Statistics 656: Applied Multivariate Analysis – Spring Quarter 2012

SYLLABUS

Instructor
Dr. Catherine Calder
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Grader
Jing Li
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Course Description
Statistics 656 is an introductory multivariate statistical analysis course designed for graduate students in the Department of Statistics, as well as from other disciplines. 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, principal components analysis, factor analysis, classification/discrimination, as well as cluster analysis if time permits. We will use the R statistical computing environment and the GGobi data visualization system; no previous experience using these software packages 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.osu.edu/~calder/stat656-sp12/
The class schedule, important announcements, lecture notes, homework problems and solutions, and other information about the course will be posted on Carmen (http://www.carmen.osu.edu).

Textbook
Applied Multivariate Statistical Analysis, 6th Ed.
by Richard A. Johnson and Dean W. Wichern (required)

Lectures
MWF 8:30-9:48am in 0436 Bolz Hall (BO)
Lecture notes will be posted on the course Carmen 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 will be parts of the notes that you will need to fill in during the lectures, 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 assigned even if some of the material in the book sections is not covered in class. If you are unsure if you are responsible for a particular topic, be sure to ask the instructor.

Computing
We will be using the freely available R statistical computing environment. R is available in the Department of Statistics computing laboratory (note that this facility is only available to Statistics students). Most homework assignments will require some computing. In addition to using R for the
homework problems, you will be expected to be able to interpret R output on the exams. The GGobi data visualization system, accessed through R, will be used occasionally.

**Homework Assignments**

Seven homework assignments will be given throughout the quarter. 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 code and output. **Use of solutions to any part of an assignment constitutes academic misconduct and will reported to the Committee on Academic Misconduct.**

Computer code must be submitted as an appendix to each assignment. The code should include comment statements that indicate what sections of the code correspond to the specific homework questions.

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 Friday, 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 instructor in writing within one week of the day the midterms are handed back. The final exam will be on Monday, June 4th from 7:30-9:18am. The location of the final exam will be announced in class and on Carmen.

**Grading**

The following is a breakdown of the final course grade:

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<tbody>
<tr>
<td>Midterm Exam</td>
<td>35 %</td>
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<tr>
<td>Final Exam</td>
<td>40 %</td>
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<tr>
<td>Homework</td>
<td>25 %</td>
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Grades on the exams may 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. Please see the Committee on Academic Misconduct’s website for details: http://oaa.osu.edu/coam.html