Psychology 524: Applied Multivariate Statistics
15215 9:30-10:45am TTH in SH 322
Lab 15216 11:00-11:50am TTH SH 341

Information:

Email address: andrew.ainsworth@csun.edu
Office Hour: TTH 2-3pm or by appointment in ST302
Class Website: http://www.csun.edu/~ata20315/psy524
Phone: 677-3898
AIM: andyains76 (good place to ask questions when I'm available)

Teaching Assistant: Ryan Feyk-Miney
Email: ryaniscool47@yahoo.com
Office Hour: TBA

Textbook:

Required:

Tabachnick, B. G. and Fidell, L. S. (2006). *Using Multivariate Statistics* (5th Edition)*:* Allyn and Bacon.

Recommended Supplemental Texts:

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd Ed.). Mahwah, NJ: Erlbaum.

Comrey, A. L., & Lee, H. B. (1992). *A First Course in Factor Analysis* (2nd ed.). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling* (2nd ed.). New York: The Guilford Press.

Catalog Description

Analysis of multivariate research data in psychology using packaged computer programs. Standard techniques with applications in psychology are covered. Choice of analytic technique is discussed, as are methods of screening data to assure appropriateness of techniques. Lab provides direct experience with computing facilities for conducting multivariate analysis and computational methods extending statistical analysis provided by computer output.

Grades

Class Grading:

Midterm 1	(Tues 2/19)	T/F, Multiple Choice, Short Answer questions
Midterm 2	(Thurs 3/27)	T/F, Multiple Choice, Short Answer questions
Final	(Thurs 5/15)	T/F, Multiple Choice, Short Answer questions
Labs		10 lab assignments throughout the semester

Your grade in the class will be based on three exams and labs.
Exams: There will be three exams worth 100 points each; a total of 300 points
Lab Assignments: There will be 10 graded lab assignments worth a total of 100 points.

As you hopefully have learned in previous courses, the distribution of scores can be described in a standardized way. A **Z-score** is a standardized score which indicates how far a particular score is away from the mean (or average) score in terms of standard deviations (a measure of how wide a distribution is). Exam scores that are above the mean will have a positive Z-score, exam scores below the mean will have a negative Z-score.

Exam Grade Estimation

First convert your raw test score and convert it to a Z-score using the Z formula:

$$Z_{testscore} = \frac{X_{\text{raw test score}} - \overline{X}_{\text{test mean}}}{s_{\text{test standard deviation}}}$$

This formula is not something you should be familiar with right now, but before your first exam you should understand this formula, what it means and how to interpret you grade based on the Z-score you receive.
Using you raw score, the mean and standard deviation of the scores to calculate your Z-score you can then look up your Z-score on the table below to see your grade estimation

.57 or above	=	A
.43	=	A-
.16	=	B+
-.16	=	B
-.43	=	B-
-.57	=	C+
-.84	=	C
Below -.84	=	C-

You grade in the class will be determined by either your average z-score on the 3 exams and your labs or your z-score on your total score (i.e. adding the exams and homework together). I will calculate your grade both ways and you will receive the better of the 2 grades if there is a difference.

Lab Grading:
Your labs will be graded and you will receive a grade based on your scores on 10 laboratory assignments that will help your overall score in the class/lab. You will receive the same grade for all 4 units of the class/lab. These labs are intended to teach you how to analyze data using statistical programs available to you in the stats (and others) lab.

Exam difficulty
The exams are **DIFFICULT**. The scores are curved so this is really not a problem. In fact, hard exams are good because they allow the students who know more to distinguish themselves from those who don't know very much. An exam that is too easy does not allow for a wide enough spread in the distribution. Some of the exam questions will be similar to questions in the book or examples done in class. Some of the questions will require you to understand the concepts well enough to relate them to each other in a potentially novel way.

Formula Sheets
You will be allowed a single sheet (1 side of an 8½ by 11 sheet) for the first exam, 2 sheets for the midterm and 3 for the final. You need to understand the concepts in the class and the formula sheets are only to assist in the application of formulas. It is imperative that you know the material well because the time allotted for the tests assumes you know the conceptual material, can analyze the data and can do it quickly. **Every student is required to put together their own formula sheet(s). No Xeroxing of formula sheets for distribution.**

Ainsworth
Spring 2008

Tentative Class Schedule

Week	Date	Topic	Labs	Chapter
1	1/22	Intro and Review		1-3 and 17
	1/24			
2	1/29	Data Screening and Assumptions		4
	1/31			
3	2/5	Multiple Regression	Data Screening	5 and A
	2/7			
4	2/12	Canonical Correlation	Multiple Regression	6
	2/14			
5	**2/19**	**Exam 1**	Canonical Correlation	**4-6, 17, A**
	2/21	ANCOVA		8
6	2/26	Go over Exam 1/ ANCOVA		9
	2/28	MANOVA	ANCOVA	
7	3/4			
	3/6			
8	3/11	Profile Analysis	MANOVA	10
	3/13			
11	**3/18**	***Spring Break!!!!***		
	3/20			
9	3/25	Doubly Manova	Profile Analysis	
	3/27	**Exam 2**		**8-10**
10	4/1	Discriminant Function Analysis		11
	4/3	Go over Exam 2/ DFA		
12	4/8	Logistic Regression	Discriminant Function	12
	4/10			
13	4/15	Principal Components	Logistic Regression	13
	4/17	Factor Analysis		
14	4/22			
	4/24	Structural Equation Modeling	Factor Analysis	14
15	4/29			
	5/1			
16	5/6		SEM	
	5/8	**Review**		
17	**5/15**	**Final Exam 8:00-10:00am**		**11-14**