SYLLABUS

UNC: Survey Sampling (SOCI 754)

Spring 2022

Davis Library Room 219

Instructor: Chris Wiesen

Instructor Contact Information

Davis Library Room 227A
919-357-3583
chris_wiesen@unc.edu

Office Hours
By appointment

Course Objectives

The objective of this course is to teach the basic ideas of sampling from an applied and theoretical perspective. The course will cover the main techniques used in actual sampling practice—simple random sampling, stratification, systematic selection, cluster sampling, multistage sampling, and unequal selection probability. The course will also cover sampling frames, cost models, sampling error estimation techniques, non-sampling errors and compensation for missing data.

This course is concerned with the design of data collection strategies and the implications of the designs for estimators and their precision. For each sampling design, mean estimators and their standard errors will be derived. Rather than memorizing equations, students will understand what the components of each equation are and why they are appropriate for a certain sampling situation.

This course is designed for students interested in understanding survey sampling methods, applying them in practice and discussing relevant issues with other researchers. Introductory course work in applied statistical methods (at least one semester of basic statistics) is required. Students should be familiar with descriptive statistics, the normal and binomial distributions, random selection, expected values, standard errors and confidence intervals. The mathematical aspects of sampling theory will be covered, and statistical notation and algebraic derivations will be used for key equations, so a comfort level with algebraic arguments as used in introductory applied statistics courses is necessary. Emphasis will be on both understanding the concepts and the implications of derivations and the derivations themselves.

Course Requirements

This course requires both homework and examinations. This is an applied course and the homework assignments are important learning devices. Each student must submit individual homework exercise solutions.

There will be two exams, a midterm and final. The final will be cumulative, covering all material taught in the course. Final grades will be a composite of examination scores, homework and class participation. Students are required to complete the assigned reading prior to each lecture.
Textbook

Elementary Survey Sampling, Sixth Edition by Scheaffer, Mendenhall and Ott (Duxbury). It is available from online book vendors.

Class Schedule

The reading assignments shown below are from Elementary Survey Sampling, Sixth Edition.

Section 1
1. INTRODUCTION. Objectives and mechanics of the course; Introduction to sample surveys and survey methodology. Concepts relating to populations. Probability and non-probability sampling. Sampling frames, sampling units, analytical units. Sampling measurements and summary statistics.

Reading: Chapter 1

Section 2

Reading: Chapter 2

Section 3

Reading: Chapter 3

Section 4

Reading: Chapter 4

Section 5

Reading: Chapter 5
Section 6

Reading: Chapter 6

Section 7

Reading: Chapter 7

Section 8

Reading: Chapter 8

Section 9

Reading: Chapter 9

Section 10

Reading: Chapter 10

Section 11

Reading: Chapter 11

Section 12

Reading: Chapter 12