OFFICIAL SYLLABUS

STAT 483 - SAMPLE SURVEYS

(Adopted - Fall 2003; Committee: Drs. W-K. Shiue, M. Agustin, A. Neath)

Catalog Description. Simple random sampling, stratified sampling, one-stage and two-stage cluster sampling. Ratio, regression, difference estimation. Estimation of population size. Prerequisite: Stat380 or 480a,b or consent of instructor.

Textbook. Elementary Survey Sampling, 5th edition, by Scheaffer, Mendenhall and Ott

Course Outline and Topics

Chapter 2 A Review of Some Basic Concepts
- 2.2 Describing data with graphs and tables
- 2.3 Summarizing information in populations and samples
- 2.4 Sampling distributions
- 2.5 Covariance and correlation
- 2.6 Estimation

Chapter 3 Elements of the Sampling Problem
- 3.2 Technical terms
- 3.3 How to select the sample
- 3.4 Sources of errors in surveys
- 3.5 Designing a questionnaire
- 3.6 Planning a survey

Chapter 4 Simple Random Sampling
- 4.1 Introduction
- 4.2 How to draw a simple random sample
- 4.3 Estimation of a population mean and total
- 4.4 Selecting the sample size for estimating population means and totals
- 4.5 Estimation of population proportion
- 4.6 Comparing estimates

Chapter 5 Stratified Random Sampling
- 5.1 Introduction
- 5.2 How to draw a stratified random sampling
- 5.3 Estimation of a population mean and total
- 5.4 Selecting the sample size for estimating population means and totals
- 5.5 Allocation of the sample
- 5.6 Estimation of a population proportion
- 5.7 Selecting the sample size and allocating the sample to estimate proportion
- 5.8 Additional comments on stratified sampling
- 5.9 An optimal rule for choosing strata
- 5.10 Stratification after selection of sample
- 5.11 Double Sampling for stratification

Chapter 6 Ratio, Regression, and Difference Estimation
- 6.2 Surveys that require the use of ratio estimators
- 6.3 Ratio estimation using in simple random sampling
- 6.4 Selecting the sample size
- 6.5 Ratio estimation in stratified random sampling
- 6.6 Regression estimation
- 6.7 Difference estimation
- 6.8 Relative efficiency of estimators

Chapter 7 Systematic Sampling
- 7.1 Introduction
- 7.2 How to draw a systematic sample
- 7.3 Estimation of a population and total
- 7.4 Estimation of a population proportion
- 7.5 Selecting the sample size
- 7.6 Repeated systematic sampling

Chapter 8 Cluster Sampling
- 8.1 Introduction
- 8.2 How to draw a cluster sample
- 8.3 Estimation of a population mean and total
- 8.4 Equal cluster sizes
- 8.5 Selecting the size for estimating population means and totals
- 8.6 Estimation of a population proportion
- 8.7 Selecting the sample size for estimating proportion

Chapter 9 Two-Stage Cluster Sampling
- 9.1 Introduction
- 9.2 How to draw a two-stage cluster sample
- 9.3 Unbiased estimation of a population mean and total
- 9.4 Ratio estimation of a population mean
- 9.5 Estimation of a population proportion
- 9.6 Sampling equal-sized clusters

Chapter 10 Estimating the Population Size
- 10.1 Introduction
- 10.2 Estimation of a population size using direct sampling
- 10.3 Estimation of a population size using inverse sampling
- 10.4 Choosing sample sizes for direct and inverse sampling

Any instructor should cover all of the material specified; additional sections are optional.