Summer 2005

Statistics II (Eco 2200)

Syllabus

INSTRUCTOR:  L.T. McRae  OFFICE: Raley Hall 3106

HOURS:  M-Th 9:00 – 10:00 a.m. and 2:40 – 3:00 p.m.


Goals and Objectives:  In a business curriculum, the principal objective of the study of statistics is to equip students to understand the data and statistical techniques on which modern business decision making often rests. Students who have completed Statistics II should be able to understand the results of simple inferential statistics such as confidence intervals and hypothesis testing, including tests for differences between two or more populations; they should also understand the concept of mathematical modeling and be able to understand and interpret the results of regression models. Finally, students who succeed in this course will have an appreciation of the difficulties inherent in time series data and some grasp of simple forecasting techniques.

Learning Outcomes:  In compliance with AACSB procedures, the following core learning outcomes will be assessed for this course:

Upon completion of this course, the student will be able to:

1. Determine the appropriate hypotheses, perform the test, and interpret the results for one and more than one population mean.
2. Determine the appropriate hypotheses, perform the test, and interpret the results for one and more than one population proportion.
3. Determine the appropriate hypotheses, perform the test, and interpret the results for two population variances.
4. Determine the appropriate hypotheses, perform the test, and interpret the results for the independence of two variables.
5. Calculate a simple correlation coefficient, interpret it, and perform a hypothesis test for its validity.
6. Construct a simple/multiple regression model, estimate it, interpret it, use it for estimation, and perform hypothesis tests for its validity.
7. Use a computer spreadsheet to perform common statistical functions.

EXAMS:  There will be two exams during the term on the dates indicated in the Outline and covering the material indicated there; the two out-of-class regression projects taken together will count as if they were a third exam. Both exams will be multiple choice.

TO REACH ME:  Except for unusual circumstances, I keep my office hours. Students with questions may visit or call me during that time or send me an e-mail. During my office hours I will make a conscientious effort to answer all course-related communications. Announcements, homework assignments,
etc. will be posted on my website, and students who miss class for whatever reason should check that site.

**e-mail me at:** MCRAELT@APPSTATE.EDU

**my website URL:** http://www1.appstate.edu/~mcraelt/

**COMPUTING:** Students enrolled in this course will need access to a personal computer and an electronic spreadsheet, preferably Excel. Both the textbook and class lectures will be organized in terms of Excel statistical functions and procedures. Excel is available in all the computer labs on the ASU campus.

For parts of the course, a pocket calculator will prove useful. I recommend the Casio fx series, which retail for around $10.

**SPECIAL DESIGNATORS:** ECO2200 carries Numerical Data (ND) and Computer (C) designators in the Core Curriculum. Students will find that this course merits the first of these because it is primarily about the manipulation of data and the interpretation of statistics; the course merits the second designator because the computations, particularly in the last half of the course, are so lengthy and intricate that they would be impossible without the use of a computer. During the course, students will become quite familiar with the Excel spreadsheet’s statistical functions, in particular, and with using a computer to process data in general.

**HOMEWORK:**  *Education is not a spectator sport.* If you want to do well in this class, you must be actively engaged with the material, both in class and out. In class, when you are given the opportunity to work a sample problem, you should take that opportunity. Out of class, you should read the text and work problems. Working problems helps you to understand relationships and to cement your understanding in your own mind; it is virtually impossible to master the material of this course without working problems in an open and interactive spirit. Students *should* work all the odd-numbered problems in the Weiers text; the answers to most of these are in the back of the book. Students who are having difficulty in the course will find it helpful to work additional problems as well. I will of course provide answers on request and will, within reason, help students who come to my office and who have clearly made a serious effort already to work the problems.

I will not attempt to collect and grade all of that, however. For each block of material, I will assign a few problems to be written up and handed in. Feel free to ask questions about these problems (or any other, for that matter) at the next class meeting. Working these few problems and getting them all right is **the very minimum preparation needed by an excellent student.** Students whose mathematical skills are less than excellent should obviously do more. Problems to be handed in should be written up in good form, legibly, and with the answers clearly indicated. Homework will NOT be accepted from students who are not in class when it is collected, and homework will NOT be accepted late.

Assigned homework will not necessarily be collected; in many class meetings there will be a quiz based on the problems assigned. Quiz and homework scores will be counted alike in determining each student’s grade. In determining the average score for this segment of the course grade, each student’s two lowest quiz or homework scores will be dropped.
**GRADING:** Each of the two exams will count 25% of your final grade; the two regression projects together will count 25%, and the quizzes and homework taken together will count 25%. Thus your course average is given by the expression

\[ CA = 0.25 \times (E_1 + E_2 + RP \text{ Avg} + Hmwk\&Quiz \text{ Avg}) \]

with all the terms in parentheses expressed in percentages.

The scale for converting percentage scores to letter grades is:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80 – 100 %</td>
</tr>
<tr>
<td>B</td>
<td>70 – 79.99</td>
</tr>
<tr>
<td>C</td>
<td>60 – 69.99</td>
</tr>
<tr>
<td>D</td>
<td>50 – 59.99</td>
</tr>
<tr>
<td>F</td>
<td>under 50.00</td>
</tr>
</tbody>
</table>

Please note that I very seldom give +/− grades.

**ATTENDANCE POLICY:** Daily attendance: There will be a brief break which will divide each day’s class into two sessions. Each student will be assigned a seat in the classroom, and attendance will be checked each session each day. Students who are not in their assigned seat when attendance is checked will be counted as absent for that session. Students are allowed up to three session absences, that is, up to three half-class-days. Thereafter, two percentage points will be deducted from a student’s course average for each session missed. **If you contemplate missing class more than twice during the summer term, you should drop this course now.**

Attendance at exams: If a student misses an exam, the absence may or may not be excused. In the event of an excused absence, a make-up exam will be scheduled at my convenience. In the event of an unexcused absence, the student will receive a zero for the exam missed. Absences from exams will be excused only on account of the student’s illness, the serious illness or death of a near relative, or the student’s need to be elsewhere on business connected with the university or its classes and activities. Absences from exams will NOT be excused for car trouble, inclement weather, conflicts with the student’s job, etc. While I try to be sensitive to emotional distress, I must insist that a student present documentation of the reason for any absence from an exam if the student desires to have that absence excused.

From time to time during the term, assignments and hand-outs may be distributed during a class period without previous announcement. Such materials or information will be given out only once; they will not be available in my office, by telephone, nor in subsequent class periods. Students who fail to receive an assignment or handout because of absence from class should get these materials from a classmate or download them from my website, and I grant blanket permission to copy or photocopy any such material.

**COURTESY:** Students who expect to be treated with courtesy in the classroom should themselves treat their instructor and classmates with courtesy. In recent
years, there appears to be an increasing discordance about what constitutes courtesy. Therefore, note the following rules, based on my expectations, which pertain to my classroom and should pertain to any classroom:

- **Do not** simply get up and walk out of the classroom while the class is still going on. This is unbelievably rude behavior, and unless you mean to personally insult your instructor, you won't do such a thing. You may of course have to leave for a physical emergency, in which case you can apologize later. If you know before class that you must be elsewhere before the class ends, speak to the instructor before class and when you leave, do so as quietly and unobtrusively as possible.
- **Do not** talk with your neighbor while the instructor is lecturing or talking to another student. Such behavior is discourteous not only to the instructor but also to your classmates. A similar rule pertains for any other noisy or disruptive behavior.
- **Do not** eat in class.
- **Do not** bring the book for your next class and study for a test during my class. Most especially, **do not** read a newspaper during my class.
- Turn off all cell telephones, beepers, and alarms before class begins.
- In general, before you do it, think about how an action or remark is likely to be received, and remember that ignorance is no excuse for bad manners.

Finally, note that faculty members have the right to bar students from their classroom if they deem those students' behavior to be disruptive to the learning environment.

**COURSE OUTLINE:**

I. Introduction to Excel Statistical Functions; Sampling Distributions [Review Topic]; Interval Estimation [Review Topic]; Simple Hypothesis Tests; Hypothesis Tests for Differences; One-Way Analysis of Variance. Weiers: Chapters 8 & 9 [Review]; Chapters 10 – 12 (to page 479).
   - First Exam: Thursday, July 21

II. The $\chi^2$ Distribution and Applications; Simple Regression; Multiple Regression. Weiers, Chapters 13, 15 & 16.
   - Simple Regression Project due: Thursday, July 28 at the beginning of class.
   - **NOTE: This project will not be accepted late.**
   - Multiple Regression Project due: Wednesday, August 3 at the beginning of class.
   - **NOTE: This project will not be accepted late.**

III. Time Series and Forecasting. Weiers, Chapter 18. This topic will be covered on the second exam.
   - Second Exam: Thursday, August 4: Chapters 13, 15, 16, 18