I. COURSE DOMAIN AND BOUNDARIES

This is a required course in the research methods sequence for WSU doctoral students. At the end of this course, students will be able to apply univariate and bivariate statistics and analysis of variance to analyze data obtained from social work practice settings. Students will learn to formulate research questions and hypotheses, choose the appropriate statistical analyses, conduct these analyses, using SPSS, interpret their findings, and communicate their results clearly and effectively to both scholarly and social work practice audiences. Prerequisite: Master’s-level statistics in social, behavioral or health sciences.

II. KNOWLEDGE AND SKILL OBJECTIVES

By the end of this course, the student should be able to:
1. choose and apply appropriate descriptive and bivariate statistical techniques to address research questions and hypotheses;
2. use SPSS for univariate and bivariate data analyses;
3. interpret findings;
4. communicate results clearly and effectively, using APA format;
5. understand statistical assumptions and how to detect and address violations; and
6. appreciate current controversies related to topics addressed in this course.

III. PERFORMANCE CRITERIA

Three papers, regular homework, and two tests are required. The papers are “take-home” assignments. These papers require students to perform data analyses using SPSS, present the using APA format, and to interpret the results. Secondary datasets will be provided for the assignments by the instructor. However, students may obtain permission from the instructor to analyze their own data.
Papers are expected to be written independently, although students are encouraged to work together prior to writing. If you want extra help with assignments and understanding the material, please see the instructor. Before you consider using a tutor, please speak with me—I can provide some helpful suggestions.

Homework assignments will primarily consist of problem sets from the required texts. **Students will be expected to do one class demonstration per term based on the homework assignment (details to be discussed in class).** The two tests cover essential statistical concepts that students will need to continue their study of statistics and data analysis.

<table>
<thead>
<tr>
<th>Assignment (due date)</th>
<th>% of Grade</th>
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<tbody>
<tr>
<td>Paper #1: Descriptive statistics/Data Screening (10/7)</td>
<td>20%</td>
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<td>Test #1 (10/21)</td>
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<td>Test #2 (11/18)</td>
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<tr>
<td>Paper #2: T-test and ANOVA (11/25)</td>
<td>20%</td>
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<tr>
<td>Paper #3: Contingency table analysis ($\chi^2$) and correlation (12/13)*</td>
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<td><strong>TOTAL</strong></td>
<td>100%</td>
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*this is the Friday after the last class on 12/9

**Grading Criteria:**

Papers will be graded according to the following scale:

- **A:** Excellent, exceeds expectations; superior performance;
- **B:** Good, meets all normal expectations; consistent grasp of content and competency in meeting course objectives; or
- **C:** Fair, meets some expectations but misses others; acceptable but barely adequate; uneven grasp of course content.

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<thead>
<tr>
<th>95.0-100</th>
<th>90.0-94.9</th>
<th>87.0-89.9</th>
<th>83.86.9</th>
<th>80.0-82.9</th>
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<td><strong>C+</strong></td>
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**GRADING SCALE:**

**IV. REQUIRED TEXTS/REQUIRED MATERIALS**


SPSS (Statistical Package for the Social Sciences) is available to students for FREE at the WSU Software clearinghouse:

[https://commerce.wayne.edu/clearinghouse/customer/account/login/](https://commerce.wayne.edu/clearinghouse/customer/account/login/)
For further assistance with installing SPSS, contact C&IT support at (313) 577-4778 or at helpdesk@wayne.edu

* Note that this is NOT the most recent edition.

**This book will also be used for SW 9300; you may be able to find the 4th edition as a used copy; this is acceptable as long as you make sure you have the correct page references.

V. RECOMMENDED TEXTS


VI. COURSE OUTLINE

Session 1: September 9
Introduction and Overview
  Course overview
  Key concepts/terminology
  Measurement
  Notation
  Introduction to SPSS and the lab

Readings: Jaccard and Becker, Ch. 1

Session 2: September 16

Descriptive Statistics: Univariate Distributions
  Frequency and probability distributions
  Modes of presentation

Descriptive Statistics: Central Tendency and Dispersion
  Mean, median, mode
  Range
  Sum of squares
Variance and standard deviation
Skewness and kurtosis

Readings: Jaccard and Becker, Ch. 2 & 3

Session 3: September 23
Lab Session for entire class

Descriptive Statistics Using SPSS
Pre-Analysis Data screening

Readings: Meyers, Gamst, & Guarino, 2006, Chapters 3A and 3B: Data Screening; Data Screening using SPSS

Session 4: September 30
Descriptive Statistics: Relative Standing
   Percentiles
   Standard scores
   Normal distributions

Pearson Correlation & Regression: Descriptive Aspects
   The Linear model
   Pearson Correlation Coefficient
   Correlation & Causation
   Interpreting the magnitude of a correlation coefficient
   Regression

Probability
   Probability of a simple event
   Conditional probability
   Joint probability
   Adding probabilities
   Relationship among probabilities

Readings: Jaccard and Becker, Ch. 4, 5 & 6

Session 5: October 7

Paper #1 due: Descriptive statistics/Data Screening

Introduction to Inferential Statistics

Inferential Statistics: Hypothesis Testing
   Null versus alternative hypotheses
   Type I and Type II errors
   Significance
   Effect size
   Confounding variables

Correlation & Regression: Inferential Aspects
   Linear model
   Strength of Relationship
   Confidence Intervals
   Regression
<table>
<thead>
<tr>
<th>Session 6: October 14</th>
<th>Estimation and Sampling Distributions</th>
<th>Jaccard and Becker, Ch. 9 &amp; 14</th>
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<tr>
<td>Session 7: October 21</td>
<td>Test 1 (closed book; necessary formulas will be provided): Levels of Measurement, hypothesis testing, correlation (J&amp;B chapters 1-4)</td>
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<td>Readings: Jaccard and Becker, Ch. 7</td>
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<td>Session 8: October 28</td>
<td>Estimation and Sampling Distributions</td>
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<td>Session 9: November 4</td>
<td>Entire Class Session in Lab: T-Tests</td>
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<td>Readings: Jaccard and Becker, Chs. 8, 10 &amp; 11</td>
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<td>Session 10: November 11</td>
<td>Inferential Statistics: ANOVA</td>
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<td>Factors Between-subjects and within-subjects designs</td>
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<td>Variance decomposition F-test Multiple comparison procedures Two-way ANOVA</td>
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Review session:
Bring your questions related to Test #2

Article Discussion:

Session 11: November 18
(Lab will be available)
Test #2 (open book): Probability,
Fundamentals of Inferential Statistics, T-tests & ANOVA
Following test:
Discussion/Questions on Papers #2 & 3

Session 12: November 25
Paper #2 due: T-tests and ANOVA

Inferential Statistics: Contingency Table Analysis
Chi-square
Other measures of association

Readings: Jaccard and Becker, Chapters 15 & 16

Session 13: December 2
Inferential Statistics: Bivariate Regression
Regression and prediction
Linear versus curvilinear models
Standardized and unstandardized coefficients

Readings: Jaccard and Becker, Chs. 5 & 14
Meyers, Gamst, & Guarino, 2006, Chapters 4A and 4B: Bivariate Correlation and Simple linear regression

Course Evaluation (SET)

Session 14: December 9
Note: Paper #3 due on Friday, December 13:

Contingency table analysis ($x^2$) and correlation

Inferential Statistics: Advanced ANOVA
Main effects and interactions (Factorial designs) Analysis of covariance (ANCOVA)
Multivariate analysis of variance (MANOVA)
Repeated-measures analysis of variance (RM-ANOVA)

Readings: Jaccard and Becker, Ch. 17

SELECTED BIBLIOGRAPHY

The following sources are resources that you may find helpful as you prepare your assignments.


