



Students requiring accommodations as a result of disability, must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca

Instructor: [Dr. Derek Bingham](#)

Prerequisite:

STAT 350.

Textbook:

Sampling: Design and Analysis, 2nd ed by Sharon Lohr, Publisher: Thomson Brooks/Cole

Calendar Description:

An introduction to the major sample survey designs and their mathematical justification. Associated statistical analyses.

Quantitative.

Outline:

This course covers the major ideas and methods of modern survey sampling.

1. Ideas of sampling, overview of application areas. Use of the free statistical software package R to select random samples and explore sampling ideas through simulation and graphics.
2. Simple Random Sampling: Selecting random samples with and without replacement, concept of population and sampling frame, estimating means, totals, and proportions, the finite population correction factor, confidence intervals, use of the normal approximation, choosing the sample size.
3. Stratified Random Sampling: Stratification of a population, selecting stratified random samples, advantages of stratification, gains in precision, confidence limits, optimal sample sizes, stratification after selection.
4. Ratio and Regression Estimation: Use of auxiliary information, bias, mean square error, gains in precision, confidence intervals, design versus model based approaches.
5. Cluster and systematic Sampling: Selection and estimation methods, potential advantages and disadvantages.
6. Complex surveys
7. Nonresponse
8. Selected topics in modern survey sampling.

Grading Scheme:

Assignments – 20%

Midterm 1 – 20%

Midterm 2 – 20%

Simulation project - 20%

Final – 20%

Grading allocation is subject to refinement.

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required of all members of the University. Please consult the General Guidelines of the calendar for more details.

Revised October 21, 2011