Psychology 6063

Course: Applied Multivariate Statistical Analysis

TR 1:30-2:45, Rm 905

Professor: Jorge L. Mendoza, Dale Hall 705, 5-4568

email: Jmendoza@ou.edu

Office Hours: Wed 9-11 a.m.

Grading: Two tests (midterm & final)..................200
Homework .............................................100

Homework: Students should read and work all exercises in the text as a general procedure. In addition to the exercises, we will have presentation. Not all exercises will be collected, but occasionally we will assign and collect some of them.

Class Participation: I expect you to contribute to the class. You will do this by presenting or explaining a procedure or exercise to the class.

What does "academic integrity" mean?

Academic integrity means honesty and responsibility in scholarship. Professors have to obey rules of honest scholarship and so do students. Here are the basic assumptions about academic work at the University of Oklahoma:

(1) Students attend OU in order to learn and grow. (2) Academic assignments exist for the sake of this goal. (3) Grades exist to show how fully the goal is attained. (4) Thus, all work and all grades should result from the student's own effort to learn and grow. Academic work completed any other way is pointless, and grades obtained any other way are fraudulent.

Academic integrity means understanding and respecting these basic truths, without which no university can exist. Academic misconduct -- "cheating" -- is not just "against the rules." It violates the assumptions at the heart of all learning. It destroys the mutual trust and respect that should exist between student and professor. Finally, it is unfair to students who earn their grades honestly.

How do I know what counts as "academic misconduct"?

The "Academic Misconduct Code" describes in detail a student's rights and responsibilities as a member of the OU academic community. (Rules and procedures are somewhat different for the Health Sciences Center, the College of Law, and courses offered off-campus). The Code defines academic misconduct simply as any act which improperly affects the evaluation of a student's academic performance or achievement. Just as professionals are expected to know the rules of their profession, students have to know what counts as misconduct. Claiming ignorance of the rules is not a defense. So when in doubt, check the Provost website at www.ou.edu/studentcode. By the way, "Academic misconduct includes but is not limited to cheating (e.g., looking on another person's exam or allowing them to look on yours), plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person (i.e., copying someone else's work, allowing someone to do your papers or take your exams for you),
taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. Please read this section in your Student Handbook or on the OU website.

**Disabilities** If you have a disability that may prevent you from fully demonstrating your abilities, contact me personally as soon as possible so we can discuss reasonable accommodations necessary to ensure full participation and facilitate your educational opportunity.

**Text: Using Multivariate Statistics, 4e by Tabachnik and Fidell**

Other Good Books:

- Applied Multivariate Statistical Analysis (4th Ed.) by Johnson & Wichern
- An Introduction to Multivariate Statistical Analysis (2nd Ed.) Anderson, T. W.
- Multivariate Data Analysis (5th edition) by Hair, Anderson, Tatham, & Black
- Categorical Data Analysis: Using the SAS System by Stokes, Davis, & Kock
- General Linear Models: Theory and applications using SAS software, by Timm, & Mieczkowski

Grading Policy: The final grade will be based on class assignments, midterm, and final.

**Purpose:** To familiarize students with the basic multivariate procedures and the SAS computer programs used to carry out these procedures.

**Course Outline:**

**Review & Introduction** (Chap 1, 2 & 3)

- Overview of multivariate techniques
- Variance Covariance and Correlation matrices
- Type(I) error, Type(II) error, Power
- The problem of multiple tests
- Bonferroni inequality
- Reasons for preferring a multivariate analysis
- Multivariate Normality
- Multivariate Sampling distributions
- Central Limit Theorem
- Linear Combinations & Basic Matrix Algebra
- Inverse and solving linear equations (Multiple Regression and Anova)
- More matrix Algebra (Eigenvalues & eigenvectors) & the internal correlation
**Principal Components** (Chap 13)

- PC model and factor analysis
- Variance accounted
- Rotations

**Hypothesis Testing—Multivariate Criteria**


**Canonical Correlation** (Chap 6)


**Multivariate Regression, MANOVA and ANCOVA** (Chap. 9)


**Discriminant Analysis** (Chap. 11)
Repeate measures designs (Chap. 10)

- Assumptions in Repeated Measures
- Profile Analysis
- Multivariate Repeated Measures Designs


Missing Data and Other Problems (Chap 4)