

**PSY 3321: Intermediate Research Methods & Statistical Analysis
spring, 2010**

Instructor: Dr. James Forbes
Office: 104D Academic Building
Phone: 942-2068, ext: 249
Office Hours: M,W: 1:00 – 2:00 p.m.; TR 8 a.m. – 12 p.m.; or by appointment
E-mail: James.Forbes@angelo.edu
Web Site: <http://blackboard.angelo.edu>

Required Texts

Jackson, S.L. (2006). *Research Methods and Statistics: A Critical Thinking Approach*, 2nd edition. Belmont, CA: Thomson Wadsworth.

George, D., & Mallery, P. (2006). *SPSS for Windows Step-by-Step: A Simple Guide and Reference, 17.0 update, 10th edition*. Boston: Allyn and Bacon.

Course Description & Objectives

Don't panic! (Douglas Adams, *The Hitchhikers' Guide to the Galaxy*)

This course is designed as the second half of a two-semester research methods and statistics course sequence. The half-life for knowledge of statistics especially, and to a lesser extent, research methods, is notoriously short. So don't worry if you cannot remember much statistics and research methods from your previous course. We'll begin the semester with a review of research methods. The statistics portion of the course will focus on analysis of variance (ANOVA), comparisons using t-tests, multiple linear regression, correlation, and chi-square. You will learn how to conduct statistical analyses on a computer using SPSS for Windows, then interpret the computer printout. You will also learn how to write an APA style results section for all of the statistical analyses that you conduct.

The purpose of the course is to prepare you to design empirical research, analyze data using SPSS for Windows statistical software, and communicate the results of data analysis. Ideally, the course will help you become a more skilled critical evaluator of social science research. The course will also prepare you for the seminar in psychological research by helping you develop skills necessary to conduct and disseminate your own research.

SPSS Homework Assignments (30% of Course Grade). Typically, assignments will consist of a data analysis using SPSS for Windows, and an APA style written report of the results. Homework assignments will be graded using a 5-point scale, where a 5 is this highest score obtainable. Your assignment score will be the proportion of the total points you obtain. Your assignment grade will be determined by me at the end of the semester after I look at the score distribution for the entire class. Overall, SPSS homework assignments will count as 30% of your final course grade.

SPSS for Windows is statistical software available in the ASU computer laboratories.

Exams (60% of Course Grade). There will be three take home exams. Exams will focus on the material immediately preceding them. So, strictly speaking, the exams are not cumulative. However, understanding statistics is cumulative; topics presented later in the course will build upon topics presented earlier in the course. If you do not actively strive to learn early topics you will not understand later topics. Therefore, I encourage you to work to keep current with the topics presented in class and to not fall behind on your homework assignments. The format of each exam will be

computational problems and written reports of analyses. Your exam grade will be determined by me after I look at the score distribution for the entire class. Each exam will count as 20% of your final course grade.

Early or late exams are not given. It is also my policy not to give make-up exams except in the very infrequent case of verified (by a doctor) illness, death in the family, and so on.

Attendance & Participation (10% of Course Grade). Participation includes asking questions, completing homework assignments, active involvement in classroom activities, collaborating with other students, and refraining from boorish behavior (viz., constant texting, habitually arriving late). The benefits of taking an active part in learning research design and statistics are greater understanding of course content and a more satisfying classroom experience.

Academic Integrity. Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is available on the web at:
<http://www.angelo.edu/forms/pdf/honorcode5.pdf>

Disabilities. Persons with disabilities which warrant academic accommodations must contact the Student Life Office, Room 112 University Center, in order to request such accommodations prior to their being implemented. You are encouraged to make this request early in the semester so that appropriate arrangements can be made.

Grades

Final course grades will be calculated as follows: Course Grade = Average Exam Score (60%) + Assignments Score (30%) + Attendance & Participation Score (10%).

Letter Grade	Percentage Grade
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Course Schedule

Date	Topic
Weeks 1-2	Descriptive Methods; Creating & Editing an SPSS Data File Descriptive Statistics Using SPSS: Scales of Measurement, Measures of central tendency, Measures of variation Types of distributions: frequency and probability Z-scores
Weeks 3-5	Experimental Designs: Between-participants, Correlated Groups Hypothesis Testing and Inferential Statistics Using SPSS:

- t Test single sample: One-Tailed, Two-Tailed
- t Test for independent groups
- t Test for correlated groups

Exam 1

Week 6 Experimental Designs with More Than Two Levels of an Independent Variable

 Between-Participants Designs

- Calculation of One-Way Randomized ANOVA Using SPSS
- Interpreting the SPSS output for One-Way ANOVA
- Graphing the Means
- Effect Size: Eta-squared (η^2)
- Post hoc comparisons of means: Tukey's- Post Hoc Test; t-test and the Bonferonni adjustment of alpha
- Coefficient Contrasts
- Describing your analysis

Week 7

 Correlated-Groups Designs

- Calculation of One-Way Repeated Measures ANOVA Using SPSS
- Interpreting the SPSS output for One-Way Repeated Measures ANOVA
- Assumptions
- Graphing the Means and Effect Size
- Eta-squared (η^2)
- Paired Samples t-tests
- Bonferonni adjustment

Week 8-10

 Factorial Designs (More Than One Independent Variable)

 Main Effects and Interaction Effects

- Calculating Two-Way Between participants ANOVA Using SPSS
- Assumptions
- Post-Hoc Comparisons using T-test and Bonferroni adjustment

 Calculating Three-Way Between participants ANOVA Using SPSS

- Assumptions
- Post-Hoc Comparisons using T-test and Bonferroni adjustment

 Calculating Two-Way Mixed ANOVA Using SPSS

- Assumptions
- Post-Hoc Comparisons
- Bonferonni adjustment

Exam 2

Week 11

 Surveys: Construction & Sampling Techniques

Week 12

 Correlation Methods & Statistics:

 Correlation coefficient

Magnitude
Scatterplots
Linear Relationships
 Positive
 Negative
 None
Calculating and Interpreting Correlation Coefficients Using SPSS
 Person Product-Moment Correlation
 Spearman
Misinterpreting Causality: Third-variable problem
Restrictive Range

Weeks 13-14 Linear Regression: Prediction

 Simple Linear Regression Using SPSS
 Multiple Linear Regression Using SPSS

Week 15 Nonparametric Designs

 Chi-Square (χ^2) Goodness-of-Fit Test

 Calculating for (χ^2) Goodness-of-Fit Test Using SPSS
 Interpreting SPSS Output
 Assumptions

 Chi-Square (χ^2) Test of Independence

 Calculating for (χ^2) Test of Independence Using SPSS
 Interpreting SPSS Output
 Assumptions
 Effect Size: Phi Coefficient (ϕ)

Exam 3

Please note that this schedule may vary at my discretion.