STAT 4520: Sampling Techniques I, Fall 2010 (A01) Course Outline

Instructor: Wilf Falk

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Class-time: Tuesday/Thursday 8:30 a.m. to 9:45 a.m.

Location: 316 Machray Hall

Office Hours: TBD

Calendar Description: A development of sampling theory for use in sample survey problems, in regression estimates, in systematic sampling, sources of errors in surveys.

Prerequisite(s): STAT 3800 (or STAT 3600 or 005.360) (C), STAT 3480 (or 005.348) (C) [or STAT 3120 (or 005.312) (C) and STAT 3130 (or 005.313) (C)] or consent of department.

Textbook: Sampling: Design and Analysis Section Edition. S. L. Lohr Brooke/Cole Boston m Ma. (2010).

Reference Texts:

Model Assisted Survey Sampling. Carl-Erik Sarndal, Bengt Swensson & Jan Wretman. Springer Series in Statistics. Springer: New York (2003).

Sampling Techniques (3rd Ed.). W. G. Cochran. Wiley: New York (1977).

Topics: This is a tentative list of topics to be covered:

- Introduction, basic concepts and definitions - (Lohr Chapter 1).
- What is a Survey? Introduction to Questionnaire Design - (Material provided
- Simple Probability Samples {SRS, Systematic Sampling, Sample Size Estimation, Randomization Theory for SRS} - (Lohr Chapter 2).
- Stratified Random Sampling (Lohr Chapter 3).
- Ratio and regression estimates - (Lohr Chapter 4).
- Cluster sampling with equal probabilities - (Lohr Chapter 5).
- Real life sampling examples – (Material provided)
- Introduction to Nonresponse issues - (Lohr Chapter 8)
- Other topics as time permits (e.g. Randomized Response Technique, Capture-Recapture Estimation) – (Lohr Chapter 13; Cochran Chapter 13)

Midterm Exam:

There will be one "In-class" term test, each worth 20.0% of the final grade. The date will be either November 2nd or November 9th.

Note: There will not be any makeup (deferred) test. If you miss the term test, have a valid excuse, and notify me within 48 hours of the scheduled exam, your final exam will be re-weighted to account for an additional 20.0% of your final grade.

Assignments:

There will be a number of assignments, likely four, for this course, worth a total of 20.0%. You are free to work with others in the class on these assignments but the handed in work must not be an exact duplicates of others. No hand written assignments please.

Project:

During the term you will be required to complete a project worth 20.0% of the final grade. The topic(s) will be provided. More information will be given as we move into the term. The submission date for the project will be near the end of the term. Consideration is being given to having an overview of project presented in class by the team or individual.

Grading Scheme:

Assignments	20.0%
Term Test	20.0%
Project	20.0%
Final Exam	<u>40.0%</u>
Total	100%

Missed Classes:

Due to scheduling conflicts, instructor will be unable to make a number of classes. Will look at rescheduling some of these for a mutually agreed time (e.g. later in day, evening). There will be notice of a "missed" class.