

Lamar University
College of Arts and Sciences
PSYC 3301-01 – Advanced Statistics CRN 11217
12:45-2:05 TR, SBS Room 102
Fall 2017

Instructor: Dr. Edythe Kirk, Ph.D.
Office: 203N Social & Behavioral Sciences Building
Office Hours: 10:15-11:15 MTWF, 9:30-11:30 R, 2:15-3:30 MR, and by appointment
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Course Website: Blackboard

Course Description: PSYC 3301 is a comprehensive survey of *advanced statistical methods* used in research. PSYC 3301 will include a review and extension of measures of central tendency, variability, and position, correlation and regression, and tests of significance introduced in PSYC 2317. The course will introduce students to software used in applied data analysis and scientific data presentation. In this course, you will learn how to use critical thinking skills to select appropriate analyses for specific research questions, perform computational procedures necessary to analyze research data, and communicate the results of those analyses to an audience. *These skills are vital for success in PSYC 4330 Experimental Psychology.*

Course Prerequisite: PSYC 2317 or PSYC 2471 (grade of C or higher)

Required Textbook:

Walker, J.L., Esser, J.K., & Kirk, E.E. (2004). *The basics of introductory statistics* (Revised 2nd Ed.). Acton, MA: Copley. ISBN 1-58152-317-3 **BRING YOUR TEXTBOOK TO CLASS.**

Recommended Textbook:

Esser, J. K., Walker, J. L., & Kirk, E. E. (2005). *Analysis of variance and multivariate statistics with matrix algebra*. Acton, MA: Copley. ISBN: 1-58152-399-8 **COPIES OF RELEVANT CHAPTERS ARE POSTED TO BLACKBOARD**

Required Materials:

Electronic storage media (e.g., flash drive). An inexpensive calculator with statistical functions, e.g., Texas Instruments TI30-IIS, is generally best. **BRING YOUR CALCULATOR TO CLASS.**

Student Learning Outcomes: Students who successfully complete this course will be able to:

1. Apply higher-order/critical thinking and statistical models to represent and solve real-world problems.
2. Represent and evaluate basic statistical information verbally, numerically, graphically, and symbolically using statistical calculators and statistical software.
3. Interpret research data with formulas, graphs, tables, draw inferences from the results, and formally communicate the conclusions in a scientific manner.
4. Recognize the applications and limitations of statistical models.

Course Management Policies:

Disability Accommodation: Lamar University is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is located in the Communications building room 105. Office staff collaborate with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact the DRC at (409) 880-8347 or drc@lamar.edu to arrange a confidential appointment with the Director of the DRC to explore possible options regarding equitable access and reasonable accommodations. If you are registered with DRC and have a current letter requesting reasonable accommodations, contact your instructor early in the semester to review how the accommodations will be applied in the course.

Course Structure and Teaching Methodology: This course will utilize active and collaborative learning strategies to enhance student mastery. Students are encouraged to become active learners in the classroom by participating in in-class activities, asking questions, and offering reflections that enhance understanding of course concepts. Students will be expected to be prepared for in-class activities by completing reading assignments *prior* to class meetings. Students are also expected to have resource materials and tools (textbook, calculator, flash drive, etc.) with them to ensure successful completion of in-class activities. Students who are alert, prepared, and open to class activities and discussions will be given every consideration when making borderline final grade decisions. *In the event of an announced campus closure in excess of four days due to a hurricane or other disaster, students are expected to login to Lamar University's website's homepage (www.Lamar.edu) and Blackboard for instructions about continuing courses remotely.*

Expectations of classroom behavior: Students are full partners in fostering a classroom environment that is conducive to learning. Students are prohibited from engaging in any form of behavior that detracts from the learning experience of fellow students. Inappropriate behavior in the classroom may result in a request for the offending student to leave class.

Attendance: Regular class attendance is expected of all students. Each student is accountable for all work missed because of absence. Instructors are under no obligation to make special arrangements for students who have been absent. Should an absence from class be unavoidable, the student is encouraged to obtain lecture notes from a classmate. Lecture notes will not be provided by the course instructor. Attendance data will be monitored and reported to the Financial Aid Department in accordance with state and federal laws but will not count against students' course grades.

Academic Integrity: As stated in the Lamar University Student Handbook, "Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Punishable offenses include, but are not limited to, cheating on an examination or academic work which is to be submitted, plagiarism, collusions, and the abuse of resource materials" (p. 81). Any student found guilty of academic dishonesty will be awarded a reasonable penalty that may include a failing grade in the course. Students who wish to appeal the decision may do so as specified in the Lamar University Student Handbook (available at <http://students.lamar.edu/student-handbook.html>).

Drop/Withdrawal: Students are responsible for making sure they are properly enrolled in the course. If, at any time, students decide not to participate in the course, it is *their responsibility* to officially drop or withdraw according to university policy. The academic calendar published on the university website lists drop dates (available at <http://events.lamar.edu/academic-calendar-listing.html>). Drops or withdrawals after the course begins may carry financial penalties.

Emergency Procedures: Many types of emergencies can occur on campus; instructions for severe weather or violence/active shooter, fire, or chemical release can be found at: <http://www.lamar.edu/about-lu/administration/risk-management/index.html>. On the next page are procedures for the first two (severe weather, violence/active shooter).

Severe Weather:

- Follow the directions of the instructor or emergency personnel.
- Seek shelter in an interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside.
- If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building.
- Stay in the center of the room, away from exterior walls, windows, and doors.

Violence/Active Shooter (CADD):

- **CALL** - x8311 from a campus phone (880-8311 from a cell phone). Note: Calling 911 from either a campus phone or cell phone will contact Beaumont City Police Dispatch rather than University Police.
- **AVOID**- If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.
- **DENY**- Barricade the door with desks, chairs, bookcases or any other items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it is safe.
- **DEFEND**- Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.

Evaluation Methods: Students will be evaluated with examinations, in-class activities, homework assignments, and a data analysis project. Exams will consist of objective (multiple choice and/or matching items) and data analysis problems. Data analysis problems will require interpretations of results and their application to a specific research question. Exam questions will come from both in-class material and textbook readings, which means that you will also be tested on material *not* presented in class. Advanced statistical techniques require mastery of basic statistical concepts. *Therefore each exam will be cumulative in nature.* The exams will be given in class on the days scheduled. **NO MAKE-UP EXAMS WILL BE GIVEN.** *Note that a grade of "F" may be recorded for a student who is absent from the final exam and is not passing the course (Lamar University General Catalog).* In-class activities will provides students with extensive practice in data analysis and communication, emphasizing the use of statistical calculators and statistical software. The data analysis project involves application of critical thinking, statistical/quantitative reasoning, and communication skills to solve and interpret a complex, real-world research problem. *The data analysis project will be due on the date indicated on the course schedule.*

Assignment of Grades: Grades will be based on the *total number of points* obtained as shown below. A curve *may* be used to determine individual student grades.

Data Analysis Project	100 points	Letter	Point Range
Exam 1	100 points	A	≥ 540
Exam 2	100 points	B	480-539
Exam 3	100 points	C	420-479
Exam 4	100 points	D	360-419
Exam 5 (Final Exam)	100 points	F	≤ 359
Total	600 points		

Tentative Course Outline:

You will be responsible for reading the text chapters assigned to each topic *PRIOR* to class to promote discussion of the topics and work on group activities.

Unit I Review of Descriptive Statistics

Basic concepts: areas of statistics, measurement scales

Tables and graphs used to report descriptive analyses

Measures of central tendency

Measures of variability

Measures of position: standard scores, percentiles, and centile points

Software applications: performing and reporting basic descriptive statistics

Reading assignments: Chapters 1-5; for more information see Esser et al. Chapter 1

Tentative exam date: TUESDAY, SEPTEMBER 19

Unit II Review of Correlational Statistics

Correlation and measures of relationships

Bivariate linear regression

Forecasting error – standard error of estimate

Assumptions and interpretations of correlational models

Software applications: performing and reporting basic correlational statistics

Reading assignments: Chapters 7-10; for more information see Esser et al. Chapter 2

Tentative exam date: TUESDAY, OCTOBER 10

Unit III Alternative and Advanced Correlational Statistics

Multiple correlation and regression

Other correlational models

Software applications: performing and reporting advanced correlational statistics

Reading assignments: Chapter 10 (pp. 130-132); for more information see Esser et al. Chapter 15 (pp. 265-268)

Tentative exam date: TUESDAY, OCTOBER 31

Unit IV Review of Basic Inferential Statistics

Inferential statistics and sampling theory

Hypothesis testing: Fisher's decision model

The *t*-tests

Software applications: performing and reporting basic inferential statistics

Reading assignments: Chapters 11-14; for more information see Esser et al. Chapter 4 (pp. 77-98)

Tentative exam date: TUESDAY, NOVEMBER 14

Unit V Advanced Inferential Statistics

ANOVA models: single factor, factorial, and mixed designs

Post hoc tests and tests of assumptions

Software applications: performing and reporting advanced inferential statistics

Reading assignments: Chapter 15; for more information see Esser et al. Chapters 5-8, 10, 11

Project due: TUESDAY, NOVEMBER 21

Final exam date: TUESDAY, DECEMBER 12, 11:00-1:30

Note: The professor reserves the right to make changes in the course, including additional readings or requirements, exam date changes, etc. Any changes will be announced in class and posted on Blackboard. It is the student's responsibility to keep up with announced changes in the course.

All policies stated within this syllabus are final and non-negotiable.