

Political Science 4000/7000
Introductory Statistics for Political Science
Fall 2020

MW 1:30-2:45

Tate 110

Prof. James Endersby
316 Professional Bldg.
Office Hours: T 10:00-12:00
endersby@missouri.edu, 573-882-4238

TA Steven Jokinsky
207 Professional Bldg.
Office Hours: T 10:00-1:00, R 12:00-3:00
smjrv8@mail.missouri.edu

Course Objectives:

This course provides an overview of elementary descriptive and inferential statistics, with an emphasis on applications in political science. It introduces the student to statistical techniques that are both common and useful for social science research. All political science students should be able to read and criticize statistics frequently presented in academic, media, and governmental reports. You will acquire skills at formulating measures for concepts and variables, collecting evidence, creating testable hypotheses, and using basic statistical tools to identify patterns and evaluate data. A competitive job market makes skills and experience with statistics, programming, and numerical data analysis a distinguishing asset for social science graduates.

While understanding statistical theory is important, this course attempts to balance theoretical and practical understanding of statistical concepts. Knowledge of mathematics through college algebra (equivalent to Math 1100) is required. More advanced mathematical knowledge is helpful but is not required. For undergraduates, this course satisfies the math reasoning proficiency requirement. For graduate students, this course serves as a prerequisite for other Political Science statistics and methodology courses.

Use of computers for research is a central feature of contemporary social science in academia as well as the private sector. This course is offered concurrently with POL_SC 4010/7010, *Computing Methods*, and enrollment in this lab is mandatory. Throughout the semester, each of these courses will complement the other. In *Computing Methods*, you will learn computer applications for fast calculations of solutions to problems encountered in the statistics class. POL_SC 4010/7010 is offered on an S/U basis only. Students will use the STATA statistical software package on machines in a computing lab and/or "Software Anywhere" computer system to answer problems in POL_SC 4000/7000. However, the grade earned in one course may be independent of the grade earned in the other. POL_SC 4010/7010 is held on Friday mornings in a computing lab in Naka Hall 144.

Course Requirements:

Successful completion of the course depends on reading the texts, attending class and lab, and completing the assigned homework problems. On occasion, you will be asked to turn in your homework for grading and review. Your performance in the course will be evaluated on the basis of three examinations (each worth 25% of the final grade), a brief research paper (15%), and attendance, participation, and homework assignments (10%). Graduate students in Political Science 7000/7010 must complete the same course requirements,

although the quality of performance and depth of political science reasoning is expected to be greater.

The plus/minus system of grading will be used; an A+ will be given for scores at or exceeding 97%, an A for scores 93 and above, an A- for those 90 and above, a B+ for scores 87 and above, and so forth.

The research paper should demonstrate your competence in applying statistics to a specific research problem. You may choose among several research topics using actual social science data. You will develop a concise research hypothesis that can be tested with data and computer analysis. You should briefly identify the source of your research problem, formulate it as a hypothesis for testing with available data, execute the appropriate test, and draw conclusions about the validity of the hypothesis. The text of the paper should be about eight to ten double-spaced pages in length (twelve pages is the maximum). Graduate student papers (PS7000) should be somewhat longer, about ten to twelve pages (fifteen pages maximum) and involve more substantive discussion of the analysis. In addition to the text, your paper must include appropriate tables and graphs. These are not included in the page count given above. Evaluation of this exercise will be based primarily on clarity of presentation and statistical craftsmanship rather than on the substantive or theoretical importance of the problem. You will select a topic and submit a one-page progress report outlining your hypotheses and data before Thanksgiving break, and your final research paper is due during finals week.

Textbooks:

Required:

Agresti, Alan. 2017. *Statistical Methods for the Social Sciences*, 5th edition.

The book by Agresti will serve as the primary text for this course. Many students have found the text to be a useful reference source for subsequent classes and research. Other class materials will be posted to the course Canvas site throughout the semester.

Fall 2020 Challenges:

Our course is designed to have both an in-person class and an in-person lab. However, office hours will be held via Zoom or another utility unless arranged in a manner consistent with safe practices. The environment of the coronavirus pandemic may influence our course during the semester. Any person who tests positive for COVID-19, who has a close, extended interaction with another who tests positive for COVID-19, or who has a pre-existing condition with heightened risk should participate in class virtually. Moreover, anyone who has a temperature of 100.4 degrees or higher, who has an explained cough, or who has any of the list of symptoms identified in MU's Show Me Renewal document or subsequent revision should participate in the virtual class option for that day. For those attending class in-person, safe practices as defined by the University of Missouri are required. These requirements include wearing an approved mask covering the nose and mouth and maintaining appropriate (six feet) physical distance from others.

If circumstances change during the semester, any changes will be announced in class or email as well as on the course Canvas site. For instance, if we are required to hold class

and/or lab online only, we will adapt as appropriate. However our semester unfolds, please remember to keep in contact with your instructor and teaching assistant. We are here to help, and we hope to have an excellent semester.

Honesty:

Academic honesty is fundamental to the activities and principles of a university. Each student's work must be responsibly and honorably acquired, developed, and presented. Plagiarism, cheating, and other forms of academic dishonesty will not be tolerated. Any examination or assignment tainted by academic dishonesty will automatically receive a grade of F. University regulations also require reporting of incidents of academic dishonesty. When in doubt about any issues pertaining to academic honesty, please consult with me.

Accommodation:

If you have special needs, such as those addressed by the Americans with Disabilities Act, please let me know as soon as possible. Every reasonable effort will be made to assist you. Students with disabilities who request academic accommodations must register and establish a plan with the Disability Center, S5 Memorial Union, 882-4696, disabilitycenter.missouri.edu.

Recording and Electronic Devices:

Every student has the right to listen to the lecture undistracted by other's use of electronic devices such as cellular phones, PDAs, laptops, tablets, and similar electronic devices. To ensure that electronics do not distract the class and facilitate—rather than impede—learning, use of these items in this class, except for classroom activities, is forbidden.

All cell phones must be kept on vibrate only so as not to interrupt the class. Because the University of Missouri deploys an emergency notification system via cellular phones, you may keep your phone on, but it must be kept on silent ring and never answered in class. If you have family medical or child care responsibilities that involve your phone, notify the professor before class.

In this class, students may not make or distribute audio or video recordings of course activity. Those students who are permitted to record are not permitted to redistribute audio or video recordings of statements or comments from the course to individuals who are not students in the course without the express permission of the faculty member and of any students who are recorded.

Course Outline, Reading, and Assignments:

We will continue at a rate comfortable for students in the class. We should cover material in the first eleven chapters by the end of the course, and we may highlight more advanced procedures described in later chapters of the Agresti text. Class activities and frequent homework assignments parallel and supplement the discussion in class. The course Canvas site outline assignments and provide other class supplementary materials; the page is available from <http://canvas.missouri.edu/>. Updates will appear periodically.

Students should complete homework assignments before attending class in order to derive maximum benefits from the discussion. Occasionally, these assignments may be collected and graded. Exercises performed using the computer will be reviewed in POL_SC 4010/7010, *Computing Methods*.

<u>Date</u>	<u>Topic</u>
August 24, 26, 31	<i>Sampling and Measurement</i> Agresti chapters 1 and 2
September 2, 9	<i>Descriptive Statistics</i> Agresti chapter 3 <i>Labor Day, September 7: No classes</i>
September 14, 16	<i>Probability Distributions</i> Agresti chapter 4
September 21, 23, 28	<i>Statistical Inference: Estimation</i> Agresti chapter 5
September 30:	First Exam
October 5, 7, 12	<i>Statistical Inference: Significance Tests</i> Agresti chapter 6
October 14, 19	<i>Comparison of Two Groups</i> Agresti chapter 7
October 21, 26, 28	<i>Categorical Variables and Association</i> Agresti chapter 8
November 2:	Second Exam (part in class and part take-home)
November 4, 9, 11	<i>Linear Regression and Correlation</i> Agresti chapter 9 Research Topic Due
November 16	<i>Multivariate Relationships</i> Agresti chapter 10
November 18	<i>Multiple Regression and Correlation</i> Agresti chapter 11

Thanksgiving Break: No Class

November 30,
December 2, 7, 9

Multiple Regression and Correlation
Agresti chapter 11, 12.1, 13.1-3, 14.1-3
(Final take-home portion distributed, December 9)

December 16: **Final Exam 10:00-12:00** (in class)

December 17: **Research Paper Due by 4:00pm**

Important Dates:

Wednesday, September 30	First Exam, in-class
Monday, November 2	Second Exam, in-class portion
Wednesday, November 4	Second Exam, take-home portion due
Wednesday, November 11	Research Topic Chosen
Wednesday, December 9	Final Exam, take-home portion distributed
Monday, December 14	Final Exam, take-home portion due
Wednesday, December 16	Final Exam, in-class portion, 10:00-12:00
Thursday, December 17	Research Paper Due, by 4:00

According to our current course plan: The first exam will be an in-class test. The second exam will be part in-class and part take-home. Likewise, the final examination will be part in-class and part take-home. The research paper due no later than 4:00 p.m. on the due date, but you may submit the research paper earlier than the due date.

Note that the format of each exam may depend on the status of the pandemic, Mizzou's response, and class participation. The description of assignments assumes we are a fully in-person class, so circumstances may change. Any changes will be announced in class and on the course Canvas site.