

STAT 343
Sample Survey Theory and Applications
Winter 2015

Instructor: Dr. Debaraj Sen, Office: LB 1041-21 (SGW), Phone: 848-2424, Ext. 3241
Email: debaraj.sen@concordia.ca

Office Hours: Wednesday, 14:00-15:30

Text: *Sampling: Design and Analysis*, 2nd Edition, by Sharon L. Lohr, Duxbury Press (2010).

Reference: *Sampling Techniques*, 3rd Edition, by William G. Cochran, Wiley (1977).

Grading Scheme: The final grade will be based on the following three components:
(a) Assignments (20%)
(b) Midterm Test (32%)
(c) Final Exam (48%)

NOTE: It is the Department's policy that tests missed for any reason, including illness, cannot be made up. If you miss the midterm test because of illness (to be confirmed by a valid medical note), the final exam can count for 80% of your final grade.

IMPORTANT: **PLEASE NOTE THAT THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE.**

Notes:

- a) The midterm test will take place in class on **Thursday, March 5, 2015.**
- b) **Midterm test will cover until week 7 inclusively.**
- c) There will be no make-up tests.
- d) The final examination will cover everything taught in the course.
- e) Assignments will be handed bi-weekly and collected in class.
- f) Late assignments will not be accepted.
- g) There are no supplemental privileges in this course.

Weeks	Chapters
1	Chapter 1: Introduction Why use surveys? What is a good survey? Basic terminology for survey, sampling. Sources of error.
2 & 3	Chapter 2: Simple Random Sampling Definitions of Probability sampling. Estimation of means and totals. Estimation of proportions. Sampling weights. Confidence Intervals. Determining sample size.
4 & 5	Chapter 3: Stratified Sampling Definition and theory. Sampling weights in Stratified Random Sampling. Allocation of sample to strata. Defining strata. Quota sampling.
6 & 7	Chapter 4: Ratio and Regression Estimators Estimation of a ratio. Ratio estimation of a mean or total. Regression estimation of a mean or total. Ratio estimation with Stratified Samples. Mid-Term Test
8 & 9	Chapter 5: Cluster Sampling Definition and notation. Clusters of equal sizes. Clusters of unequal sizes. Two-stage cluster sampling. Systematic sampling.
10 & 11	Chapter 6: Sampling with Unequal Probabilities One-stage sampling with replacement. Two-stage sampling with replacement. Unequal probability sampling without replacement.
12 & 13	Chapter 8: Non-response & Review Effect of non-response in samples. Design issues to combat non-response. Weighting for differential non-response. Imputation for non-response.