Course Information for 22S:161 “Applied Multivariate Analysis”
Spring 2012

Instructor
Dale Zimmerman, 233 Schaeffer Hall, Office phone 5-0818, Home phone 351-0520, E-mail dale-zimmerman@uiowa.edu, Webpage http://www.stat.uiowa.edu/~dzimmer

Class Hours and Location
9:30 – 10:20 am MWF, 71 SH

Department Executive Officer
Professor Luke Tierney, 241 SH, Phone 335-0712, luke-tierney@uiowa.edu

Dr. Zimmerman’s Office Hours
Tuesday 1:00 pm – 3:00 pm; Thursday 1:30 pm – 2:20 pm; or by appointment

Textbook
The required textbook for this course is Applied Multivariate Statistical Analysis, 6th edition, by Richard A. Johnson and Dean W. Wichern. We will cover most of Chapters 1-8 and 11, and briefly touch on Chapters 9 and 10. Reading assignments from the text will be made at the beginning of most class meetings. Abridged lecture notes for the entire semester will be available for download and printing from Dr. Z’s webpage, during the period from January 18–31, 2012. Lecture notes will cover mostly material in the textbook but will include a few topics not covered at all by the textbook.

Course Prerequisites
22S:152 (Applied Linear Regression) and 22S:158 (Experimental Design and Analysis), or equivalents; and facility with matrix algebra. Note that 22S:152 uses R extensively, and 22S:158 uses SAS extensively, so some familiarity with R and SAS is assumed. Also assumed is a little bit of theory, at the level of 22S:039 or 22S:120.

Course Objective
To learn some of the basic methods of applied multivariate statistics: descriptive statistics, Hotelling’s $T^2$-test, multivariate regression and MANOVA, principal components, discrimination and classification, and modeling continuous longitudinal data. In addition to learning the methods, it is our goal to learn when and why they are appropriate, what the underlying assumptions are, and how to implement the methods using SAS (primarily).

Not a Course Objective
To rigorously present the theory underlying statistical methods for multivariate analysis. We offer a more theoretical and advanced treatment of many of the same topics in 22S:256, Multivariate Analysis (taught spring semesters of even-numbered years). Nevertheless, students taking 22S:161 who do not have command of statistical theory at the level of 22S:120 may struggle.
Exams and Project

- Three 50-minute midterm exams, given in class in mid February (covering Chapters 1–4), late March (covering Chapters 5-7), and late April (covering Chapters 8 and 11). Exact dates will be determined later.
- Data analysis project, handed out in class on April 27 and due to Dr. Z (or his mailbox) by noon on Wednesday, May 9.

Calculators may be used for exams, and any necessary statistical tables will be provided. If an exam is missed, a make-up exam will be permitted only if the circumstances of missing the exam satisfy university policies.

Homework

Written homework assignments are an essential component of the course. Assignments will be given in class every 1-2 weeks, and will usually be due 1 week from the day they are assigned. They will consist mostly of problems from the textbook. Homework not turned in at the beginning of class on the due date will receive at most half credit and will not be graded, unless it is due to circumstances beyond your control. You may work on homework problems together, provided that no outright plagiarism occurs.

Computing

Substantial computing will be necessary to complete the homework assignments and the final project. We will primarily be using SAS but may also use a bit of R. Ample examples using these software packages will be presented in class.

Attendance

Attendance at lectures and participation in discussions are expected. Often arriving late to class, leaving early, or failing to attend class will lower your grade by one-third of a full letter grade (for example, from an A- to a B+).

Grading

- Homework, 20%
- Midterm Exams, 60% (20% each)
- Data Analysis Project, 20%
Administrative Home
The College of Liberal Arts and Sciences is the administrative home of this course and
governs matters such as the add/drop deadlines, the second-grade-only option, and other
related issues. Different colleges may have different policies. Questions may be addressed to
120 Schaeffer Hall or see the CLAS Student Academic Handbook

http://www.clas.uiowa.edu/students/academic_handbook/index.shtml

Electronic Communication
University policy specifies that students are responsible for all official correspondences sent
to their standard University of Iowa e-mail address (@uiowa.edu). Students should check
this account frequently. (Operations Manual, III.15.2. Scroll down to k.11.)

Academic Fraud
Plagiarism and any other activities when students present work that is not their own are
academic fraud. Academic fraud is a serious matter and is reported to the departmental
DEO and to the Associate Dean for Undergraduate Programs and Curriculum. Instructors
and DEOs decide on appropriate consequences at the departmental level while the Associate
Dean enforces additional consequences at the collegiate level. See the CLAS Student Aca-
demic Handbook.

Making a Suggestion or a Complaint
Students with a suggestion or complaint should first visit the instructor, then the course
supervisor, and then the departmental DEO. Complaints must be made within six months
of the incident. See the CLAS Student Academic Handbook.

Accommodations for Students with Disabilities
A student seeking academic accommodations should first register with Student Disability
Services and then meet privately with the course instructor to make particular arrange-
ments. See http://www.uiowa.edu/~sds/ for more information.

Understanding Sexual Harassment
Sexual harassment subverts the mission of the University and threatens the well-being of
students, faculty, and staff. All members of the UI community have a responsibility to uphold
this mission and to contribute to a safe environment that enhances learning. Incidents of
sexual harassment should be reported immediately. See the UI Comprehensive Guide on
Sexual Harassment at

http://www.uiowa.edu/~eod/policies/sexual-harassment-guide/index.html
for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather
In severe weather, class members should seek appropriate shelter immediately, leaving the
classroom if necessary. The class will continue if possible when the event is over. For more
information on Hawk Alert and the siren warning system, visit the Public Safety web site,

http://www.uiowa.edu/~pubsfty/intlinks.htm