THE OHIO STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

Statistics 6510 **Survey Sampling Methods** **Fall 2024**

NOTE: Syllabus is subject to change as the semester evolves

Instructor: Dr. Elizabeth A. Stasny, 319 Cockins Hall, stasny.1@osu.edu
Zoom Office Hours (Stasny): 12:30 – 1:30 Tuesdays and immediately following each class

Course Assistant: Ms. Yuxuan Xin, xin.155@buckeyemail.osu.edu
Office Hours (Xin): (TBD)

Textbook: Lohr, Sharon L., "Sampling: Design and Analysis", Chapman and Hall/CRC; 2019. (This is a reprinting of the 2nd edition published by Brooks/Cole; 2010.) The unlimited user ebook is available at https://library.ohio-state.edu/record=b8944076~S7. Be sure you are looking at the correct textbook for assignments. Supplemental reading assignments may be posted on the course website.

Other Sampling References:

Cochran, *Sampling Techniques*
Schaeffer, Mendenhall, and Ott, *Elementary Survey Sampling*
Kish, *Survey Sampling*
Hanson, Hurwitz, and Madow, *Sample Survey Methods and Theory*, Vols. I and II
Groves, Fowler, Couper, et al., *Survey Methodology*

Prerequisites: An excellent background in the material covered in Statistics 5301 or Public Health Biostatistics 6212. Students should be knowledgeable about and comfortable with discrete data distributions, expected values, variances, confidence intervals, and regression. Many of these topics are reviewed in Appendix A of the course textbook.

Course Requirements: You are responsible for all material covered in class, in assigned readings, and on homework assignments. You are expected to attend all classes*. **Attendance is mandatory* for all class meetings at which students make presentations.** Reflection papers will be assigned after class group discussions and student presentations.

Course delivery:
Classes will be delivered live using CarmenZoom lectures from 3:00-4:20 MW as scheduled. On occasion, the class will be divided into breakout rooms for small group discussions. If you are unable to attend a class, please let me know in advance so that I can record the lecture for your use (only).

Use of Electronic Devices during Class: Any recording during class, using video, audio, or still photography, is permitted **only with prior permission** from the instructor.

Computing: I will use the Statistical package R for my computing needs in the course. R is freely available for most operating systems (http://www.r-project.org/). If you are not already familiar with R, there are online tutorials available. I recommend getting started with swirl. This site http://swirlstats.com/students.html has instructions for downloading R, RShiny, and opening the swirl tutorial system. Once inside, you can learn the basics of working with R via the tutorial "R Programming:

The basics of programming in R." Alternately, you may use any statistical package you prefer for the work in this course; I may not be able to help you with the package you choose, however.

Homework: Assignments will be due approximately weekly. It is your job to ensure that your homework is easy to grade. Any computer output must be edited and annotated; graphs and plots must be clearly labeled and discussed in the text of the homework. Problems that are out of order or with parts not clearly identified may not receive full credit.
Additionally, reflection papers of 250-300 words will be due the class period after the 2-3 classes in which we have group discussions and after class presentations for which you are not a presenter. These will count as homework assignments for determining course grades. **No late assignments of any type will be accepted*.**
Although you certainly may discuss homework with others outside of class, your submissions must be your own and should demonstrate your personal understanding of the problems.

Midterm: Midterm: On or about Wednesday, October 16. The exam will be online and you may take up to two hours to complete and submit the exam. Start time will be as early as 2:30 p.m. and end time will be as late as 5:00 p.m. You may use your book and/or your notes, but you may not consult with anyone other than the course instructor during the exam; the work you submit must be your own.

Ohio State's academic integrity policy
It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Class Presentations: The final exam for the course is a 12 - 15-minute class presentation by each student on an appropriate paper, report, or other similar document. I will provide a list of suggested papers on Carmen but students are welcome to suggest other papers or topics. The topics include Political Polling, the Decennial Census, Survey Biases, Questionnaire Design, Cognitive Aspects of Surveying, Web-based Surveys, and Complex Surveys. Requirements for presentations will be covered as the class progresses. Presentation topics must be decided by the end of September.

The following dates are reserved for class presentations (**attendance is required***). I will assign students to a date based on the topic of papers they choose:

October 30 (Political Polling since this is the week before the election)
November 6
November 20
December 2
December 6 (During the Final Exam time of 12:00-1:45)

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* Obviously, if you are ill or caring for someone who is ill, we will make alternate arrangements. Please contact me by email as soon as possible and keep me apprised of your situation.

Grades: The final numerical grade will be determined as follows:

Homework (lowest grade dropped)	25%
Midterm Exam	34%
Class Presentation	34%
Class Participation	7%

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be followed for copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator Melissa Mayhan at titleIX@osu.edu or 614-247-5838.

Accessibility accommodations for students with disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; 098 Baker Hall, 113 W. 12th Avenue.

Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you, or someone you know, are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614- 292-5766. You can reach an on call counselor when CCS is closed at 614-292-5766; 24 hour emergency help is also available through the National Suicide and Crisis Lifeline by calling or texting 988.

Other

OSU's policy statement on accommodations for religious holidays may be found at https://oaa.osu.edu/religious-holidays-holy-days-and-observances.

OSU's policy statement on Artificial Intelligence and Academic integrity may be found at https://ugeducation.osu.edu/recommended-syllabus-statements-and-policies.

Tentative Schedule of Topics

(Actual schedule will evolve as the term progresses and class presentations are scheduuled)

Introduction to sampling and its history (2 classes)

Simple Random Sampling (3 classes)
- Estimating population means, proportions and totals Variances and Interval estimates
- Sample Size Determination

Stratified Sampling (3 classes)
- Estimating population means, proportions and totals Variances and Interval estimates
- Designing good strata
- Sample size and sample allocation
- Sample-based weights

Estimating a Ratio and Ratio Estimation (2 classes)
- Estimating population means, proportions and totals
- Variances and Interval estimates

Cluster Sampling (4 classes)
- Estimating population means, proportions and totals
- Variances and Interval estimates
- Good versus practical clustering
- Single-stage, equal and unequal cluster sizes
- Two-stage cluster sampling
- Sample-based weights

Probability Proportional to Size Sampling (1/2 class)

Introduction to Questionnaire Design and Question Writing (2 classes)

Nonsampling Errors (3 classes)
- Frame Design and Error
- Response Bias
- Nonresponse
- Other sources of error

Ranked Set Sampling (1 class)

Class Schedule For My Planning Purposes – Subject to Change as Needed

Monday	Tuesday	Wednesday	Thursday	Friday
Aug. 19	20 First Day of OSU classes	21	22	23
26	27	28	29	30
Sept. 2 Labor Day	3	4	5	6
9	10	11	12	13
16	17	18	19	20
23	24	25	26	27
30 Presentation Paper Selection Due by Today	Oct. 1	2	3	4
7	8	9	10 Fall Break	11 Fall Break
14	15	16 Midterm	17	18
21	22	23	24	25
28	29	30 Presentations	31 Halloween 🎃	Nov. 1
4	5 Election Day	6 Presentations	7	8
11 Veterans' Day	12	13	14	15
18	19	20 Presentations	21	22
25	26	27 Thanksgiving Holiday	28 Thanksgiving Holiday	29 Thanksgiving Holiday
Dec. 2 Presentations	3	4 Last Day of Classes	5	6 Final Exam Presentations 12:00 – 1:45