

University of Arkansas – Fort Smith  
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## General Syllabus

### STAT 4303 Sampling Methodology

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite: STAT 3703 Statistical Computation

Effective Catalog: 2018~2019

#### I. Course Information

##### A. Catalog Description

Covers various sampling design methods including how to collect and process data, how to use techniques in reducing sampling related errors, and how to prepare questions in surveys.

##### B. Additional Information

This course allows students to investigate sampling methodology on a more in depth level than in previous courses and apply it to their particular disciplines.

#### II. Student Learning Outcomes

##### A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Define survey methodology.
2. Make inferences and identifying errors in surveys.
3. Determine target populations, sampling frames and coverage error.
4. Assess different sample designs and their sampling errors.
5. Choose data collection methods.
6. Reduce errors associated with nonresponse in sample surveys.
7. Write proper questions and answers in surveys.
8. Evaluate survey questions.
9. Conduct survey interviewing.
10. Perform post-collection processing of survey data.

##### B. University Learning Outcomes

Sampling methodology enhances student abilities in the following areas.

### **Analytical Skills**

**Critical Thinking Skills:** Students will draw conclusions and/or solve problems. Students will access and evaluate appropriate information through written and electronic means. Students will reach viable solutions to a problem and be able to justify those solutions.

### **Communication Skills (written and oral)**

Students will communicate effectively with a variety of audiences in any setting. Students will compose coherent documents appropriate to the intended audience. Students will effectively communicate orally in a public setting.

### **Ethical Decision Making**

Students will recognize and analyze ethical dilemmas. Students will apply ethical concepts and rules to determine viable alternatives in any given situation.

### **Global & Cultural Perspectives**

Students will understand the general concept of sampling techniques and perform a variety of sampling methodologies. Students will communicate findings with others in a global environment using appropriate statistical and non-statistical language.

## **III. Major Course Topics**

- A. Inference and Error in Surveys
  - 1. Design a Questionnaires
  - 2. Plan of Survey
  - 3. Source of Errors
- B. Target Population, Sampling Frame, and Coverage Error
  - 1. Technical Terms
  - 2. Information in Populations and Samples
  - 3. Infinite and Finite Population Cases
  - 4. Sampling Distribution
- C. Sample Design and Sampling Error
  - 1. Simple Random Sampling
  - 2. Stratified Random Sampling
  - 3. Systematic Sampling
  - 4. Cluster Sampling
- D. Methods of Data Collection
- E. Nonresponse in Sample Surveys
  - 1. Imputation
  - 2. Randomized Response Model
- F. Survey Questions and Answers
- G. Survey Interview
- H. Processing Survey Data