STAT 4520: Sampling Techniques I, Winter 2015 (A01)

Tentative Course Outline

Instructor: Brad Johnson
Office: 322 Machray Hall
E-mail: brad_johnson@umanitoba.ca (**Note**: I will only respond to e-mail from UMNet ID's)

Class-time: TTh 8:30 a.m. – 9:45 a.m.
Location: 316 Machray Hall
Office hours: Open door policy — if my door is open, I am available for questions.

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 (C) and STAT 3480 (C), or consent of department.

Course web-page: Course materials will be made available through the Desire2Learn system (`umanitoba.ca/d2l`).

Textbook: There is no textbook for this course. I will make lecture notes available through the Desire2Learn system.

Other Resources: Not required. On 2 hour reserve in the Science Library

Model Assisted Survey Sampling. C. E. Särndal, B. Swensson & J. Wretman. Springer: New York (2003).

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

Sampling: Design and Analysis. S. L. Lohr. Duxbury Press: Toronto (1999).

Software: We will also be making use of the software package *R*. It is freely available for Linux, Macintosh and Windows from *The Comprehensive R Archive Network* at `http://cran.r-project.org/`. Please download and install.

Topics: This is a tentative list of topics we will cover:

- Introduction
- Basic principles for probability samples
- Basic element sampling designs
- Functions of several study variables
- Ratio estimator
- Regression estimation
- Stratified sampling

Midterm Exams: There will be 2 in-class mid-term exams, each worth 22.5% of your final grade. The tentative dates are February 3 and March 12 (2015) but these are **subject to change**.

Note: There will not be any makeup (deferred) mid-term exams for this course. If you miss a mid-term exam, **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 22.5% of your final grade per test.

Assignments: There will be no *formal* assignments for this course. The distributed lecture notes have a number of exercises and questions, which I may add to. The midterm tests and final examination will be based, in part, on these or similar problems. You are free (and encouraged) to work in groups on these but you must be able to complete the work individually on tests/examinations. Additional problems may be posted to the Desire2Learn system (`umanitoba.ca/d2l`).

Project: During the term you will be required to complete a group project worth 15% of your final grade. The groups and topics will be determined by myself and more information will be given early in the term.

Grading Scheme:

Mid-term Test 1	22.5%
Mid-term Test 2	22.5%
Project	15.0%
Final Exam	40%
Total	100%

Voluntary Withdrawal: The voluntary withdrawal deadline is **March 19, 2015**.

Academic Integrity: It is important that you understand what constitutes academic dishonesty and that you are familiar with the very serious consequences. Please familiarize yourself with the information contained in *Academic Calendar > General Academic Regulations> SECTION 8: Academic Integrity*. (see `http://umanitoba.ca/calendar`) The Faculty of Science home page at www.umanitoba.ca/science also contains links regarding academic and disciplinary matters.