

**STAT 344 - SURVEY SAMPLING**  
**2011/2012 – Term 2**

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**Description:** Planning and practice of sample surveys. Random sampling, bias and variance, unequal probability sampling, systematic, multistage and stratified sampling, ratio and regression estimators, post-stratification, establishing a frame, pretesting, pilots, nonresponse, and additional topics.

**Prerequisite:** Either: (a) one of STAT 200, BIOL 300 and one of MATH 302, STAT 302; or (b) STAT 305.

**Objectives:**

- To introduce the student to the basic concepts of scientific sampling.
- To develop the statistical theory of different sampling schemes and methods of estimation.
- To provide the student with an understanding of the practical difficulties which arise when carrying out surveys.
- To develop in the student an ability to design efficient sample surveys for different situations.

**Textbook:** Rao, P.S.R.S. (2000). Sampling Methodologies with Applications. Chapman & Hall/CRC. *UBC library has e-book subscription, students can access chapters (in pdf) at no charge.*

**References:** Lohr, S.L. (1999 1<sup>st</sup> ed., 2010 2<sup>nd</sup> ed.) Sampling: Design and Analysis. Duxbury Press.

**Topics:**

1. Introduction/Basic Concepts: populations and samples, parameters and estimators, selection bias, sampling distributions, bias, variance, mean squared error.
2. Simple Random Sampling.
3. Ratio and Regression Estimation.
4. Stratification.
5. Cluster Sampling.
6. Complex Surveys and Variance Estimation.
7. Nonresponse.

**Course work:** Five assignments; one midterm and a regular final exam.

**Final mark:** 20% assign + 30% Midterm + 50 % final.  
One must attain 50% in the final exam to pass the course.

