

Psychology 6308: Experimental Design/Analysis of Variance

MW 4:30-5:50 in Worrell Hall 205

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Review Sessions: Fridays, Time TBA

These sessions, led by the teaching assistant, will involve working through practice problems, going over homework solutions, question-answer time, and other activities conducive to learning the class material.

Content and Learning Goals

This course will cover experimental design and analysis, with a focus on the analysis of controlled experiments with categorical independent variables and quantitative dependent variables. Analysis of Variance (ANOVA) techniques will be applied to a variety of experimental designs, research questions, and data properties. After this course, you will be able to analyze experimental data with a variety of designs and be prepared to be a critical consumer of literature reporting such analyses.

Required Readings

Keppel, G. & Wickens, TD (2004). *Design and Analysis: A Researcher's Handbook (4th Edition)*. Prentice Hall Associates.

Other articles or chapters may be assigned as needed and will be distributed electronically.

Software

SPSS can be accessed in most research laboratories in the department and can be installed on any UTEP-owned computer. You can use my.apps.utep.edu to access SPSS using Citrix Receiver software on any computer using your UTEP login credentials.

Exams

There will be two midterms, one on Wednesday February 21st (25% of grade) and one on Wednesday March 27th (25%), and a cumulative final exam Monday May 6th from 4:00-6:45 (40%). You will need to be prepared to work the problems efficiently. [If you have not done the homework, this will be nearly impossible.]

All exams will be open-book and open-note, and you will need a calculator. Be sure that you know how to use your calculator before the first exam. It is suggested that you prepare a set of summary notes with critical formulas and other information to reduce the time necessary to look up information.

Homework

Homework will be assigned and collected regularly and will be worth 10% of the final grade. The assignments will be graded and used to identify areas for further instruction/clarification. Solutions will be discussed in the weekly review sessions. If computer output is required, please include only the parts necessary for evaluating the solution and edit out irrelevant output. Consultation with other students in the class while completing homework assignments is acceptable and appropriate, but it is strongly recommended that you do as much as possible on your own, because collaboration is not allowed on the exams. Homework will be collected at the beginning of class on the designated due dates.

Policies

Graduate students are expected to behave professionally in graduate courses. This includes but is not limited to the following:

- Attending class consistently.
- Turning in homework on time -- Late homework will not be accepted.
- Taking exams on the scheduled dates -- Of course absences for professional conferences are acceptable and appropriate, but please give notice ahead of time if the absence will include an exam date. Otherwise, make up exams will be given only under extraordinary circumstances, and with appropriate documentation.
- Academic honesty and integrity – This means that cheating, plagiarism, and other forms of academic dishonesty will not be tolerated.
- Showing respect for others in the class.

UTEP Course Drop Policy: January 31st is the last day to drop a course with full refund and no listing of the course on your record. March 28th is the last day to drop a course with an automatic “W.” It is the student’s responsibility to officially drop any course that he or she no longer wishes to attend.

CASS: If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Students who become pregnant or have parenting responsibilities may also request reasonable accommodations. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. The UTEP Center for Accommodations and Support Services (CASS) will process requests for accommodations based on a disability, pregnancy, or parenting. Contact the Center for Accommodations and Support Services at 915-747-5148, email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

Tentative Schedule of Topics

1/17: Introduction, notation, one-group example, single-sample t test

1/22: Independent/dependent samples, paired samples and independent samples t tests

1/24-1/29: One-way ANOVA

1/31-2/05: Trends and contrasts, error control

2/07: Linear model, assumptions

2/12: Detecting and dealing with violations of assumptions

2/14-2/19: Effect size, power, sample size

2/21: EXAM 1

2/26: Two-way ANOVA introduction and notation, main effects and interaction concepts, detecting effects in tables or graphs

2/28: Two-way ANOVA computation, interpretation of effects, effect size

3/04: Analytic comparisons in the two-way design

3/06: Within-subjects/repeated measures ANOVA

3/11-3/13: No class—Spring Break

3/18: Contrasts in the within-subjects ANOVA, Latin square, assumptions

3/20: Two-way within-subjects ANOVA

3/25: Two-way mixed ANOVA

3/27: EXAM 2

4/01-4/03: Three-way ANOVA

4/08-4/10: Reporting ANOVA results, dealing with real data

4/15-4/17: Random factors, nested factors, and complex designs

4/22-4/29: Analysis of covariance and linear mixed-effects regression

5/01: More linear mixed-effects regression and review

5/06 (Monday): **FINAL EXAM** (Cumulative) 4:00-6:45