

Statistics 656 : Applied Multivariate Analysis – – Spring 2005

SYLLABUS

Instructor

Dr. Catherine Calder

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Office Hours: M 3:30-4:18pm, Th 2:30-3:18pm

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Grader

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Office Hours: T 12:00-2:00pm

Course Description

Statistics 656 is an introductory multivariate analysis course designed for graduate students in the Department of Statistics. The aim of the course is to introduce a variety of standard statistical methods used to analyze multivariate data, emphasizing the implementation and interpretations of these methods. Topics covered include matrix computation of summary statistics, graphical techniques, the geometry of sample data, the multivariate normal distribution, MANOVA, principal components analysis, factor analysis, and other topics such as canonical correlation and cluster analysis if time permits. We use the R statistical computing package and the GGobi data visualization system; no previous experience using these computing tools is required.

Prerequisites

Statistics 645 (Applied Regression Analysis) or equivalent, knowledge of linear algebra, and some experience with statistical computing packages are required.

Website <http://www.stat.ohio-state.edu/~calder/stat656/>

Important announcements, lecture notes, homework problems and solutions, computing references, and other information about the class are posted on the course website.

Textbook *Applied Multivariate Statistical Analysis, 5th Ed.*
by Richard A. Johnson and Dean W. Wichern (required)

Lectures MWF 1:30-2:48pm in 0190 Knowlton Hall

Lecture notes will be posted on the course website before class. Please read the sections of the textbook that will be covered, and print out a copy of the lecture notes before each class. There may be parts of the notes that you should fill in during lecture, and you may need to take separate notes on examples that are not in the lecture notes. Unless instructed otherwise, you are responsible for all of the material in the sections of the book that are covered in lecture even if some of the material in the book section is not covered in class. If you are unsure if you are responsible for a particular topic, be sure to ask the instructor.

We will frequently do a review exercise during lecture. These problems will not be collected or graded, but participation is expected. You should bring your **textbook** and a **calculator** to class every day to assist you with solving these in-class problems.

Computing

We will be using the freely available R statistical computing package and the GGobi data visualization system in this course. Both R and GGobi are available in the Department of Statistics computing laboratory, although this facility is only available to Statistics students. Links to websites where these tools can be download and reference manuals are available on the course website. Most homework assignments will require some computing. Please cut and paste your computer output and graphs into your homework solutions. In addition to using R for the homework problems, you will be expected to be able to interpret R output on the exams.

Homework Assignments

Homework assignments will be given approximately once a week. You are encouraged to work together on the problems, but each student must hand in his or her own work. **DO NOT COPY** any part of another student's homework including computer output.

Solutions to the homework problems will be posted on the course website. Late homework assignments will be accepted until the solutions have been posted on the website. Once the solutions have been posted, late homework will not be accepted. If you are unable to come to class the day a homework assignment is due, please contact the instructor. Re-grade requests on the homework problems must be submitted in writing to the course grader within one week of the day the solutions are posted.

Exams

There will be an in-class midterm given (tentatively) on Wednesday, April 27th. The date may change and will be officially announced on the course website and in class. Re-grade requests on the midterms must be submitted to the grader in writing within one week of the day the midterms are handed back. The final exam will be on Wednesday, June 8th from 1:30pm - 3:18pm. Please bring a **calculator** to the exams.

Grading

The following is a breakdown of your final course grade:

Midterm	35 %
Final Exam	40 %
Homework	25 %

Grades on the exams might be curved if necessary.

Special Accommodations

If you need any accommodations based on the impact of a documented disability contact the instructor privately to discuss your specific needs. You should also contact the Office of Disability Services to coordinate special accommodations.

Academic Misconduct

Academic misconduct **will not be tolerated** and will be dealt with procedurally in accordance with university policy.