STAT 4502
SURVEY SAMPLING

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Text: *Sampling: Design and Analysis*, 3rd ed by Sharon L. Lohr

References: *Sampling Techniques*, ed 3, by W.G. Cochran

Marking Scheme:

Assignments	20%
Class Projects Participation	10%
Midterm	25%
Final exam	45%

Class Projects: These will be ongoing applications of the material covered that will be discussed in class after you have had a chance to think about them on your own. You will be marked on your contribution to the class discussion. This will happen approximately 4 times during the course.

Assignments: **ALL assignments must be handed in and ALL count for your term mark.** Assignments will **not all have the same weight**. SAS statistical software will be used.

Midterm: There will be a 1½ hour midterm test on **Friday evening, March 4 OR March 11**.

Final Exam: There will be a 3-hour cumulative final exam scheduled by the University.

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Academic Integrity: Make sure you read Carleton's **Academic Integrity Policy** at

https://carleton.ca//senate/wp-content/uploads/Academic-Integrity-Policy1.pdf/

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC co-ordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. The deadline for requesting accommodations for the formally scheduled final examination is March 16. Please consult the PMC website (www.carleton.ca/pmc) for more details.

APPROXIMATE WEEKLY OUTLINE

Week	**Material**
1	An Introduction to Survey Sampling: basic definitions, sampling versus census, steps in sample surveys, selection bias, measurement bias, sampling and non-sampling errors, probability versus non-probability sampling, (Chap 1)
2	Simple Probability Samples: types of probability samples, framework for probability sampling, sampling distributions, precision vs accuracy, simple random sampling: definitions, estimating a population mean, variance and estimated variance of sample mean, estimation of σ^2, estimation of population total & population proportion, sampling weights, confidence intervals, CLT for an SRS, determination of sample size, when to use a SRS, systematic sampling. (Chap 2)
3	Stratified Sampling: procedure & rationale, theory of stratified random sampling (notation, estimators, variance of estimators) , sampling weights (Chap 3.1 –3.3)
4	Allocating observations to strata: optimal allocation, Neyman allocation, proportional allocation, sampling weights, determining sample size, defining strata. (Chap 3.4, 3.5)
5	Ratio and Regression Estimation (Chap 4.1, 4.2)
6	Ratio and Regression Estimation (Chap 4.3 – 4.6)
7	Cluster Sampling with Equal Probabilities: cluster sampling notation, 1-stage cluster sampling, 2-stage cluster sampling, designing a cluster sample, systematic sampling (Chap 5.1 – 5.5)
8	Sampling with Unequal Probabilities: 1 psu, 1-stage sampling with replacement, 2- stage sampling with replacement (Chap 6.1 – 6.3)
9	Sampling with Unequal Probabilities cont.: unequal probability sampling without replacement (Chap 6.4, 6.5)
10	Non-Response (Chap 8)
11	Non-Probability Samples (Chap 15)
12	TBA

NOTE: The above outline is subject to change. Topics may be dropped or the order of presentation may be changed depending on the progress of the course.