SOC G125: INTRODUCTION TO STATISTICS IN SOCIOLOGY

Item	Value
Curriculum Committee Approval Date	09/21/2021
Top Code	170100 - Mathematics, General
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

This course introduces probability techniques, hypothesis testing and predictive techniques used in sociological research. Topics include descriptive statistics, probability and sampling distributions, statistical inference, correlation and linear regression, chi-square and t-test, and application of technology for statistical analysis and interpretation of statistical findings. It provides an introductory statistics course for sociology majors and other social science or health majors and provides applications using data from social science, business, sciences, and education. Enrollment Limitation: ECON G160/STAT C1000/STAT C1000E/PSYC G140; students who complete SOC G125 may not enroll in or receive credit for ECON G160, STAT C1000, STAT C1000E, or PSYC G140. PREREQUISITE: Course taught at the level of intermediate algebra or appropriate math placement. Transfer Credit: CSU; UC: Credit Limitation: BIOL G260, ECON G160, MATH G103, MATH G160, MATH G160S, STAT C1000, STAT C1000C, PSYC G140, and SOC C125 combined: maximum credit, 1 course. C-ID: MATH 110; SOCI 125. **C-ID:** MATH 110; SOCI 125.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Calculate key statistical measures using sociology and social science data.
3. Calculate probabilities using normal and t-distributions.
4. Construct a hypothesis test and interpret the results using sociology and social science data.
5. Interpret levels of statistical significance and confidence intervals.

Course Objectives

- 1. Interpret sociological and social science data from tables and graphs.
- 2. Calculate measures of central tendency and variation.
- 3. Explore sampling methods and their advantages and disadvantages.
- 4. Calculate mean and variance of a discrete distribution.
- 5. Apply continuous distributions: normal, t-distribution, F-distribution, and Chi-squared.
- 6. Determine levels of significance and construct confidence intervals.
- 7. Conduct hypothesis testing and identify statistical errors.
- 8. Estimate regression lines and determine goodness of fit.
- 9. Utilize statistical analysis software to estimate and interpret results from social science data sets.

Lecture Content

Role of statistics and reseach design Data collection and sampling Sampling Sampling and nonsampling errors Represent quantitative data in the social sciences Descriptive Techniques Graphical data Pie, bar, and line charts Histograms Scatter-plots Numerical descriptive techniques Central tendency Variation Relative standing and box plots Linear relationships Probability Joint, marginal, and conditional probability Probability Trees Random variables Expected value Probability Distribution (Discrete and Continuous) Binomial distribution Normal distribution t distribution Chi-squared distribution Sampling Distributions Mean Proportion Central limit theorem Population Estimation and Inference One population Two populations Hypothesis Testing and Inference Significance levels Type I and Type II errors; power p-Value One and Two tailed tests Confidence intervals Chi-squared tests Goodness of fit Independence Homogeneity Analysis of Variance (ANOVA) Regression Analysis Linear regression Correlation Influential points and outliers Statistical Analysis using Technology Graphing calculators Excel or other spreadsheet software Statistical software for social sciences SPSS (Statistical Package for Social Sciences) SAS (Statistical Analysis System) Other Statistical applications Social science (sociology, political science, and economics) Public policy, law, and human services Health science Administration of justice

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

LectureProblem solvingAnalysis using statistical software

Reading Assignments

TextbookData filesSupplemental readings and case studies

Writing Assignments

Written questions on homework, quizzes, and examsInterpretation of analysis

Out-of-class Assignments

Homework assignments based on lecture and textbook examplesData analysis problemsIndividual or group projects collecting and analyzing data

Demonstration of Critical Thinking

Problem solving on homework, quizzes, and examsDetermine appropriate statistical tests to apply to a given data setAnalyze data setsApply sample statistics to make population conclusions

Required Writing, Problem Solving, Skills Demonstration

Complete written solutions to homework, quiz, and exam questionsWritten reports or projectsAnalysis and comparison of data

Eligible Disciplines

Mathematics: Masters degree in mathematics or applied mathematics OR bachelors degree in either of the above AND masters degree in statistics, physics, or mathematics education OR the equivalent. Masters degree required. Sociology: Masters degree in sociology OR bachelors degree in sociology AND masters degree in anthropology, any ethnic studies, social work, or psychology OR the equivalent. Masters degree required.

Textbooks Resources

1. Required Leon-Guerrero, A., Frankfort-Nachmias, C., Davis, G.. Essentials of Social Statistics for a Diverse Society, 4th ed. Sage, 2021 Rationale: .

Other Resources

1. Instructor prepared materials.