Instructor: Luis E. Aguerrevere Ph.D.  
Course Time & Location: Tuesday 9:00AM to 11:30PM; HSTC 314

Office: HSTC 301  
Office Hours: Monday 1-3:30  
Thursday 1-4PM (Zoom) or by appointment

Office Phone: 936-468-1153  
Other Contact Information:  
Credits: 3  
Email: aguerrevle@sfasu.edu

Prerequisites: Admission to the PhD program in School Psychology and graduate school

I. Course Description: (brief paragraph)

Advanced study of multivariate statistical methods, including discriminate analysis, repeated measures analysis, priority and ad-hoc procedures. Neural networking procedures will address nonlinear data modeling and identifying complex patterns among diversified data types.

Course Credit Hour Justification:
Each week of a 15-week semester, doctoral students will engage in 3 hours of instructor-directed activities, including but not limited to lectures and discussions of readings, and selected research projects. Additionally, the class will require students to devote a minimum of 6 hours to reading material and completing the necessary course requirements, such as but not limited to out-of-class discussions, readings, participating in laboratory activities.  [total instructor-directed activities=45 hrs and total out-of-class activities=90 hrs; grand total of approximately 135 hrs for the 3 credits]

Diversity Statement: The James I. Perkins College of Education Diversity Statement is found at the following link: http://coe.sfasu.edu/about-us

II. Intended Learning Outcomes/Goals/Objectives (Program/Student Learning Outcomes):
The complete listing of the standards associated with the PLOs, SLOs, assignments, and assessments are located on the PCOE website.

This course reflects the following core values of the College of Education:
• Academic excellence through critical, reflective, and creative thinking
• Life-long learning
• Collaboration and shared decision-making
• Openness to new ideas, to culturally diverse people, and to innovation and change
• Integrity, responsibility, diligence, and ethical behavior
• Service that enriches the community

The mission of the College of Education is to prepare competent, successful, caring, and enthusiastic professionals dedicated to responsible service, leadership, and continued professional and intellectual development.

The goals of this course are closely aligned to those of the College of Education (COE), which is to prepare competent, successful, caring and enthusiastic professionals dedicated to responsible service,
leadership, and continued professional and intellectual development. As a preliminary step in this process the knowledge obtained in this course will enable candidates to develop the requisite knowledge, skills, and dispositions necessary for admission into the COE Teacher Certification Program.

This course also supports the mission of the Human Services Department. The mission of the College of Education is to prepare competent, successful, caring, and enthusiastic professionals dedicated to responsible service, leadership, and continued professional and intellectual development.

Program Learning Outcomes (PLO)

1. **Human Diversity:** Candidates demonstrate awareness and sensitivity in working professionally with diverse individuals, groups, and communities.

2. **Psychoeducational Foundations:** Each graduate student must demonstrate appropriate knowledge of historical, political and laws, policies, and procedures that affect the field of psychology and education.

3. **Content Knowledge:** Each candidate must also demonstrate the ability to use knowledge of biological, psychological sociocultural, ethical and legal factors to understand typical and atypical behavior.

4. **Research & Technology:** SFA trained psychologists must demonstrate the ability to use their knowledge of research, statistics, and evaluation methods to inform all areas of practice, from choosing appropriate methods for collecting information to making recommendations for interventions based on empirical evidence.

5. **Professional Skills and Dispositions:** Candidates will conduct themselves in a manner that reflects the values and attitudes alienated with the American Psychological Association policies and guidelines; The candidate will demonstrate knowledge, skills, and professional work characteristics/dispositions and effectively apply them in the practice.

6. **Application of Principles and Procedures:** Assessment that demonstrates candidates’ knowledge, skills, and dispositions are applied effectively in the practice of psychology. As part of this assessment, each student must document the ability to use both problem-solving (client-centered) and process-focused (consultee-centered) models of consultation.

7. **Communication:** The candidate will demonstrate proficiency in communication skills relevant to the field of psychology both written and spoken. This may include, but not be limited to, effective writing for different purposes, effective presentation skills for a variety of audiences and purposes, and skills for interacting appropriately with others.

Student Learning Outcomes:

- At the end of the course, the student will:

  1. Demonstrate fluency in matrix algebra sufficient to understand and employ multivariate methodology to research data. [PLO 1, 5]

  2. Demonstrate fluency in basic MANOVA hand calculations sufficient to apply this methodology to research data. [PLO 1, 5]

  3. Identify and demonstrate hand calculations and computer-interactive procedures appropriate to Logistic Regression and Principal Components Analysis/Factor Analysis operations. [PLO 1, 2, 5]

  4. Discuss the basic logic and advantages of testing for statistical interactions and employing a priori and ad-hoc procedures. [PLO 1]

  5. Explain the assumptions associated with multivariate operations. [PLO 1]

  6. Utilize and SPSS statistical software and interpret complex research findings. [PLO 1, 2, 5]
7. Test the assumptions associated with linear and logistic regression and various multivariate tests. [PLO 1, 2, 5]
8. Using SPSS, employ scatterplots for checking the assumptions of multiple regression procedures. [PLO 1]
9. Differentiate between standard and hierarchical multiple regression procedures. [PLO 1, 2, 5]
10. Differentiate between predictive vs. explanatory functions of multiple regression. [PLO 1, 5]
11. Identify research situations in which logistic regression analysis is appropriate. [PLO 1]
12. Identify and employ multivariate analysis of variance tests in several research applications. [PLO 1, 5]
13. Understand and discuss the general purpose and types of research questions pertaining to multivariate analysis of covariance, main effects, interactions among variables, specific comparisons and trend analysis, effects of covariates and effect size. [PLO 1, 2, 5].

This course incorporates the Core Curriculum Objectives in the listings of course objectives and indicated in course assignments. Just as was required in the application for the inclusion in the core curriculum, faculty are asked to note how each core objective is met in the course schedule in terms of instruction and in the description of course assignments The following lists the Core Curriculum Objectives with definitions that this course meets.

Critical Thinking. Description indicates how students will be instructed in critical thinking skills including creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
Communication. Students will be instructed in Communication Skills to include effective development, interpretation and expression of ideas through written, oral and visual communication.
Personal Responsibility. Students will be instructed in personal responsibility to include the ability to connect choices, actions and consequences to ethical decision-making.
Social Responsibility. Students will be instructed in intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities.
Empirical and Quantitative Skills. Students will be instructed in the manipulation and analysis of numerical data observable facts resulting in informed conclusions
Teamwork. Students will be instructed in the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

III. Course Assignments, Activities, Instructional Strategies, use of Technology:

There will be no exams in this class, rather there will be assigned weekly and monthly projects. These projects will include, as much as possible, genuine data sets. Your tasks will involve analyzing the data using a multivariate technique, printing and annotating the output from SPSS, and writing up a brief results section using APA style. Other tasks will involve offering brief answers to conceptual questions, minor hand computations (e.g., with matrix algebra), and analysis of small, contrived data sets.

IV. Evaluation and Assessments (Grading):

1. Study (20%). Students will be writing a report and presenting a study using either data already collected or simulated data (created by the instructor) to answer questions related to a student’s topic of interest. Students will be writing and extended abstract following the below guidelines. Students will also present their finding in a poster session.
2. Homework (20%): Students will complete homework from Field’s assigned chapters. Specific exercises to be completed below)
3. Exams (60%). Exams will be comprehensive to the material presented up to that date. The exams will be posted on D2L a week before it is due. Students will have until 11:59 of the due date to complete the exam.

The following rubric will be used for all projects and in-class activities.

<table>
<thead>
<tr>
<th>Rubric for Statistics Projects</th>
<th>Points Possible</th>
<th>Points Earned</th>
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</thead>
<tbody>
<tr>
<td><strong>Introduction/Title:</strong></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Title is clear and in the form of a question</td>
<td>10</td>
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<tr>
<td>Introduction clearly describes the question that is being investigated</td>
<td>10</td>
<td></td>
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<tr>
<td>Introduction clearly states the hypotheses for the question of interest</td>
<td>10</td>
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<table>
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<tr>
<th>Graphs and Summary Statistics:</th>
<th>40</th>
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<tbody>
<tr>
<td>Appropriate tables and graphs are used (help answer the overall question of interest)</td>
<td>10</td>
</tr>
<tr>
<td>Graphs and tables are accurate and neat</td>
<td>10</td>
</tr>
<tr>
<td>Appropriate summary statistics are calculated (help answer the overall question of interest) and written in APA style</td>
<td>10</td>
</tr>
<tr>
<td>Summary statistics are calculated correctly (SPSS output is included)</td>
<td>10</td>
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<tr>
<th>Discussion and Conclusions:</th>
<th>30</th>
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<tbody>
<tr>
<td>Conclusion clearly and correctly addresses the question of interest</td>
<td>10</td>
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<tr>
<td>Conclusion is supported by the appropriate inferential procedure</td>
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<tr>
<td>Appropriate generalizations are made with supporting evidence</td>
<td>10</td>
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Study Specifics:

**Brief Paper ~10 pages follow the following format:**

a. Introduction. must be a discussion of the scientific evidence that led you to your study. Here, you will discuss 6 articles that are relevant (similar to your study). At least half of your articles should be published within the last 5 years.

b. To effectively use the content of the 6 journal articles to support your ideas, be sure to clearly describe 1) the topic of the research being reported, 2) the research method used (and how these methods may have affected the results), 3) the researcher’s conclusions, and 4) questions raised by the research.

c. In the last paragraph of the research section of your paper, summarize the research findings and briefly state how the research relates to the topic of your paper. In this same paragraph, you should clearly and concisely describe the various SPECIFIC hypotheses on which you are basing your paper.

d. Methods. Here you will present your proposed participants, materials and design.

e. Results: Here you will present your experimental design, including the statistics you will be using and a non-statistic results. If you have not collected data, you will be provided with simulated data.
f. Discussion: You will need to explain how your results change the existing literature. Also, state in what ways you can make your study improve.

g. References. All the books and journals used for your paper should be listed alphabetically in a bibliography at the end. You should follow the style manual of the American Psychological Association (APA) - seventh edition.

**GRADES**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90–100 %</td>
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<tr>
<td>B</td>
<td>80– 89.9%</td>
</tr>
<tr>
<td>C</td>
<td>70–79.9 %</td>
</tr>
<tr>
<td>D</td>
<td>60– 69.9%</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 60 %</td>
</tr>
</tbody>
</table>
V. Tentative Course Outline/Calendar:

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>Required Homework due Sunday at midnight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Topic</td>
</tr>
<tr>
<td>Aug 28</td>
<td>Introduction</td>
</tr>
<tr>
<td>Sep 04</td>
<td>Basic Statistics Concepts (Zoom)</td>
</tr>
<tr>
<td>Sep 11</td>
<td>Review of SPSS and Graph builder</td>
</tr>
<tr>
<td>Sep 18</td>
<td>Beast of Bias</td>
</tr>
<tr>
<td>Sept 25</td>
<td><strong>Exam 1</strong></td>
</tr>
<tr>
<td>Oct  2</td>
<td>Correlations and Partial Correlations</td>
</tr>
<tr>
<td>Oct  9</td>
<td>Linear and Multiple Regression</td>
</tr>
<tr>
<td>Oct 16</td>
<td>Comparing 2 means</td>
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<tr>
<td>Oct 23</td>
<td>Moderation</td>
</tr>
<tr>
<td>Oct 30</td>
<td><strong>Exam 2</strong></td>
</tr>
<tr>
<td>Nov  6</td>
<td>One-Way ANOVA and ANCOVA</td>
</tr>
<tr>
<td>Nov 13</td>
<td>Factorial Designs</td>
</tr>
<tr>
<td>Nov 20</td>
<td><strong>Thanksgiving</strong></td>
</tr>
<tr>
<td>Nov 27</td>
<td>Repeated Measures (ZOOM)</td>
</tr>
<tr>
<td>Dec  04</td>
<td>Categorical Outcomes</td>
</tr>
</tbody>
</table>

**EXAM 3 and Study due – Dec 16th**
VI. Readings (Required and recommended—including texts, websites, articles, etc.):

**Required Texts and Software:**

*Text*
Andy Field’s *Discovering Statistics Using IBM SPSS Statistics* *(4th or 5th edition)*
You may also find his website useful: [http://www.statisticshell.com/html/apf.html](http://www.statisticshell.com/html/apf.html)

*Software*
SPSS Statistics GradPack (see dealer for cost on this item)

**Recommended Texts**

VII. Course Evaluations:

“Near the conclusion of each semester, students in the Perkins College of Education electronically evaluate courses taken within the PCOE. Evaluation data is used for a variety of important purposes including:

1. Course and program improvement, planning, and accreditation;
2. Instruction evaluation purposes; and
3. Making decisions on faculty tenure, promotion, pay, and retention.

As you evaluate this course, please be thoughtful, thorough, and accurate in completing the evaluation. Please know that the PCOE faculty is committed to excellence in teaching and continued improvement. Therefore, your response is critical!”

In the Perkins College of Education, the course evaluation process has been simplified and is completed electronically through MySFA. Although the instructor will be able to view the names of students who complete the survey, all ratings and comments are confidential and anonymous, and will not be available to the instructor until after final grades are posted.

VIII. Student Ethics and Other Policy Information: Found at [http://www.sfasu.edu/policies/](http://www.sfasu.edu/policies/)

**Class Attendance and Excused Absence: Policy 6.7**
Regular, punctual attendance, documented participation, and, if indicated in the syllabus, submission of completed assignments are expected at all classes, laboratories, and other activities for which the student is registered. Based on university policy, failure of students to adhere to these requirements shall influence the course grade, financial assistance, and/or enrollment status. The instructor shall maintain an accurate record of each student’s attendance and participation as well as note this information in required reports (including the first 12 day attendance report) and in determining final grades. Students may be excused from attendance for reasons such as health, family emergencies, or student participation in approved university-sponsored events. However, students are responsible for notifying their instructors in advance, when possible, for excusable absences. Whether absences are excused or unexcused, a student is still responsible for all course content and assignments. Students with accepted excuses may be permitted to make up work for up to three weeks of absences during a semester or one week of a summer term, depending on the nature of the missed work. Make-up work must be completed as soon as possible after returning from an absence.

**Academic Accommodation for Students with Disabilities: Policy 6.1 and 6.6**
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and
Room 325, 936-468-3004 as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/

Academic Dishonesty

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

Student Appeals
A student who wishes to appeal decisions related to academic dishonesty should follow procedures outlined in Academic Appeals by Students (6.3).

Withheld Grades: Policy 5.5
At the discretion of the instructor of record and with the approval of the academic unit head, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F, except as allowed through policy [i.e., Active Military Service (6.14)]. If students register for the same course in future semesters, the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.
Student Code of Conduct: Policy 10.4
Interference or disruption of students, faculty, administration, staff, the educational mission, or routine operations of the university is prohibited. Such activity includes, but is not limited to, behavior in a classroom or instructional program that interferes with the instructor or presenter's ability to conduct the class or program, or the ability of others to profit from the class or program. To remain in the vicinity of activity that is disrupting normal university functions when requested to leave by a university official is prohibited. Bystanders, if their presence incites or adds to the disruption, as well as more active participants in the disruptive activity, may be in violation of this policy as well. Engaging in physical violence of any nature against any person. This includes fighting; assaulting; battering; using a knife, gun, or other weapon; or acting in a manner that threatens or endangers the physical health or safety of any person or causes a reasonable apprehension of such harm.

The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program at SFA.

SFASU values students' mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
SFASU Counseling Services
www.sfasu.edu/counselingservices
3rd Floor Rusk Building
936-468-2401

SFASU Human Services Counseling Clinic
www.sfasu.edu/humanservices/139.asp
Human Services Room 202
936-468-1041

Crisis Resources:
Burke 24-hour crisis line 1(800) 392-8343
Suicide Prevention Lifeline 1(800) 273-TALK (8255)
Crisis Text Line: Text HELLO to 741-741

Additional Information:

EXTRA CREDIT
Students will have the opportunity throughout the semester to earn extra points to be added to the final grade. These opportunities will be offered at the instructor's discretion.

POSTING GRADES
Grades will be posted on D2L. When grades are posted, an announcement will be posted on D2L indicating the grades for that assignment or exam have been posted. Please do not e-mail or call inquiring if grades are posted until this announcement is posted. To protect student confidentiality, students' performance cannot be reported or even discussed over the phone, e-mail, or instant message.
IX. Other Relevant Course Information: The instructor reserves the right to change the syllabus as necessary. You are responsible for keeping up with all changes to the syllabus and for all information presented during class, regardless of whether or not you attended class.