University of Texas at Austin
GOV 350K: Statistical Analysis in Political Science (38935)
Fall 2021, TTH 2:00PM-3:30PM

> **Important Note: As approved by the College of Liberal Arts, all sessions of this course will be conducted online throughout September 17. Both the instructor's and the TA's office hours will also be held online.**

Instructor: Tse-min Lin <tml@austin.utexas.edu>
Online Office Hours: TTH 3:30-5:00pm (Join url: https://utexas.zoom.us/j/5757438701)

Teaching Assistant: Md Muhibbur Rahman <r.muhib@utexas.edu>
Online Office Hours: WF 9:30-11:00am (To be scheduled on Canvas)

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
Online Midterm Exam (Week 8): 30%
Online Final Exam (Week 15): 30%
Instructor's Discretion (participation in class, office hours, etc.): 10%

Notes: (1) Attendance and participation during live sessions, whether in-person or online, are strongly encouraged. (2) During an online session, please show your face when the instructor speaks to you or when you speak. (3) 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. (4) Both the midterm and the final are cumulative. (5) 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.
- *Any* basic statistics textbook that covers the topics listed in the course outline, **or**
- [W&W] T. H. Wonnacott and R. J. Wannacott. 1990. *Introductory Statistics*, 5th Ed. Wiley.

[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
  8/26: W&W, Chapter 1.
  Lecture Note No. 1/1A: Introduction

Week 2 Univariate Descriptive Statistics
  8/31: W&W, Chapter 2.
        [Canvas] VenderWeele, 2019, "Does a Religious Upbringing Promote Generosity or Not?"
          Psychology Today, Posted September 25, 2019,
  9/2: [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
  9/7, 9/9: 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)
  9/14, 9/16: Review & Catch-up

Week 5 Probability
  9/21: W&W, Sections 3-1, 3-2, 3-3, 3-4, 3-5.
  9/23: [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
  9/28: W&W, Sections 4-1, 4-2, 4-3.
  9/30: W&W, Sections 4-4, 4-5, 4-6.
  Lecture Note No. 8/8A: The Binomial and Normal Distributions

Week 7 Probability Distributions
  10/5: W&W, Sections 5-1, 5-2, 5-3.
  10/7: W&W, Sections 5-4.
  Lecture Note No. 9/9A/9B: Probability Theory
  Lecture Note No. 10/10A: Joint Probability Distribution

Week 8 Review Session & Midterm Exam
  10/12: Review Session
  10/14-15: Online Midterm Exam from 10/14 noon to 10/15 noon

Week 9 Sampling and Sampling Distribution
  10/19: [Canvas] Goel (1988), "Sampling." Chapter 5 of his *Political Science Research*.

10/21: Point Estimation, W&W, Sections 6-1, 6-2, 6-3, 6-4; Chapter 7
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
  10/26: W&W, Sections 8-1, 8-2, 8-5.
  10/28: W&W, Sections 8-3, 8-4.
        [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
  11/2: W&W, Sections 9-1, 9-2.
  11/4: W&W, Sections 9-3, 9-4.
  Lecture Note No. 14: Hypothesis Testing
  Lecture Note No. 15: One-Tailed Test

Week 12 Hypothesis Testing
  11/9: W&W, Section 9-6.
        [JSTOR] Krehbiel, 1990. "Are Congressional Committees Composed of Preference
          Outliers?" *APSR*, 84:149-163.
  11/11: W&W, Sections 10-1.
  Lecture Note No. 16: 2-Sample t Test
  Lecture Note No. 17: Statistical Inference of Means/Proportions

Week 13 ANOVA & Chi-Square Test
  11/16: W&W, Sections 10-1.
  11/18: W&W, Chapter 17.
        [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 Happy Thanksgiving
  11/23: Review & Catch-up
  11/25: Thanksgiving Holiday

Week 15 Review Session & Final Exam
  11/30: Review Session
  12/2-3: Online Midterm Exam from 12/2 noon to 12/3 noon