

Sampling and Survey Techniques

STAT 4307/5307 - Spring 2015

Instructor:	Yali Liu, PhD
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Office Hours:	MW 10:30-11:30am or by appointment
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Class time and Place: MWF 9:20 - 10:15am; Warf-Pickel 308

Credits: 3

Prerequisites: Elementary statistics or the equivalent.

Textbooks: Sampling: Design and Analysis (second edition), by Sharon L. Lohr (Duxbury Press, 2009, ISBN-10: 0495105279, ISBN-13: 978-0495105275). This text will provide the structure of the course; however, material for the class will come from several sources. I will help you figure out which parts are really important and which parts you can skim over.

D2L Course Page: The D2L will be used to provide you with information relevant to the course. Such information includes syllabus, announcements, lecture notes, homework assignments and solutions, reading assignments, data sets, review sheets, and changes to office hours. Please check D2L regularly for updates.

Calculator: You will need a calculator for this class. I will not provide instruction on how to use your calculator.

Course Objectives:

- To develop a basic understanding of statistical methods for the design and analysis of survey sampling
- To learn methods of randomization specific to various survey designs and how to choose and apply them
- To provide methods of population parameters estimation and calculation of the margin of error and sample size for the most common sampling designs
- To introduce the students to the use of statistical software in the survey and sampling context

Teaching Method: Topics are illustrated by using current newspaper, magazine articles, and the world wide web. SAS/Minitab will be used for labs and lectures. This course is **writing intensive**. Each student is required to write a total of at least 15 pages (approximately 250 words each one) over the course of the semester.

Course Topics:

- Survey Designs (Chapter 1): Plan and conduct a Survey; Prepare the Questionnaire
- Basic Sampling Methods (Chapter 2-6): Simple Random Sampling; Stratified Random Sampling; Ratio and Regression estimation; Systematic Sampling; Cluster Sampling
- Estimating the population size (Chapter 13)
- Special Topics selected from other Chapters

Course Work:

- Several homework and lab problems will be assigned most on Mondays/Wednesdays and due one week later on Wednesdays/Fridays. No late homework or lab will be accepted. When turning in your homework or lab, each problem must be presented in order including all relevant graphs and tables, which must be easily readable and appropriately labeled. Any graph or figure that is turned in without comments or spans across more than one page will be ignored. You are permitted, and encouraged, to discuss the assignments with other students, but you must write your reports on your own. Copying work from other students or resources is not accepted. The homework/Lab accounts for 25% of your final grade.
- One project will also be assigned approximately midway through the semester, which will be due near the end of the semester. Further instructions regarding the project will be provided when it is assigned. The project accounts for 10% of your final grade.
- Three mid-term exams (in-class) will be scheduled and the tentative dates are February 13th, March 6th, and April 3rd. Exams are close book and notes but one sheet of paper (2-sided) prepared by yourself is permitted. There will be NO makeup of exam. If for any reason you have to miss the exam, talk to me at least one week before the exam. With valid excuses such as severe disease or death of a family member, the missed exam score will be the average score of the other two exams. The midterm exams account for 45% of your final grade.
- Final exam will be held on Monday, May 4th, 8am-10am. It is open book and open notes. It accounts for 20% of your final grade. For extremely low scores on the Final Examination (less than half of the total points), the student will be assigned a semester grade of F. Request for any exceptional arrangement must be made at least one week before the exam.
- Students enrolled in STAT5307 will have more problems on homework and Exams.

Grading Scale for 4307: The grade will be based on a possible 100 points.

The scale follows:

<i>A</i>	92 – 100	<i>A–</i>	90 – 91	<i>B+</i>	88 – 89	<i>B</i>	82 – 87	<i>B–</i>	80 – 81
<i>C+</i>	78 – 79	<i>C</i>	72 – 77	<i>C–</i>	70 – 71	<i>D+</i>	65 – 69	<i>D</i>	60 – 64
<i>F</i>	less than 60 on total or less than 50% on Final Exam								

Grading Scale for 5307: The grade will be based on a possible 100 points.

The scale follows:

<i>A</i>	92 – 100	<i>A–</i>	90 – 91	<i>B+</i>	88 – 89	<i>B</i>	82 – 87	<i>B–</i>	80 – 81
<i>C+</i>	78 – 79	<i>C</i>	72 – 77						
<i>F</i>	less than 72 on total or less than 50% on Final Exam								

Department Attendance Requirements: Attendance is required. The Math Department has this attendance policy: “The limit of absences for MWF classes is 7. Should a student exceed the limit, the instructor has the authority to assign a grade of FN or W.”

Student Success:

- Study and read before attending the lectures. Keep up with the course.
- Take an active role in learning. Attend class and actively **participate** in the learning process. Active participation involves not just taking notes, but thinking, asking questions and answering questions during class.
- After each lecture, review the notes before the next lecture. Look for connections to previous material. Think about the BIG picture. Come to the next lecture ready to learn something new!
- Devote some time to studying each day, rather than a large amount of time once a week.
- Tutor each other. Get to know someone else in class. If you feel that you are lost help is out there; see your instructor/tutor early. Don't wait until the last minute!
- **LEARNING DISABILITY:** Students requesting special assistance due to a learning disability must show proof that they have properly registered their disability. Call Disability Services at 439-4841 for information.