

EdPsych/Soc 584 & Psych 594
C.J. Anderson
Spring, 2009

Applied Multivariate Statistical Analysis
in Psychology and Education

COURSE INFORMATION

Instructor: Carolyn Anderson

Office: rm 236C Education Bldg 244-3537
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Prerequisite Psych 407 or EdPsych 581 and EdPsych 582

Lecture 10:00-11:50am , Mon & Wed in room 176 Education Bldg.

Course website <http://www.ed.uiuc.edu/courses/EdPsy494>

Required text : Johnson, R.A. and Wichern, D.W. (2007). *Applied Multivariate Statistical Analysis*, Sixth Edition. Englewood Cliffs, NJ: Prentice-Hall.

Homework: There will be 9 – 10 assignments. You will have one week to complete each assignment. Most will require the use of computers.

Computers and Software: SAS will be used in this course; however, for matrix computations you may choose among SAS, R and/or MATLAB. If you choose to use R or MATLAB, I can only give minimal help. I am assuming that you can create graphics using a program of your choice. An Introductory lab session will be held during the first week or two of the semester that will cover SAS basics and a little SAS/IML programming (IML is the matrix manipulation procedure in SAS). Documentation for SAS and IML is available online. Additional information and papers can be found at the SAS wite-site: www.sas.com.

Examinations: There will be a midterm around 3/11 and a final (due 5/11).

Grading: Homework: 40%, Midterm: 30%, Final 30%.

Class Schedule/Plan 2008

Week	Date	Lecture	Reading in J&W '07
1	Jan 21	Overview & Statistics review	Chapter 1
2	Jan 26 Jan 28	Matrix algebra & random vectors	49-78, 82-101,137-140
3	Feb 2 Feb 4	Sample geometry & random sampling	111-137
4	Feb 9 Feb 11	Linear combinations Multivariate normal distribution	75-77, 149-192 157-214
5	Feb 16 18	Inferences about means Confidence regions & ellipsoids	210-220 221-234, 258-260
6	Feb 23 25	Large sample inference & missing data	234-238, 251-256
7	Mar 2 4	Paired comparisons (repeated measures) Comparing 2 independent populations	273-283 284-296
8	Mar 9 11	Eigensystems (more matrix algebra) Principal components *** Midterm distributed ***	60-66,73-75,77-81 430-459
9	Mar 16 28	Comparisons of means: 1-Way MANOVA *** Midterm due ***	296-312
—	—	March 21 – 29 : *** Spring Break ***	—
10	Mar 30 Apr 1	Profile analysis 2-way MANOVA	323-328 312-323

Week	Date	Lecture	Reading in J&W '07
11	Apr 6 8	2-way MANOVA (continued) Discriminant analysis	575–578, 621–633
12	Apr 13 15	Discriminant analysis (continued)	
13	20 Apr 22	Canonical correlation Canonical correlation (continued)	539–566
14	Apr 27 29	Factor analysis	481–530
15	May 4 6	Review	
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	May 11	*** Final exam due at 5pm ***	