The use of probability techniques, hypothesis testing, and predictive techniques to facilitate decision-making. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; t-tests; analysis of variance, chi-square tests; and application of technology for statistical analysis including the interpretation of the relevance of the statistical findings. Applications using data from disciplines including psychology, social sciences, life and health sciences, and education.

JUSTIFICATION FOR COURSE:

PREREQUISITES:
- MATH G030: Intermediate Algebra with a minimum grade of C or better
- MATH G080: Pre-Statistics with a minimum grade of C or better

COREQUISITES:

ADVISORIES:

ASSIGNED DISCIPLINES:
- Psychology

MATERIAL FEE: Yes [ ] No [X] Amount: $0.00

CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]

GRADING POLICY: Pass/No Pass [X] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]

OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]

TRANSFER STATUS: CSU Transferable[ ] UC/CSU Transferable[X] Not Transferable[ ]

BASIC SKILLS STATUS: Yes [ ] No [X]

LEVELS BELOW TRANSFER: Not Applicable

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: E

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:

REQUIRED FOR DEGREE OR CERTIFICATE: No [ ] Yes [X]
- Psychology(Associate in Arts for Transfer)
- Psychology(Associate in Arts)

GE AND TRANSFER REQUIREMENTS MET:
- IGETC Area 2: Mathematical Concepts and Quantitative Reasoning
  - 2A: Mathematic
CSU GE Area B: Scientific Inquiry and Quantitative Reasoning
  B4 - Mathematics/Quantitative Thinking
GWC AA - Area D Social, Political, and Economic Institutions
  Area D Social, Political, and Economic Institutions

PROGRAM LEVEL LEARNING OUTCOME(S) Supported by this course:

Use reasoning to recognize, develop, defend, and criticize arguments related to conclusions about psychological issues.

Characterize the nature of psychology as a science.

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

1. Explain statistical concepts using appropriate data-based examples.
2. Examine data and analyses conducted by others and correctly assess the validity of conclusions.
3. Evaluate and organize research data, accurately compute the appropriate statistical test(s), interpret results, and formulate conclusions.

COURSE OBJECTIVES:

1. Explain key statistical concepts and correctly use associated terminology
2. Differentiate between descriptive and inferential statistics
3. Distinguish among different scales of measurement and their implications
4. Interpret data displayed in tables and graphically
5. Apply concepts of sample space and probability
6. Calculate and interpret descriptive statistics for a given set of data
7. Identify the standard methods of obtaining data and note advantages and disadvantages of each
8. Calculate probabilities using normal and t-distributions
9. Distinguish between sample and population distributions and analyze the role played by the Central Limit Theorem
10. Construct and interpret confidence intervals
11. Discuss correlational research and analysis, conduct associated computations, and interpret results
12. Identify the basic concepts of hypothesis testing, including Type I and II errors
13. Select the appropriate technique for testing a hypothesis and interpret the result
14. Formulate hypothesis tests involving samples from one and two populations
15. Determine and interpret levels of statistical significance including p-values
16. Use linear regression and ANOVA for estimation and inference, and interpret the associated statistics
17. Compute and interpret effect size statistics
18. Perform statistical analysis using software such as SPSS, EXCEL, R, or similar programs, and interpret results
19. Interpret the output of a technology-based statistical analysis
20. Use appropriate statistical techniques to analyze and interpret applications based on data from disciplines including psychology, business, social sciences, psychology, life science, health science, and education

COURSE CONTENT:
LECTURE CONTENT:

A. Summarizing data graphically and numerically;
B. Descriptive statistics: measures of central tendency, variation, skewness and kurtosis, relative position
C. Sample spaces and probability;
D. Random variables and expected value;
E. Sampling and sampling distributions;
F. Binomial distributions;
G. Normal distributions;
H. The Central Limit Theorem;
   I. Estimation and confidence intervals;
J. Hypothesis Testing and inference, including t-tests for one and two populations, and Chi-square test;
K. Correlation and linear regression
L. Analysis of variance (ANOVA) for one and two independent variable designs;
M. Graphing and interpreting interactions;
N. Determine appropriate analysis given hypothesis, level of measurement, and research design
O. Applications using data from various disciplines including psychology, social sciences, life and health sciences, and education; and business;
P. Statistical analysis using technology such as SPSS, EXCEL, R, or graphing calculators.

METHODS OF INSTRUCTION:

A. Lecture:
B. Independent Study:

INSTRUCTIONAL TECHNIQUES:

Classroom lecture / discussion / group activities
Text and supplemental readings

COURSE ASSIGNMENTS:

Out-of-class Assignments
Homework problems based on lecture/discussion and text readings
Data analysis problems
Group projects (e.g., operationalize variables, collect and analyze data, draw appropriate conclusions)

Writing Assignments
Written questions (short answer and essay) on exams
Written assignments (critique / interpretation) of analyses

Reading Assignments
Readings from primary text and supplemental reader
Results sections of published research articles (identify levels of measurement, design, discuss analysis and appropriate conclusions)
Topical articles related to statistical analyses and applications
METHODS OF STUDENT EVALUATION:
Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Objective Examinations
Report
Projects (ind/group)
Problem Solving Exercises
Oral Presentations
Skills Demonstration

Demonstration of Critical Thinking:
1. Written assignments
2. Critiques of analyses in studies
3. Data set projects
4. Written questions on exams
5. Homework problem sets

Required Writing, Problem Solving, Skills Demonstration:
1. Conceptual questions on exams
2. Conceptual questions in homework assignments
3. Data set projects
4. Critiques of analyses in research sections of published studies
5. Determine appropriate analysis for given set of data

TEXTS, READINGS, AND RESOURCES:

TextBooks:

LIBRARY:

Adequate library resources include: Print Materials
Online Materials

Comments:

Attachments:

Attached Files