

EDF 7932  
Multivariate Analysis in Educational Research  
2009 Spring Term

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Course Web Page: <http://plaza.ufl.edu/algina/index.html>

- To help me keep track of email messages, please include **EDF 7932 and your last name** in the subject line of any correspondence sent via email about the course.
- If you have never taken a course with me, please send me an email message today so I can construct a distribution list for the class.

Office Hours: Tuesday 5:15-6:45 PM, Thursday 4:15-5:45 PM, and by appointment. (To set an appointment, it is best to send me an email indicating several times when you are free.)

#### Course Materials

There is one text for the course. The book is recommended, not required.

Raykov, T., & Marcolides, G. A. (2008). *An introduction to applied multivariate analysis*. New York: Routledge.

Topic	Reading
1. Introduction	Chapter 1
2. Matrix Algebra	Chapter 2
3. Principal Components Analysis	Chapter 7
4. Discriminant Analysis	Chapter 10
5. Canonical Correlation	Chapter 11
6. Manova for Two groups	Chapter 4 (pp 99-113)
7. Manova for K groups	Chapter 4 (pp 116-146)
7. Manova for a Within-Subject factor	Chapter 5.(pp 147-160)
9. Manova for Mixed Designs	Chapter 5.(pp 160-179)
10. Missing data in multivariate analysis	
11. Multidimensional Scaling	
12. Cluster Analysis	

## Course Requirements

### Exams

There will be one exam after topics 2 to 5 and a second exam after topics 6 to 9. The first exam will take place the week after I complete Topic 5 and the second exam will take place the week after I complete topic 9. You will have two hours (9:35-11:35) to complete an exam. I will begin new material in the remaining class period on and exam day (11:45-12:35).

### Data analysis problems

You will complete six data analysis problems, covering topics 3 to 9. The problem for a particular topic will be due the third class period after the topic is completed.

**Data analysis problems must be submitted electronically to [algina@ufl.edu](mailto:algina@ufl.edu).**

### Paper

Choose one of the following four alternatives. This paper is Due **Friday, April 24, 2009 by 5:00 PM**. Students in the Program in Research and Evaluation Methodology must choose one of the last three options.

**A.** Conduct a research study in which multivariate analysis is the primary method of analysis. This kind of paper should be written in APA style and should include an introduction, method, results and discussion section at a minimum. The introduction should be a review of the literature that culminates in the research questions to be addressed and a rationale for investigating the questions.

I will evaluate the paper by using criteria typically used to judge papers submitted for publication.

1. Is there a good rationale for the research?
2. Is the data collection clearly and adequately described?
3. Are the results presented clearly and in appropriate detail?
4. Are the results interpreted correctly?
5. Are the conclusions clearly justified by the results?

**B.** Present and illustrate a multivariate data analysis method that has not been presented in class. This paper will include a didactic presentation as well as analyses of at least two illustrative data sets.

**C.** Make a comparison of several (two or more) multivariate data analysis methods that

can be used to analyze a given data set. The comparison should include a didactic presentation and comparison of the methods as well as analyses of at least one illustrative data set.

**D. Write a literature review on a methodological issue in multivariate analysis.**

The culminating section for a literature review must be either

1. a rationale for and design of a study to answer methodological problem that emerges in the literature review;

or

2. a guide to practice with regard to the methodological issue.

The latter would comprise decisions that need to be in an analysis, and criteria for making those decisions. Preparing a guide for practice should be undertaken only if the decisions and criteria are sufficiently complex to make the guide a contribution to the literature on multivariate analysis.

The criteria for evaluating the literature review section will be adequacy of coverage of the literature and the accuracy, clarity, and integration of the review. With regard to the last three criteria, you must give sufficient detail to permit the reader to know what were the purposes, methods and results of each study. Equally important, you must describe consistencies and inconsistencies that emerge across the papers.

A guide to practice will be evaluated by the criteria of importance, clarity, and correctness.

A proposed research study will be evaluated in terms of clarity and quality of the rationale and of the design.

**You must submit a brief proposal for your paper (two pages or less) on or before Friday, March 19, 2009.**

**Proposals and papers must be submitted electronically to [algina@ufl.edu](mailto:algina@ufl.edu).**

### Grade Scale

All work will be graded on a 16-point scale. The following relates the score range to letter grades:

Score	Grade
13-15	A
11-12	B+
9-10	B
7-8	C+
5-6	C
3-4	D+
1-2	D
0	E

To determine a score on which the final grade will be based exam scores will be averaged and data analysis scores will be averaged. Then the average exam score, the average data analysis score and the score on the final paper will be averaged.

Final grades will be based on the following scale, where a square bracket means including the bracketed score and a parenthesis means up to but not including the score.

Score	Grade
[13-15	A
[11-13)	B+
[9-11)	B
[7-9)	C+
[5-7)	C
[3-5)	D+
[1-3)	D
0	E

### Late Work

For data analysis projects, there will be a penalty of two points per class for any work that is submitted late. For example, work that is due on a Tuesday but submitted on a Thursday will receive a penalty of two points. For the final paper, there will a penalty of two points for a submission after **5:00 PM on Friday, April 24, 2009**. Final papers not received by **5:00 PM on Monday, April 26, 2009** may result in an I grade for the course. If your final paper is not received by **5:00 PM on Friday, May 1, 2009**, you will receive an E on the final paper.

### Class Attendance

Students are expected to attend class unless they have a valid excuse for missing a class. Examples of valid excuses are illness, attendance at professional conferences, and the like. The last three topics are not covered by an exam. Nevertheless, students are expected to attend class when those topics are covered. Failure to do so without a valid excuse will result in a decrease in the final grade of half a grade point (e.g., an A will become a B+).

### Academic Honesty

Students are expected to do their own work. You should not solicit help with your exercises or your paper from other people including, students and faculty, nor should you provide help to other students. Soliciting help includes discussing with other people, including students and faculty, what the appropriate analysis of the data might be. Type the following statement on the cover sheet for the paper and exercises:

**"On my honor I have neither given nor received unauthorized aid on this assignment,"**

and sign the statement. By the University of Florida honor code, even if you do not type and sign this statement, it is implied when you submit an exercise or paper.

If you need to discuss an exercise or the paper, you should talk with me. Be advised however that if your question is about the correct analysis for an exercise or I will usually require you to phrase your question about analysis in general and not about the specific exercise. If you know the correct analysis and have a question about a computer program or formula to implement the analysis, I will usually answer the question directly.

You are expected not to cheat on examinations.

In the event a violation of standards of academic honesty occurs, I will contact the Director of Student Judicial Affairs to determine if it is the first violation. If not I will turn the matter over to the Director of Student Judicial Affairs. For a first offense:

1. The exercise or the exam will receive a grade of zero.
2. Your grade in the course will be reduced by one-half a grade point.

### Students with Disabilities

Students with disabilities who need reasonable modifications to complete assignments successfully and otherwise satisfy course criteria are encouraged to meet with the instructor as early in the course as possible to identify and plan specific accommodations. Students must supply a letter from the UF Office for Students with Disabilities to assist in planning modifications.