

# PSY 3321

## Intermediate Research Methods & Statistical Analysis spring 2022



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**Instructor: James Forbes**

**Email:** [james.forbes@angelo.edu](mailto:james.forbes@angelo.edu)

**Phone:** 325 486 6120

**Office:** 204-B Academic Building

**Office Hours:** MTWRF 9-11am, or by appointment

### Course Information

#### Course Description & Goals

***“The world cannot be understood without numbers. And it cannot be understood with numbers alone” (Hans Rosling).***

Psychology 3321 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 an introduction to SPSS statistical analysis software. The statistics portion of the course will focus how to use inferential and descriptive numbers. Throughout the semester, different research methods will be introduced along with explanations of statistical techniques typically used to analyze the resulting data.

The purpose of PSY 3321 is to prepare you to design empirical research, analyze data using statistical software, describe the data analysis, and communicate the findings. 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.

A serendipitous benefit of learning about research methods and statistical analysis is that it will help overcome the normal human mental short-cuts and slip-ups in thinking.

## Prerequisite Courses

PSY 2301 & 2231

## BA and BS Psychology Program Outcomes

Upon completion of the program of study for the bachelor's in psychology, the graduate will be prepared to: access and use relevant psychological knowledge to solve comprehensive problems in behavioral science; communicate effectively in a variety of formats; critically and creatively use information from the different branches of psychology, employ the scientific method where appropriate, to analyze human functioning in a variety of contexts and address problems or questions related to behavior and mental processes.

## Student Learning Outcomes for PSY 3321

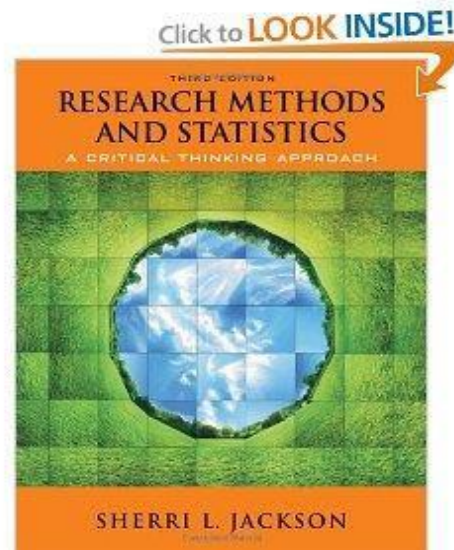
<b>Student Learning Outcome</b> By completing all course requirements, students will be able to:	<b>Assignments &amp; activities validating outcome achievement:</b>	<b>Mapping to Program Outcomes</b>
apply a variety of research methods to address empirical questions;	Analysis & methods assignments; exams	Access and Use of Knowledge; Scientific & Integrative thinking;
conduct statistical analyses on a computer using SPSS for Windows;	Analysis & methods assignments; exams	Access and Use of Knowledge; Scientific & Integrative thinking;
use quantitative reasoning to interpret the SPSS analysis output file for each statistical analyses;	Analysis & methods assignments; exams	Access and Use of Knowledge; Scientific & Integrative thinking;
write an APA style results section for all of the statistical analyses that you conduct.	Analysis & methods assignments; exams	Professional Communication

## Course Delivery

This is a face-to-face course with learning resources and supplemental materials posted in Blackboard.

## Recommended Text

Jackson, S.L. (2012). *Research Methods and Statistics: A Critical Thinking Approach*, 4<sup>th</sup> edition.



Belmont, CA: Thomson Wadsworth/Cengage.

## Technology Requirements

To successfully complete this course, students need to acquire a working knowledge of SPSS software.

IBM SPSS statistics software is already downloaded to the classroom computers as well as most computers in all of the campus computer labs. To access SPSS, browse all programs, then click on the IBM SPSS Statistics icon.

## Communication

Psychology 3321 is a computer classroom course taught face-to-face so most questions can be answered during class. You could also stop by my office during office hours, or really any other time when I am there and not speaking with someone else, and I would be happy to help you. You could also email me anytime and I usually return emails sent Mon through Friday within a day or so.

## Assignment and Activity Descriptions

**Assignments (45% of Course Grade).** Typically, assignments will consist of applications or research methods, data analysis using SPSS along with APA style written description of the results. Homework assignments will be graded using a 5-point scale, where a 5 is this highest score obtainable. **Please note that assignment scoring and grading are separate processes.** Your assignment score will be the proportion of the total points you obtain. At the **very end** of the semester, I will sum your assignment scores, evaluate the class assignment score distribution, then assign assignment grades.

*Assignments must be completed by their due dates. Late homework will be assessed a late penalty at my discretion. Homework for assignments leading to each exam must be turned in before the exam is posted and will not be accepted after the exam is posted.*

**Exams (40% of Course Grade).** There will be four take home exams. Your work must be your own and you may not work with others on any of the exams. You may ask me questions about the exam and I will help you complete the problems. Exams will focus on the material immediately preceding them. So, strictly speaking, the exams are not cumulative. However, understanding research methods and 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 research method and design exercises, computational and statistics exercises, and written APA-like descriptions of analyses. Your exam grade will be determined by me after I look at the score distribution for the entire class.

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, cataclysmic world altering event, and so on.

**Attendance, Participation, & Quizzes (15% of Course Grade).** Attendance is mandatory. Participation includes asking questions, completing homework assignments, active involvement in classroom activities, collaborating with other students, and refraining from boorish behavior (viz., not completing assignments, gaming course policy, 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. Quizzes given during class consist of short answer questions or exercises about topics I talk about in class. There are no make-up quizzes.

## Grading

### Evaluation and Grades

Course grades will be determined as indicated in the table below.

Assessment	Percent of Course Grade
Assignments Score	45
Average Exam Score	40
Attendance & Participation Score	15
Total	100%

**Final course grades will be calculated as follows:**

A = 90 – 100%

B = 80 – 89%

C = 70 – 79%

D = 60 – 69%

F = < 60%

## Course Schedule

Date	Topic
Weeks 1-4	<p>Descriptive Methods; Observational Research</p> <p>Variables; Observational Definitions</p> <p>Creating, Editing, Saving, Opening an SPSS Data File</p> <p>Types of distributions: frequency, probability</p> <p>Entering Data</p> <p>Data Management; case summaries, select cases, reverse coding, computing new variables</p> <p>Graphs: box-plots, bar charts, clustered bar charts, histograms</p> <p>Descriptive Statistics Using SPSS: Scales of Measurement, Measures of central tendency, Measures of variation; z-scores (standard scores), quantiles (percentiles, quartiles, ...)</p> <p style="text-align: center;"><b>Exam 1</b></p>
Weeks 5-7	<p>Experimental Designs: Between-participants, Correlated Groups</p> <p>Hypothesis Testing and Inferential Statistics Using SPSS:</p> <ul style="list-style-type: none"><li>t Test single sample: One-Tailed, Two-Tailed</li><li>t Test for independent groups</li><li>t Test for correlated groups</li></ul> <p>Experimental Designs with More Than Two Levels of an Independent Variable</p> <p>Between-Participants Designs</p> <ul style="list-style-type: none"><li>Calculation of One-Way Randomized ANOVA Using SPSS</li><li>Interpreting the SPSS output for One-Way ANOVA</li><li>Graphing the Means</li><li>Effect Size: Eta-squared (<math>\eta^2</math>)</li><li>Post hoc comparisons of means: Tukey's- Post Hoc Test; t-test and the Bonferroni adjustment of alpha</li><li>Describing your analysis</li></ul> <p>Correlated-Groups Designs</p> <ul style="list-style-type: none"><li>Calculation of One-Way Repeated Measures ANOVA Using SPSS</li><li>Interpreting the SPSS output for One-Way Repeated Measures ANOVA</li><li>Assumptions</li><li>Graphing the Means and Effect Size</li><li>Eta-squared (<math>\eta^2</math>)</li><li>Paired Samples t-tests</li></ul>

Bonferonni adjustment

**Exam 2**

Weeks 8-11

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 3**

Weeks 12-15

Survey, Questionnaire, Instrument Construction

Internal Consistency: Chronbach alpha

Correlation: Pearson r

Simple Linear Regression

Multiple Regression

**Exam 4**

*Please note that this schedule may vary at my discretion.*

## **General Policies Related to This Course**

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](#)<sup>1</sup>
- [Angelo State University Catalog](#)<sup>2</sup>

## **Academic Integrity**

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Health and Human Services adheres to the university's [Statement of Academic Integrity](#).<sup>3</sup>

## **Accommodations for Students with Disabilities**

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at [ADA@angelo.edu](mailto:ADA@angelo.edu). For more information about the application process and requirements, visit the [Student Disability Services website](#).<sup>4</sup> The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
[dallas.swafford@angelo.edu](mailto:dallas.swafford@angelo.edu)  
Houston Harte University Center, Room 112

## **Incomplete Grade Policy**

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](#)<sup>5</sup> for more information.

## **Plagiarism**

Plagiarism is a serious topic covered in ASU's [Academic Integrity policy](#)<sup>6</sup> in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the [ASU Writing Center](#).<sup>7</sup>

## **Student Absence for Observance of Religious Holy Days**

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for [Observance of Religious Holy Day](#)<sup>8</sup> for more information.



## Copyright Policy

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

## Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Boone, J.D. You may submit reports in the following manner:

Online: [www.angelo.edu/incident-form](http://www.angelo.edu/incident-form)

Face to face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: [michelle.boone@angelo.edu](mailto:michelle.boone@angelo.edu)

*Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).*

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit: [www.angelo.edu/title-ix](http://www.angelo.edu/title-ix).

## Student Evaluation of Faculty and Course

Students in all programs are given the opportunity to evaluate their courses and the faculty who teach them. Evaluations are most helpful when they are honest, fair, constructive, and pertinent to the class,

clinical experience, or course. Faculty value student evaluations, and use student suggestions in making modifications in courses, labs and clinical experiences.

Angelo State University uses the IDEA (Individual Development and Educational Assessment) system administered through Kansas State University for all course evaluations. The Office of Institutional Research and Assessment administers IDEA for the entire university, online and has established a policy whereby students can complete course evaluations free from coercion.

1. Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)
2. Learning to apply course material (to improve thinking, problem solving, and decisions)
3. Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course
4. Acquiring skills in working with others as a member of a team
5. Developing skill in expressing oneself orally or in writing
6. Learning appropriate methods for collecting, analyzing, and interpreting numerical information

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<sup>1</sup> <https://www.angelo.edu/student-handbook/>

<sup>2</sup> <https://www.angelo.edu/catalogs/>

<sup>3</sup> <https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php>

<sup>4</sup> <https://www.angelo.edu/services/disability-services/>

<sup>5</sup> <https://www.angelo.edu/content/files/14197-op-1011-grading-procedures>

<sup>6</sup> <https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php>

<sup>7</sup> [https://www.angelo.edu/dept/writing\\_center/academic\\_honesty.php](https://www.angelo.edu/dept/writing_center/academic_honesty.php)

<sup>8</sup> <https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of>