

University of Texas at Austin
GOV 350K: Statistical Analysis in Political Science (37285)
Fall 2024, TTH 2:00-3:30PM, PHR 2.116

Instructor: Prof. Tse-min Lin

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Quantitative Reasoning Flag

This course carries the Quantitative Reasoning Flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.

Course Overview:

This course introduces basic concepts and methods of statistics. Unlike the typical elementary statistics courses you may have taken, the emphasis here will be on applications in political science. The objective of this course is to help students acquire the literacy for understanding political science literatures based on the scientific approach, as well as to prepare interested students for more advanced methods courses. Topics include descriptive statistics, probability and probability distributions, sampling, sampling distribution, point estimation, confidence intervals, hypothesis testing, analysis of variance, contingency tables, correlation, and simple regression. You will also learn how to use the computer software R to analyze data.

Grading Policy:

Homework Assignments (6 sets required): 5% each set, 30% overall

Take-home Midterm Exam (Week 8): 30%

Take-home Final Exam (Week 15): 30%

Instructor's Discretion (attendance, participation, office hours, etc.): 10%

Notes: (1) Attendance and participation are strongly encouraged. Attendance will be taken in randomly selected class sessions. Recorded absences will be penalized. (2) You are allowed to work together on homework questions, but you should write your assignments independently. Suspected issues of academic dishonesty may be referred to Student Judicial Services. (3) Both the midterm and the final are cumulative. (4) Plus/minus grades will be assigned for the final grade.

Texts:

- A comprehensive set of notes on which lectures are based has been posted on Canvas.
- **[L&F] R. Larson and B. Farber. 2019. *Elementary Statistics: Picturing the World*, 7th Ed. Pearson. Available through the “My Textbooks” link in Canvas.** Note: This text is available through the Longhorn Textbook Access (LTA) program, a new initiative between UT Austin, The University Co-op and textbook publishers to significantly reduce the cost of digital course

materials for students. You are automatically opted into the program but can easily opt-out (and back in) via Canvas through the 12th class day. If you remain opted-in at the end of the 12th class day you will receive a bill through your “What I Owe” page and have until the end of the 18th class day to pay and retain access. If you do not pay by the 18th class day, you will lose access to the materials after the 20th class day and your charge will be removed. More information about the LTA program is available at <https://www.universitycoop.com/longhorn-textbook-access>.

- [JSTOR]/[Canvas] In addition, a number of journal articles and book chapters are assigned as required readings. Most of these papers are political science applications of the statistical methods to be introduced. These papers are included primarily for use in homework assignments, and they often include parts that are beyond the scope of this course. These readings will be discussed in class only if time allows. Most of the papers are available online at JSTOR <www.jstor.org>; others will be posted on Canvas <canvas.utexas.edu>. Reading these materials will help you get a better grip on the statistical concepts and methods introduced in this class.

Students with Disabilities:

Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259. For more information, visit <http://diversity.utexas.edu/disability/>

Policy on Academic Integrity:

Students who violate University rules on academic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and / or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on academic dishonesty will be strictly enforced. For further information, please visit the Student Conduct and Academic Integrity website at: <http://deanofstudents.utexas.edu/conduct/>

Accommodations for Religious Holidays:

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

Emergency Evacuation Policy:

Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside. Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building. Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.

In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.

Behavior Concerns Advice Line (BCAL): 512-232-5050

Emergency Information Web Site: <http://www.utexas.edu/emergency>

Course Outline and Reading Assignments:

Week 1 Introduction

8/27: L&F, Chapter 1.

8/29: L&F, Chapter 2.

[Lecture Note No. 1/1A: Introduction](#)

Week 2 Univariate Descriptive Statistics

9/3: L&F, Chapter 2.

9/5: [Canvas] VenderWeele, 2019, "Does a Religious Upbringing Promote Generosity or Not?" *Psychology Today*, Posted September 25, 2019.

[JSTOR] Aldrich et al., 1989. "Foreign Affairs and Issue Voting." *APSR*, 83:123-141.

[Canvas] 1984 "Gallup Survey Questionnaire"

[Lecture Note No. 2: Levels of Measurement and Descriptive Statistics](#)

[Lecture Note No. 2A: Quartiles for Grouped Data](#)

Week 3 Univariate Descriptive Statistics / R Computing

9/10, 9/12: An Introduction to R Computing

[Lecture Note No. 3: Download/Install R & R-Studio for Statistical Computing](#)

[Lecture Note No. 4: An Example of Statistical Computing: Height and Longevity](#)

[Lecture Note No. 5: The 1984 General Social Survey](#)

[Lecture Note No. 6: Coefficient of Variation \(For Reference Only\)](#)

Week 4 Univariate Descriptive Statistics (Continued)

9/17, 9/19: Review & Catch-up

Week 5 Probability

9/24: L&F, Sections 3-1, 3-2, 3-3.

9/26: [JSTOR] Davis and Davenport, 1999. "Assessing the Validity of the Post-Materialism Index." *APSR*, 93(September).

[Lecture Note No. 7/7A/7B/7C: Random Variables and Probability Distributions](#)

Week 6 Probability Distributions

10/1: L&F, Sections 4-1, 4-2.

10/3: L&F, Sections 5-1, 5-2, 5-3.

[Lecture Note No. 8/8A: The Binomial and Normal Distributions](#)

Week 7 Probability Distributions

10/8: [Lecture Note No. 9/9A/9B: Probability Theory](#)

10/10: [Lecture Note No. 10/10A: Joint Probability Distribution](#)

Week 8 Review Session & Midterm Exam

10/15: In-Person & Online Review Session at 2:00-3:15pm (to be recorded)

10/17-18: Take-home Midterm Exam from 10/17 noon to 10/18 noon

Week 9 Sampling and Sampling Distribution

10/22: [Canvas] Goel (1988), "Sampling." Chapter 5 of his *Political Science Research*.

10/24: L&F, Section 5-4.

Lecture Note No. 11/11A: Sampling
Lecture Note No. 12: Statistical Inference – Confidence Intervals
Lecture Note No. 12A: Sampling Distribution
Lecture Note No. 12B: Point Estimation

Week 10 Confidence Interval

10/29: L&F, Sections 6-1, 6-2, 6-3.

10/31: L&F, Section 6-4.

[Canvas] Sullivan et al., 1990. “Candidate Appraisal and Human Nature: Man and Superman in the 1984 Election.” *Political Psychology*, 11:459-484.

Lecture Note No. 12C: The Notion of Margin of Error

Lecture Note No. 13: Sampling Distribution of the Sample Mean

Week 11 Hypothesis Testing

11/5: L&F, Sections 7-1, 7-2, 7-3.

11/7: L&F, Sections 7-4, 7-5.

Lecture Note No. 14: Hypothesis Testing

Lecture Note No. 15: One-Tailed Test

Week 12 Hypothesis Testing

11/12: L&F, Sections 8-1, 8-2.

11/14: L&F, Sections 8-3, 8-4.

Lecture Note No. 16: 2-Sample t Test

Lecture Note No. 17: Statistical Inference of Means/Proportions

Week 13 ANOVA & Chi-Square Test

11/19: L&F, Section 10-4.

11/21: L&F, Sections 10-1, 10-2.

[Canvas] Dahl, 1984. “Political Regimes: Popular and Hegemonic.” Chapter 7 of his *Modern Political Analysis*.

Lecture Note No. 18: Comparing Means of Three or More Independent Samples (ANOVA)

Lecture Note No. 19: Level of Measurement and Statistical Procedures

Lecture Note No. 20: Measures of Association – Chi Square Test

Week 14 Fall Break

Week 15 Review Session & Final Exam

12/3: In-Person & Online Review Session at 2:00-3:15pm (to be recorded)

12/5-12/6: Take-home Final Exam from 12/5 noon to 12/6 noon