct* (<http://www.artsci.utoronto.ca/osai/The-rules/what-is-academic-misconduct>) at the Office of Student Academic Integrity's website. Please note that, as stated in this site, "(n)ot knowing the University's expectations is not 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 clarification and information on plagiarism, please see *Writing at the University of Toronto* (<http://www.writing.utoronto.ca/advice/using-sources/>).

The University of Toronto treats cases of academic misconduct very seriously. All suspected cases of academic dishonesty will be investigated 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.

### **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. If these are to happen, you will be given an advance notice during lectures.

The instructor will occasionally post a study guide, which provides guidance for the readings assigned for the coming week, on the class Blackboard site.

#### **Jan. 14. Introduction**

Pollock 2013, Chapter 1.  
Agresti and Finlay 2009, Chapter 1.

#### **Jan. 21. Introduction to R (1): Univariate Distribution & Variable Transformation**

Pollock 2013, Chapters 2 and 3.  
Agresti and Finlay 2009, Chapters 2.1, 3.1, 3.2, 3.3, and 3.4.

#### **Jan. 28. Drawing a Random Sample: Probability and Probability Distribution**

Agresti and Finlay 2009, Chapters 2.2, 2.3, 4.1, 4.2, and 4.3.

**Feb. 4. Exploiting Randomness for Our inference of Unknowns: Sampling Distribution and Point Estimation**

Agresti and Finlay 2009, Chapters 4.4, 4.5, 4.6, 4.7, and 5.1.

**Short Data Analysis Essay 1 Due: Feb. 12 (Fri.), 11:59pm**

**Feb. 11. Introduction to R (2): Linear Regression**

Pollock 2013, Chapters 4 and 8.

Agresti and Finlay 2009, Chapters 9.1, 9.2, 9.3, 11.1, and 11.3

**Feb. 18. No Class (Reading Week)**

**Feb. 25. Is Our Finding *Significant*? Hypothesis Testing, and Statistical and Substantive Significance**

Agresti and Finlay 2009, Chapters 6.1, 6.2, 6.3, 6.5, and 6.8.

**Mar. 3. How Much Are We Confident in Our Inference? Interval Estimation**

Agresti and Finlay 2009, Chapters 5.1, 5.2, 5.3, and 5.6.

Pollock 2013, Chapter 6.

**Short Data Analysis Essay 2 Due: Mar. 11 (Fri.), 11:59pm**

**Mar. 10. Statistical Inference for Linear Regression**

Agresti and Finlay 2009, Chapters 9.5, 9.6, 9.7, and 11.4.

**Mar. 17. Interpreting Linear Regression**

Pollock 2013, Chapter 9.

Agresti and Finlay 2009, Chapter 10.

**Mar. 24. Review Session**

**Mar. 31. Final Test**

**Apr. 7. Wrap-Up**

**Final Paper Due: Apr. 8 (Fri), 11:59pm**

**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.