

EdPsych/Soc 584 & Psych 594  
C.J. Anderson  
Spring, 2011

Applied Multivariate Statistical Analysis  
in Psychology and Education

**COURSE INFORMATION**

**Instructor:** Carolyn Anderson

Office: rm 236C Education Bldg 244-3537  
Office hours: Tuesday 1:00-3:00 pm  
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**Teaching Assistant:** Haiyan Lin

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**Prerequisite** Psych 407 or EdPsych 581 and EdPsych 582

**Lecture** 10:00-11:50am , Mon & Wed in room 162 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. Note late homework will be accepted unless you receive prior approval by the instructor. Approval will require a very good reason.

**Illness:** If you are sick, do NOT come to lecture, the instructor's office hours or the TAs office hours. If you need to turn in homework, you can either give it to a fellow student (preferred) or it may be sent electronically (to both the TA and instructor).

**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](http://www.sas.com).

Since R is open source and MatLab is “free” if you are logged on to campus network, SAS will be provided via remote desktop login at [remote.webstore.illinois.edu](http://remote.webstore.illinois.edu). Beside SAS you will also have access to MSWord and Internet explorer and a few other things. If you are enrolled in the course, then you will have access to [remote.webstore.illinois.edu](http://remote.webstore.illinois.edu) and can access it anywhere that you have internet access. Alternatively, you can purchase a SAS license for about \$50 from web-store and put the program on your computer (it’s good until Dec 31 or so).

**Examinations:** There will be a midterm around 3/9 and a final (due 5/9).

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

#### Class Schedule/Plan 2011

Week	Date	Lecture	Reading in J&W '07
1	Jan 19	Overview & Statistics review	Chapter 1
2	Jan 24 Jan 26	Matrix algebra & random vectors	49-78, 82-101,137-140
3	Jan 31 Feb 2	Sample geometry & random sampling	111-137
4	Feb 7 Feb 9	Linear combinations Multivariate normal distribution	75-77, 149-192 157-214
5	Feb 14 16	Inferences about means Confidence regions & ellipsoids	210-220 221-234, 258-260
6	Feb 21 23	Large sample inference & missing data	234-238, 251-256
7	Feb 28 Mar 2	Paired comparisons (repeated measures) Comparing 2 independent populations	273-283 284-296

Week	Date	Lecture	Reading in J&W '07
8	Mar 7	Eigensystems (more matrix algebra)	60–66, 73–75, 77–81
	9	Principal components *** Midterm distributed ***	430–459
9	Mar 14		
	16	Comparisons of means: 1–Way MANOVA *** Midterm due ***	296–312
—	—	March 21 – 25 : *** Spring Break ***	—
10	Mar 28	Profile analysis	323–328
	30	2–way MANOVA	312–323
11	Apr 4	2–way MANOVA (continued)	
	6	Discriminant analysis	575–578, 621–633
12	Apr 11	Discriminant analysis (continued)	
	13		
13	Apr 18	Canonical correlation	539–566
	20	Canonical correlation (continued)	
14	Apr 25	Factor analysis	481–530
	27		
15	May 2		
	4	Review	
	May 9	*** Final exam due at 5pm ***	