

Carleton University
School of Mathematics and Statistics
Sampling Methodology: STAT 3507 - Winter 2020

Instructor: Emmanuel Benhin, PhD
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Office hours: Thursdays: 5:05pm – 5:55pm.

Prerequisites: STAT 2507 or STAT 2509 or STAT 2606, or STAT 2607 or ECON 2200 or ECON 2201 or ECON 2202 or equivalent; or permission from the school

Textbook: Lecture Notes by Instructor plus COURSEPACK STAT 3507

References: Elementary Survey Sampling, ed. 6, by Schaeffer, Mendenhall, Ott.
Sampling: Design and Analysis, by Sharon Lohr.
Sampling Techniques, ed. 3, by W. G. Cochran.

Lectures: Tuesdays and Thursdays: 6:05pm – 7:25pm at Tory Building 446

Laboratory: Tuesdays: Lab A1: 7:35pm-8:25pm and Lab A3: 9:05pm -9:55pm
Mondays: Lab A2: 6:05pm-6:55pm:
(All labs in Herzberg Labs for Physics, room 3393)

Mark distribution: 4 Assignments 20%; Midterm 20%; Final exam 60%.

Note: A mark of at least 40% on the final exam and at least 50% overall to pass the course

Midterm: Scheduled for February 27, 2020.

Final Exam: A three-hour closed book exams covering all materials in the term

Last day of Withdrawal: April 7, 2020.

Students with disabilities: Students with disabilities requiring academic accommodations in this course (e.g., extra time for tests) must contact a coordinator at the Paul Menton Centre for Students with Disabilities to complete the necessary Letters of Accommodation. Please inform me after your registration with PMC. Also please note the deadline for submitting completed forms to the Paul Menton Centre is March 13, 2020.

Academic Accommodations: Should you need special arrangements during the term in order to meet your academic obligations due to disability, pregnancy or religious obligations, please let me know in writing within the first two weeks of class. You may visit the Equity Services

website to view the policies and to obtain more detailed information on academic accommodation at <http://carleton.ca/equity/accommodation>.

Review of Final Exams: If you wish to review your exam please email the instructor to set up a convenient time to review the exam. If the instructor is unavailable, contact the associate director to set up an appointment to review your exam. Exams are only available for 3 weeks after the exam has been written. If you wish to review your exam after the three weeks, you must formally request to view your exam from the Registrar's office. For more information of this process go to <http://www.carleton.ca/registrar>

Topics to cover: What is the sampling problem?
Review of basic statistical concepts
Simple random sampling
Stratified random sampling
Ratio, regression and difference estimation
Systematic sampling
Cluster sampling and Related Topics

TENTATIVE WEEKLY COURSE OUTLINE

<u>Week</u>	<u>Material</u>
1.	Review of basic statistical concepts for example, random variables, probability distribution, sampling distribution, properties of estimators.
2.	Elements of sampling problem; sampling vs. census, steps in sample surveys, probability vs. non-probability sampling, sources of errors in surveys.
3.	Simple random sampling: estimation of a population mean, variance estimation of the mean, interval estimation of the mean.
4.	Simple random sampling: estimation of a population total, sample size determination, estimation of a population proportion
5.	Stratified random sampling: sampling technique, estimation of population of mean and total, variance estimation, sample size determination
6.	Stratified random sampling: Allocation of the sample, optimum allocation, Neyman's allocation, and proportional allocation.
7.	Stratified random sampling for proportions, Ratio estimation
8.	Ratio estimation of a population mean, total, sample size determination
9.	Regression estimation, difference estimation
10.	Systematic sampling
11.	Cluster sampling
12.	Related Topic

The above outline is subject to change (topics may be added or dropped) based on the progress of the course.