POL232H1S: Introduction to Quantitative Reasoning II
L0101 & L5101
University of Toronto
Winter 2017

Meeting Room:	SS 561
Meeting Time:	L0101: Monday, 2:00-4:00pm
	L5101: Thursday, 6:00-8:00pm
Instructor:	Kenichi Ariga
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Office:	SS 3047
Office Hours:	Monday, 10:00am-12:00pm

Teaching Assistants:	Gregory Eady	gregory.eady@mail.utoronto.ca
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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 students, two consecutive introductory courses on quantitative empirical methodology are offered (POL222 & 232). This course, "POL232 Introduction to Quantitative Reasoning II," is the 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;

2. *Linear regression* analysis, which is one of the most basic methods to empirically investigate the relationship between political, economic, social and policy phenomena; and

3. Elementary use of statistical software 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

> Paul M. Kellstedt and Guy D. Whitten, *The Fundamentals of Political Science Research*, *Second Edition* (Cambridge University Press, 2013).

> 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.

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.

Blackboard / Learning Portal

The class Blackboard site (https://portal.utoronto.ca) 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 after each lecture. 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. Occasionally, there will be in-class problems/exercises during lectures. They are intended to be used only in the lectures and will not be posted on the Blackboard.

Teaching Assistants

There are two 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 the teaching assistants. When you contact the teaching assistants, please follow the specific guidance set forth later.

Tutorials

There will be two types of tutorial sessions led by teaching assistants during the semester.

The first type is a computer laboratory session, scheduled before and after the class lecture, in which you will learn the elementary use of R based on Pollock's textbook. Zhen Zhao will lead the laboratory sessions for L0101, which meet at SS561 between 1:00-2:00pm or 4:00-5:00pm on Monday. Gregory Eady will lead the laboratory sessions for L5101, which meet at SS561 between 5:00-6:00pm or 8:00-9:00pm on Thursday. In a computer laboratory tutorial, an R homework assignment will be given and due by the next lab tutorial.

The second type is a theoretical review session in which a theoretical homework assignment is due and the theory of statistical inference and linear regression covered in the lectures will be reviewed based on the homework assignments. The schedule of these tutorial sessions will be made available separately on the class Blackboard site.

If you cannot attend any one of the tutorial time slots for a legitimate reason, you need to make an alternative arrangement for the tutorial participation marks and the submission of homework assignments at the beginning of the semester. Official documentation, which verifies the specific reason given, will be required. Unless you make an alternative arrangement, you will lose participation mark for homework assignments and tutorial sessions.

Note that a teaching assistant who leads your computer laboratory session will be a grader of your data analysis essay and final paper assignments.

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: 30% (15% each)

    b. Final Paper: 30%

    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 Exam: 30%

There will be a closed-book, closed-note final exam. The exam will take place during the final examination period in April administered by the Faculty of Arts and Science. Its date and place will be determined and announced by the Faculty. While it is closed-book, you will be given a list of formulas needed for the exam.

3. Class Participation: 10%

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

a. iClicker Participation during Class Lectures: 3%

Your iClicker participation during the lectures will count toward 3% of your final mark. I plan to include iClicker opportunities in ten lectures. Your final mark on iClicker participation will be based on your participation in iClicker opportunities in eight out of ten lectures, with each lecture weighted equally. The total number of lectures with iClicker opportunities may change due to the actual progress of the class. If this happens, the number of lectures that will be the basis of your iClicker participation mark will be the new total number of lectures with iClicker opportunities minus two.

It is your responsibility to bring your iClicker to each lecture. If you forgot to bring your iClicker or you have noticed that your iClicker is not functioning during the lecture, you may write down your answers to all iClicker questions of the lecture on a sheet of paper and submit it to the instructor at the end of the lecture. Note that the submission of iClicker responses in this way may be accepted in up to two lectures only. Such a submission will be accepted only at the end of the lecture in question, meaning submission in later days will not be accepted.

There may be rare occasions in which your iClicker did not function and you did not notice it during the lecture or your iClicker response was not recorded for some technical reasons. The number of lectures that is the basis of your iClicker participation mark is set to be the total number of lectures with iClicker opportunities minus two in order to accommodate missing a participation mark due to such rare troubles. As you are expected to attend all lectures and participate in all iClicker opportunities and these technical problems are expected to happen only rarely (presumably in less than two lectures), these rare troubles will not be considered to waive or make up your iClicker participation mark.

b. Tutorial Participation: 3%

There will be eight computer laboratory tutorial sessions and eight theoretical review tutorial sessions — sixteen tutorial sessions in total. Your tutorial participation mark (3% of your final mark) will be determined by your

participation in twelve out of the sixteen 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 minus four.

c. Homework Assignments: 3%

There will be two types of homework assignments. The first is a theoretical homework assignment in which you will review a theory of statistical methods that you will have learned in lectures. Theoretical homework assignments will be due in the theoretical review tutorial sessions. The second is an R homework assignment in which you will practice the use of R based on Pollock's textbook. R homework assignments will be due in the computer laboratory tutorial sessions.

Completing homework assignments is considered as participation in class as the number of correct answers will not be counted but the extent to which you gave effort 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 a reasonable effort to answer all the questions, you will be given full credit for that homework, regardless of the number of correct answers. If you do not show a reasonable amount of effort, 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.

There will be eight theoretical homework assignments and six R homework assignments. In total, there will be fourteen homework assignments. Your final mark on homework assignments (3% of the total mark) will be determined by your completion of ten out of the fourteen homework assignments by the tutorial sessions in which they are due, with each homework assignment weighted equally. The total number of homework assignments may change due to the actual progress of the course. If this happens, the number of homework assignments that will be the basis of your final mark will be the new total number of homework assignments minus four.

Completing all homework assignments is essential to understanding the class materials, completing the data analysis essay and final paper assignments appropriately, and performing well in the final exam.

d. 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 allowed for some assignments in this class, as specified below. 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 may facilitate learning for each other and deepen your understanding of the materials, which may be difficult if you worked alone.

Data Analysis Essay/Final Paper Assignments

The submission by a team of two individuals is allowed for the data analysis essay/final paper assignments. Collaboration in a team of multiple scholars is not unusual 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.

At most two 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. Given the nature of the class organization, if you want to submit your data analysis essay/final paper assignments with your peers, you should do so with another student in the same lecture section. For example, if you are in the L0101 lecture section, you have to collaborate with another student in L0101.

You may submit some of the data analysis essay/final paper assignments in a group but submit others individually. You may also change your group across paper assignments.

Note that a group submission is voluntary. There will be neither credit nor penalty for submitting your data analysis essay/final paper assignments in a group or individually. Neither the instructor nor the teaching assistants can help you organize your group or resolve any conflicts related to a group work. Conflicts or difficulties related to coordinating a 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 works appropriately and submit your data analysis essay/final paper assignments in time.

Homework Assignments

For homework assignments, you are also allowed to work with your classmates, but your submission of homework assignments must be individual. That is, you can discuss the homework problems with your classmates, but you have to prepare your own answer to each homework problem.

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 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.

➢ Short Data Analysis Essay / Final Paper Assignments

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 Verification of Student Illness or Injury form, 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 teaching assistant in charge of grading your assignments as early as possible before the deadline. Those who missed the deadline for a legitimate, unforeseeable reason should contact the teaching assistant as soon as possible and no later than one week after returning to class.

Short data analysis essay/final paper assignments handed in late will result in <u>a penalty of 2-percentage-point reduction per day</u> (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 the Turnitin is used to submit essay/final paper assignments, your submission must be accepted by Turnitin before the due date and time. Note that the date and time recorded in Turnitin will be your submission date and time. If this is after the due date and time, then your submission will be considered late. In other words, completing your essay and start uploading it to Turnitin before the due date and time is not enough. Your submission to Turnitin must be complete before the due date and time.

Also note that your submission is incomplete unless you receive a Turnitin submission ID. It is your responsibility to make sure that you received a submission ID 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.[1]

➢ Homework Assignments

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

Since your participation mark on homework assignments is based on your completion of ten out of fourteen homework assignments, missing up to four homework assignments will not affect your final mark.

If you cannot complete five or more homework assignments by the tutorial sessions in which they are due for a legitimate reason, the homework assignment in question will be waived rather than being given an extension, and your participation mark for the homework assignments will be determined by the rest of the assignments minus four with each readjusted to weigh equally. An official documentation to verify the specific reason given, such as the UofT Verification of Student Illness or Injury form, the Accessibility Services Letter, and the College Registrar's Letter, will be required for this waiver.

The request of a waiver for homework assignments must be made to a teaching assistant who leads the tutorial sessions in which the homework assignments in question are due.

➢ Tutorial Participation

Since your tutorial participation mark is based on your participation in twelve out of sixteen tutorial sessions, missing up to four tutorial sessions will not affect your final mark. If you will have to miss five or more tutorial sessions for a legitimate reason, the participation in these sessions may be waived as long as you provide official documentation, such as the UofT Verification of Student Illness or Injury form, the Accessibility Services Letter, and the College Registrar's Letter, which verifies the specific reason given. The tutorial participation mark will then be determined by your participation in the rest of the tutorial sessions minus four with each session weighed equally.

The request of a waiver for tutorial participation must be made to a teaching assistant who leads the tutorial session that you request a waiver for.

➢ iClicker Participation

Since your iClicker participation mark is based on your participation in eight out of ten lectures with iClicker opportunities, missing up to two lectures with iClicker

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[1] For example, you may use cloud storage spaces, such as DropBox, Google Drive, and iClouds. Or you may send your draft to your UofT email address so that your draft file will be stored in your mailbox of the UofT server.

opportunities will not affect your final mark. As stated in Grading and Evaluation 3-a, however, occasional technical problems will not be considered to waive or make up your iClicker participation mark, since the number of lectures with iClicker opportunities that will be the basis of the iClicker participation mark is set to be less than the total number of lectures with iClicker opportunities in order to accommodate missing a mark for such problems.

If you will have to miss three or more lectures with iClicker opportunities for a legitimate reason, your iClicker participation in these lecturers may be waived as long as you provide official documentation, such as the UofT Verification of Student Illness or Injury form, the Accessibility Services Letter, and the College Registrar's Letter, which verifies the specific reason given. Your iClicker participation mark will then be determined by your participation in the rest of the lectures with iClicker opportunities minus two with each session weighed equally.

The request of a waiver for iClicker participation must be made to the instructor.

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, who is normally a teaching assistant leading your computer lab session. 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. 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

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 before the data analysis essay and final paper assignments' due dates. 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 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.
- Teaching assistants and the instructor will regularly check the Discussion Board 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:..."
- If your questions are of substantive nature, please post these questions on the Discussion Board or visit office hours or tutorial sessions to get them answered.

4. Essay/Paper Assignments

- You may post general questions on the data analysis essay/final paper assignments on the class Discussion Board. If you have a question specific to your essay idea that is not appropriate to post on the Discussion Board, you are best advised to visit office hours of the instructor or teaching assistants. However, if you have a schedule conflict with all available office hours, you may send an email to the teaching assistant who is your grader to ask questions on your essay ideas. Please consider visiting office hours of the instructor or teaching assistants first, as the feedback of this kind may be best communicated in person. You should consider seeking advice from your tutorial instructor via emails only when your schedule does not allow visiting the available office hours.
- 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 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, accessibility.services@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.

Week 1: L5101 Jan. 5 (Thr.) & L0101 Jan. 9 (Mon.)
Introduction

PART I. DESCRIPTIVE STATISTICS:
ANALYSIS OF SAMPLE DATA
How Can We Describe a Variable or the Relationship between Variables?

Week 2: L5101 Jan. 12 (Thr.) or L0101 Jan. 16 (Mon.)
Descriptive Statistics for Single Variable
  ➢ Kellstedt and Whitten, Chapter 5.8-5.12
Theoretical Homework 1: Descriptive Statistics for Single Variable
R Homework 1: Intro to R
  ❖ Computer Lab Tutorial Session 1: L5101 Jan. 12 (Thur.) or L0101 Jan. 16 (Mon.)
    Introduction to R
    ➢ Pollock, Preface and Chapter 1
  ❖ Theoretical Review Tutorial Session 1: Jan. 17 (Tue.), 18 (Wed.), or 19 (Thr.)
    Theoretical Homework 1 Due

Week 3: L5101 Jan. 19 (Thr.) or L0101 Jan. 23 (Mon.)
Linear Regression As Descriptive Tool (1)
  ➢ Kellstedt and Whitten, Chapter 7.4.3 (skip t-statistic & p-value), 8.1-8.3 (skip the
    discussion on population), 9.1-9.4 (skip the discussion on population), and 9.9.
Theoretical Homework 2: Linear Regression As Descriptive Tool (1)
R Homework 2: Descriptive Statistics for Single Variable in R
  ❖ Computer Lab Tutorial Session 2: L5101 Jan. 19 (Thr.) or L0101 Jan. 23 (Mon.)
    Descriptive Statistics for Single Variable in R
    ➢ Pollock, Chapter 2
    R Homework 1 Due
  ❖ Theoretical Review Tutorial Session 2: Jan. 24 (Tue.), 25 (Wed.), or 26 (Thr.)
    Theoretical Homework 2 Due

Week 4: L5101 Jan. 26 (Thr.) or L0101 Jan. 30 (Mon.)
Linear Regression As Descriptive Tool (2)
  ➢ Reread the reading assignments for Week 3.
Theoretical Homework 3: Linear Regression As Descriptive Tool (2)
R Homework 3: Transforming Variables in R
  ❖ Computer Lab Tutorial Session 3: L5101 Jan. 26 (Thr.) or L0101 Jan. 30 (Mon.)
    Transforming Variables
    ➢ Pollock, Chapter 3
    R Homework 2 Due
  ❖ Theoretical Review Tutorial Session 3: Jan. 31 (Tue.), Feb. 1 (Wed.), or 2 (Thr.)
    Theoretical Homework 3 Due

PART II. STATISTICAL INFERENCE (A)
POINT ESTIMATION AND INTERVAL ESTIMATION
How Can We Learn about Population from Sample?

Week 5: L5101 Feb. 2 (Thr.) or L0101 Feb. 6 (Mon.)
Probability and Sampling Distribution
  ➢ Kellstedt and Whitten, Chapter 6.1-6.3
Theoretical Homework 4: Probability and Sampling Distribution
❖ Computer Lab Tutorial Session 4: L5101 Feb. 2 (Thr.) or L0101 Feb. 6 (Mon.)
   Short Data Analysis Essay 1 Discussion & Consultation
   R Homework 3 Due
❖ Theoretical Review Tutorial Session 4: Feb. 7 (Tue.), 8 (Wed.), or 9 (Thr.)
   Theoretical Homework 4 Due

Short Data Analysis Essay 1 Due: Feb. 10 (Fri.), 11:59pm

Week 6: L5101 Feb. 9 (Thr.) or L0101 Feb. 13 (Mon.)
Point Estimation and Interval Estimation
  ➢ Kellstedt and Whitten, Chapter 6.3-6.5
  ➢ Thomas H. Wonnacott and Ronald J. Wonnacott. 1990. *Introductory Statistics, 5th Edition.* Chapter 8 "Confidence Intervals."
Theoretical Homework 5: Point Estimation and Confidence Interval
R Homework 4: Examining the Relationship between Two Variables in R
❖ Computer Lab Tutorial Session 5: L5101 Feb. 9 (Thr.) or L0101 Feb. 13 (Mon.)
   Examining the Relationship between Two Variables in R
   ➢ Pollock, Chapter 4
❖ Theoretical Review Tutorial Session 5: Feb. 14 (Tue.), 15 (Wed.), or 16 (Thr.)
   Theoretical Homework 5 Due

Week 7: L5101 Feb. 16 (Thr.) or L0101 Feb. 27 (Mon.) [2]
Statistical Inference for Linear Regression
  ➢ Kellstedt and Whitten, Chapter 8.1-8.2 (reread), 9.1-9.2 (reread), 8.4's introductory paragraph (pp.178-179), 8.4.4, 8.4.5, and 8.5
R Homework 5: Linear Regression As Descriptive Tool in R
❖ Computer Lab Tutorial Session 6: L5101 Feb. 16 (Thr.) or L0101 Feb. 27 (Mon.)
   Linear Regression As Descriptive Tool in R
   ➢ Pollock, Chapter 8
   R Homework 4 Due

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[2] There will be no class on Feb. 20 (Mon.) and 23 (Thr.) because of the Family Day and Reading Week.

Week 8: L5101 Mar. 2 (Thr.) or L0101 Mar. 6 (Mon.)
Is Our Finding *Significant*? Statistical and Substantive Significance
> ➤ Kellstedt and Whitten, Chapter 8.4.5 (reread), 9.5, and 9.6

Theoretical Homework 6: Statistical and Substantive Significance
R Homework 6: Statistical Inference for Linear Regression in R

❖ Computer Lab Tutorial Session 7: L5101 Mar. 2 (Thr.) or L0101 Mar. 6 (Mon.)
  Short Data Analysis Essay 2 Discussion & Consultation
  R Homework 5 Due
❖ Theoretical Review Tutorial Session 6: Mar. 7 (Tue.), 8 (Wed.), or 9 (Thr.)
  Theoretical Homework 6 Due

Short Data Analysis Essay 2 Due: Mar. 10 (Fri.), 11:59pm

PART III. STAISTICAL INFERENCE (B)
HYPOTHESIS TESTING

Week 9: L5101 Mar. 9 (Thr.) or L0101 Mar. 13 (Mon.)
Hypothesis Testing: Basic Setup
> ➤ Alan Agresti and Barbara Finlay. 2009. *Statistical Methods for the Social Sciences, 4th Edition.* Pearson. Chapter 6 "Statistical Inference: Significance Tests."
> ➤ Janet B. Johnson, H.T. Reynolds, and Jason D. Mycoff. 2015. *Political Science Research Methods, 8th Edition.* CQ Press. Chapter 12 "Statistical Inference."

Week 10: L5101 Mar. 16 (Thr.) or L0101 Mar. 20 (Mon.)
Hypothesis Testing for Single Variable
> ➤ Reread the reading assignments for Week 9.

Theoretical Homework 7: Hypothesis Testing
❖ Theoretical Review Tutorial Session 7: Mar. 21 (Tue.), 22 (Wed.), or 23 (Thr.)
  Theoretical Homework 7 Due

Week 11: L5101 Mar. 23 (Thr.) or L0101 Mar. 27 (Mon.)
Hypothesis Testing for Linear Regression
> ➤ Kellstedt and Whitten, Chapter 8.4, 8.5 (reread)

Theoretical Homework 8: Hypothesis Testing for Linear Regression
❖ Computer Lab Tutorial Session 8: L5101 Mar. 23 (Thr.) or Mar. 27 (Mon.)
  Final Paper Discussion & Consultation
  R Homework 6 Due
❖ Theoretical Review Tutorial Session 8: Mar. 28 (Tue.), 29 (Wed.), or 30 (Thr.)
  Theoretical Homework 8 Due

Week 12: L5101 Mar. 30 (Thr.) or L0101 Apr. 3 (Mon.)
Review

Final Paper:
Due Apr. 5 (Wed.), 11:59pm

Final Exam:
Date and time determined by the Faculty of Arts and Science

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.