PSY 6366
Multivariate Design & Analysis
Spring 2021

Instructor: Dr. Stephen Lippi
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Phone: 325-486-6923
Office: Academic Bldg 104C
Office Hours: TR 10:30AM-3:30PM
Join Zoom Meeting
https://us02web.zoom.us/j/81049672588?pwd=ZmcxbDRmZUFhYVhLbWFZT2MwdVREUT09
Meeting ID: 810 4967 2588
Passcode: 7adpGw

Course Description
“This course examines the design and analysis of research involving more than one dependent variable. Topics will include multiple regression, MANOVA, and Factor analysis” – Riveting. I know.
Research design and analysis is a critical aspect of being a scientist; having a sound design and analyzing data correctly is more important than ever. While your first semester of graduate statistics tends to focus on univariate designs (designs and tests measuring 1 dependent variable), this second semester we are going to be focusing on how to run and analyze research questions/data with more than 1 dependent variable (hence, multivariate). Statistics is like a foreign language; the more you practice it, the more you will be able to use and understand it. We will be starting off with a review of univariate techniques (t-tests, ANOVAs, correlation, assumptions of tests, etc.) and then move into their multivariate extensions (multiple/canonical/logistic regression, ANCOVAs/MANOVAs, PCA/EFA, Survival Analysis, Discriminant analysis, and nonparametrics). Graduate students will be expected to be proficient in not only understanding different multivariate statistical techniques but also in discussing these techniques as they relate to research of others and their own. Students will lead a discussion on chosen articles’ methods/results sections as well as analyze and write up a mock-data set.

Course Credits
3

Prerequisite and Co-requisite Courses
Prerequisite: PSY 6364 (Statistical Design and Research)
**Prerequisite Skills**
Accessing Internet websites, using ASU Library resources, and proficiency with Microsoft Word and/or PowerPoint are expectations of this course.

**Student Learning Outcomes**

<table>
<thead>
<tr>
<th>Student Learning Outcome</th>
<th>Assignment(s) or activity(ies) validating outcome achievement:</th>
</tr>
</thead>
<tbody>
<tr>
<td>By completing all course requirements, students will be able to:</td>
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</table>
| 1) Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories) | • Exams (1-4)  
• Methods/Discussion article presentations |
| a) To understand and be able to discriminate between various research methods and multivariate statistical tests used to collect and analyze data | |
| 2) Learning to apply course material (to improve thinking, problem-solving, and decisions) | • Final Course Project (mock dataset write-up) |
| a) To apply knowledge of various multivariate techniques to analyze novel data sets | |
| 3) Learning appropriate methods for collecting, analyzing, and interpreting numerical information | • Exams (1-4)  
• Final Course Project (mock dataset write-up) |
| a) To develop skills required to be able to analyze and interpret datasets | |
| b) Learning how to run various multivariate statistical tests and understanding how to interpret data, outcomes, and make appropriate decisions | |

**Class Mask Policy**
As a member of the Texas Tech University System, Angelo State University has adopted the mandatory *Facial Covering Policy* to ensure a safe and healthy classroom experience. Current research on the COVID-19 virus suggests there is a significant reduction in the potential for transmission of the virus from person to person by wearing a mask/facial covering that covers the nose and mouth areas. Therefore, in compliance with the university policy *students in this class are required to wear a mask/facial covering before, during, and after class*. Faculty members may also ask you to display your daily screening badge as a prerequisite to enter the classroom. You are also asked to maintain safe
distancing practices to the best of your ability. For the safety of everyone, any student not appropriately wearing a mask/facial covering will be asked to leave the classroom immediately. The student will be responsible to make up any missed class content or work. Continued non-compliance with the Texas Tech University System Policy may result in disciplinary action through the Office of Student Conduct.

Course Delivery
This is a face-to-face course with learning resources and supplemental materials posted in Blackboard. Students unable to attend class in person can find all resources on Blackboard.

Required Texts and Materials
Text:
6th Edition is fine as well*

Software:
Jamovi (https://www.jamovi.org) – free and open statistical software
SPSS (Statistical Program for the Social Sciences) – primarily all analyses in this class will be demonstrated/performed through SPSS

Technology Requirements
To successfully complete this course, students need to download the above software (Jamovi) and be able to access SPSS (whether that is through the library, the Psychology lab spaces, or through remote network access).

Communication
Faculty will respond to email and/or telephone messages within 24 hours during working hours Monday through Friday. Weekend messages may not be returned until Monday.

Written communication via email: All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line.

Virtual communication: Office hours and/or advising may be done with the assistance of the telephone, Zoom, etc.

Grading
Evaluation and Grades
Course grades will be determined as indicated in the table below.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percent/Points of Total Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams (4)</td>
<td>66.67 (400 points)</td>
</tr>
<tr>
<td>Methods/Results Write Up (2)</td>
<td>16.67 (100 points)</td>
</tr>
<tr>
<td>Final Project (Dataset write-up) (1)</td>
<td>16.67 (100 points)</td>
</tr>
<tr>
<td>Total</td>
<td>100% (600 points)</td>
</tr>
</tbody>
</table>
**Grading System**
Course grades will be dependent upon completing course requirements and meeting the student learning outcomes.

The following grading scale is in use for this course:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage Grade (600 total points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100% (540 - 600 points)</td>
</tr>
<tr>
<td>B</td>
<td>80-89% (480 - 539 points)</td>
</tr>
<tr>
<td>C</td>
<td>70-79% (420 - 479 points)</td>
</tr>
<tr>
<td>D</td>
<td>60-69% (360 - 419 points)</td>
</tr>
<tr>
<td>F</td>
<td>0-59% (0 points – 359 points)</td>
</tr>
</tbody>
</table>

**Teaching Strategies**
Students are expected to be “active learners.” It is a basic assumption of the instructor that students will be involved (beyond the materials and lectures presented in the course) discovering, processing, and applying the course information using peer-review journal articles, researching additional information and examples on the Internet, and discussing course material and clinical experiences with their peers.

**Assignment and Activity Descriptions**

**Exams**
Each unit will involve a take-home exam. Do not confuse take-home with easy. These exams are meant to allow students ample opportunity to work with data and draw appropriate conclusions. These exams will be turned in via Blackboard (as a Microsoft word document (.doc, .docx) or a PDF) and will be due to me the following class period after they are assigned. (Exams will open up on Wednesdays and will be due the following Wednesday at 4PM (start of class)). See the schedule below for all due dates. These are open-note and open-book, but not open-friend. You will need access to Jamovi (free to download and should be installed on all of your computers) and SPSS (can be used on campus or in Psychology lab spaces). If you are found to have cheated on an exam, you and the person you cheated from will receive zeros, no questions asked. There are 4 non-cumulative exams. The exams will each count for 100 points. A total of 400 points will be from exams.

**Paper Methods/Results Discussion**
Part of doing research is examining literary sources. Academic literacy includes the ability to understand the methods and results used/presented by other researchers. Students will present a methods and results section from an article of their choosing and will walk the class through why those methods were utilized, how the results were analyzed/discussed, if there might have been other ways to do the analysis, etc. The first discussion should be on a paper that utilizes a method covered in univariate statistics (or up to Mixed ANOVA/Repeated Measures ANOVA) while the second should cover a/some multivariate techniques. These assignments aim to strengthen students’ ability to apply course material. Each methods discussion presentation should last approximately 20 minutes and will be graded out of 50 points. A total of 100 points will be from these discussion assignments.
Final Project
As a graduate student, you are no doubt familiar with collecting data with human and/or animal subjects. In lieu of a final exam, students will produce a mock data set that is suitable to be analyzed by multivariate methods. This data set can be related to what the student is studying OR it can be something of interest to the student. Students will then write a complete methods and results section (based on that data), with graphs and statistics accompanying results. Components of this grade will involve: submission of the SPSS data set, submission of graphs and figure captions, and a methods/results section in appropriate APA format. A detailed rubric will be provided on Blackboard. A total of 100 points will be from this final project.

Assignment Submission
All assignments will be submitted through Blackboard. Issues with technology use arise from time to time. If a technology issue does occur regarding an assignment submission (before the deadline), email me at stephen.lippi@angelo.edu and attach a copy of what you are trying to submit. Please contact the IT Service Center at (325) 942-2911 or go to your Technology Support tab to report the issue. This lets your faculty know you completed the assignment on time and are just having problems with the online submission feature in Blackboard. Once the problem is resolved, submit your assignment through the appropriate link. This process will document the problem and establish a timeline. Be sure to keep a backup of all work.

POLICY ON LATE OR MISSED ASSIGNMENTS
Due dates and times for assignments are posted below. Failure to submit your assignments on the assigned date will result in a ten percent deduction for each day after the posted deadline. No papers or postings will be accepted more than one week past the assigned due date.

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
- Angelo State University Catalog

Student Responsibility and Attendance
Each student is expected to arrive on time to each class and attend class regularly. However, if you are unable to attend because you are feeling ill, that is certainly fine. You all are graduate students and are expected to be in class each week (except in serious circumstances). COVID-19 and Attendance: If you have had an exposure event, feel any less than 100%, or are unable to complete your daily wellness check, do not come to class. Please see the Class Mask Policy above.

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1 [https://www.angelo.edu/student-handbook/](https://www.angelo.edu/student-handbook/)
2 [https://www.angelo.edu/catalogs/](https://www.angelo.edu/catalogs/)
**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 to disciplinary action and possible expulsion from ASU.

The College of Health and Human Services adheres to the university’s [Statement of Academic Integrity](https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php).

**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](https://www.angelo.edu/services/disability-services/).

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  
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](https://www.angelo.edu/content/files/14197-op-1011-grading-procedures) for more information.

**Plagiarism**
Plagiarism is a serious topic covered in ASU’s [Academic Integrity policy](https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php) 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.

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3 [https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php](https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php)  
4 [https://www.angelo.edu/services/disability-services/](https://www.angelo.edu/services/disability-services/)  
5 [https://www.angelo.edu/content/files/14197-op-1011-grading-procedures](https://www.angelo.edu/content/files/14197-op-1011-grading-procedures)  
6 [https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php](https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php)
In your papers and presentations, 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.  

**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 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.

**Syllabus Changes**
The faculty member reserves the option to make changes as necessary to this syllabus and the course content. If changes become necessary during this course, the faculty will notify students of such changes by email, course announcements and/or via a discussion board announcement. It is the student’s responsibility to look for such communications about the course on a daily basis.

**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
Face to face: Mayer Administration Building, Room 210
Phone: 325-942-2022

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7 [https://www.angelo.edu/dept/writing_center/academic_honesty.php](https://www.angelo.edu/dept/writing_center/academic_honesty.php)
8 [https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of](https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of)
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).

### Course Schedule

<table>
<thead>
<tr>
<th>Week/Date</th>
<th>Topic</th>
<th>Assignments/Assessments Due</th>
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</thead>
<tbody>
<tr>
<td>27-Jan</td>
<td>Introduction &amp; Descriptives – Ch. 1, 2 Variables and Tests</td>
<td></td>
</tr>
<tr>
<td>3-Feb</td>
<td>Review of Inferentails/Techniques Ch. 3, 4</td>
<td></td>
</tr>
<tr>
<td>10-Feb</td>
<td>Mixed ANOVA; Repeated Measures</td>
<td>Exam 1 – Benchmark (Ch. 1-4, Review)</td>
</tr>
<tr>
<td>17-Feb</td>
<td>Ch. 6 – ANCOVA</td>
<td></td>
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<tr>
<td>24-Feb</td>
<td>Ch. 7 – Multivariate ANOVA (MANOVA) &amp; ANCOVA</td>
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<tr>
<td>3-Mar</td>
<td>Ch. 8 – Profile Analysis</td>
<td>Selection of Statistics Methods paper 1 Due</td>
</tr>
<tr>
<td>10-Mar</td>
<td>Ch. 5 – Multiple Regression</td>
<td>Exam 2 – ANOVA (Mixed ANOVAs and Rpt. Measures; Ch. 6-8)</td>
</tr>
<tr>
<td>17-Mar</td>
<td>Ch. 10 – Logistic Regression</td>
<td>Paper Methods 1 (Univariate) Presentation/Discussion</td>
</tr>
<tr>
<td>24-Mar</td>
<td>Pseudo Spring Break Take a deep breath – over halfway done!</td>
<td></td>
</tr>
<tr>
<td>31-Mar</td>
<td>Ch. 12 – Canonical Correlation</td>
<td></td>
</tr>
<tr>
<td>7-Apr</td>
<td>Ch. 9 – Discriminant Analysis</td>
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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.