University of British Columbia - Department of Statistics

**STAT 344 - SURVEY
SAMPLING 2017/2018 – Term 1**

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:	*Prerequisite:* One of STAT 200, BIOL 300. *Corequisite:* One of MATH 302, STAT 302.
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:	No formally assigned textbook.
References:	Lohr, S.L. (1999 1st ed., 2010 2nd ed.) Sampling: Design and Analysis. Duxbury Press. Lumley, T. (2010) Complex Surveys: A Guide to Analysis Using R. Wiley Rao, P.S.R.S. (2000) Sampling methodologies with applications. Chapman & Hall. [eVersion available to UBC students via library]

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. Ratios and Regression Estimation.
4. Stratification.
5. Cluster Sampling.
6. Complex Surveys and Variance Estimation.
7. Nonresponse.
8. Additional topics emphasizing *weighted* statistical procedures.

Assessment:
20% Coursework (iClicker in-class reponses, WeBWorK assignments, Lab Exercises)
20% Midterm Exam
60% Final Exam
Notwithstanding this scheme, a student cannot pass the course without a passing grade in the final exam.