

AREC/ECON 335 –Introduction to Econometrics
Department of Agricultural and Resource Economics
Colorado State University
Spring, 2010
TR, 9:30-10:45AM, D-102 Engr

Course Syllabus

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COURSE DESCRIPTION

This class is an undergraduate-level introduction to econometrics, an applied set of tools that uses statistical analysis to analyze economic data. We will study and apply regression analysis to various data sets in order to familiarize students with the core concepts of estimation of economic parameters, prediction of economic outcomes, and statistical inference.

COURSE OBJECTIVES

Students will learn how to use statistical analysis, including regression, in order to 1) estimate relevant economic parameters; 2) predict economic outcomes; and 3) test economic hypotheses using data, as well as critically evaluating the results and conclusions from similar analyses. In addition, this class also provides the basic foundation for future study in econometrics and other statistical techniques. Ultimately, the successful completion of the class will allow students to signal to employers that they not only know how to think like an economist (a powerful skill, indeed!), but can use this theoretical foundation in conjunction with data analysis to provide valuable information to their future employer.

PREREQUISITES

ECON 204; MATH 141 or MATH 155 or MATH 160; STAT 201 or STAT 204 or STAT 301 or STAT 307

As such, I will assume that all students are familiar with (or can rapidly learn) the following: basic statistical concepts (including probability distributions and hypothesis testing), graphing a line and curves in two dimensions, basic EXCEL skills, and the ability to write in complete sentences. **Basic differential calculus (MATH 141 or equivalent) is now required for AREC/ECON 335.**

REQUIRED TEXT AND SOFTWARE

Hill, R.C., W.E. Griffiths, and G.C. Lin. 2008. *Principles of Econometrics, 3rd Ed.* John Wiley and Sons.

Analysis will be performed with Microsoft EXCEL, although you may use any other statistical package with which you are familiar. The companion guide “Using EXCEL for Principles of Econometrics” will be posted to RAMCT, and should be a useful resource.

In addition, I will post any additional readings, handouts, etc... on RamCT (<http://ramct.colostate.edu>).

GRADING

Final grades will be based on total weighted point accumulations according to the following schedule: A=90-100%, B=80-89.99%, C=70-79.99%, D=60-69.99%, and F<60%. Pluses and minuses will not be assigned. Your grade is based on *my* expectations of your performance in the class, *not* your performance relative to your classmates. As such, there is no “curve”, but this also means that everyone in the class has the opportunity to achieve an “A” grade. However, the professor reserves the right to shift the bounds of the letter grades “downward” (e.g., a “B” may range from 75% to 85%) to the benefit of the students.

For example, last year, the “B” range was from 77.1% to 89.9%, the “C” range was from 69.75% to 77.0%, and the “D” range was from 58.475% to 69.74%. The adjustments were made on the basis of being able to discriminate between letter grades, and performance on the final exam. Out of 26 students in this section last year who took the final exam, there were 2 “A’s”, 9 “B’s”, 5 “C’s”, 5 “D’s”, and 5 “F’s”.

EVALUATION

Exams (70% of final grade):

Due to the fact that the course builds on material throughout the semester, there will be **three** midterm exams and **one** comprehensive final exam in this class. These exams provide both the student and the professor with valuable feedback at multiple points during the class, and should help provide the incentive and the information necessary to ultimately succeed in learning the material.

Your grade will be assigned according to the following formula:

$$\max \left\{ \begin{array}{l} .20midterm1 + .20midterm2 + .30final \\ .10midterm1 + .10midterm2 + .50final \end{array} \right\},$$

where *midterm1* and *midterm2* are the two highest midterm exam scores. In other words, the lowest midterm exam score will be dropped from the calculation.

The formula above gives you the highest numerical value of the two weighting schemes. Note that the second equation provides a means to overcome a “slow start” with hard work throughout the entire semester. **In addition, any student achieving a 100% grade on the final exam will receive an “A” grade.**

The format of each exam will include fill-in-the-blank, multiple choice, short answer, and/or graphical or mathematical questions related to the material covered in class. It is expected that you will be able to *apply* the relevant econometric concepts and models we learn to a variety of circumstances and data sets. Memorization of material presented in class will likely not be sufficient to earn a high grade on exams.

As such, many students find these exams extremely challenging, and are sometimes surprised that mean unadjusted exam grades are relatively low (scores for the midterm and final exams last semester were 71, 57, 56, and 53, respectively). Be advised that I write my exams to test your *understanding* of the material, rather than your ability to memorize, and that my understanding of the published, empirical evidence suggests that challenging students is the best way to create an incentive to learn the material.

However, I also acknowledge that our typical evaluation instruments (such as exams) are generally imperfect. As such, my policy is to adjust all exam grades (each worth 100 pts.) by adding the difference between a perfect score and the top grade in the class to your raw score. In mathematical terms, this implies:

$$adjexam_i = \left(100 - \max_j(rawexam_j)\right) + rawexam_i,$$

where i and j denote individuals, $adjexam$ is the exam grade used in your final grade calculation, and $rawexam$ is an unadjusted exam grade. Last semester, $\max_j(rawexam_j)$, the highest unadjusted scores in the class, were as follows for the three midterms and final, respectively: 89, 89, 97, and 80. As such, the mean adjusted exam scores were 82, 68, 69, and 73.

Homeworks (30% of final grade):

Problem set assignments will be posted to RamCT, and focus on applications of the tools we cover in class. Many of these problem sets will include both an analytical and computing component. These assignments are due at the beginning of class, at least one week after distribution on RamCT. There will likely be 5-7 of these over the course of the semester. **It is highly recommended that a) students do not wait until the night before the due date to begin the problem sets, and b) students augment their understanding with additional problems, especially those from the textbook.**

CLASS POLICIES

1. Take-home homework assignments are due at the beginning of class. Late submissions will be accepted within 24 hours of the time due with a 25% decrease in possible points, and 48 hours of the time due with a 50% decrease. Submissions after 48 hours will not be accepted. ***Make-up exams will only be offered under extraordinary unforeseen circumstances (e.g., death in the family, personal incarceration by the state) or for University-sanctioned extracurricular/co-curricular activities, and with acceptable documentation of the event responsible. Otherwise, no early or late exams will be offered.***

2. To dispute a homework or exam grade, attach a typewritten argument to the assignment/exam in question and return it to the instructor or the TA within one week of receipt of the graded work. All such requests will be reviewed; however, grades will be subject to both upward and downward revisions. ***Requests in all other forms will not be considered.***

3. Please be on time and respectful of your fellow students. This includes eliminating all externality-generating emissions, including, but not limited to, audible sounds from mobile phones, PDA's, and beepers and excessive snoring.

4. All University regulations regarding student behavior and responsibilities, including academic integrity, will be ***strictly*** enforced. Remember, "faculty and students have not only a right, but also a responsibility, to examine critically the insights, understandings, values, issues, and concerns which have evolved in the various areas of human activity" (2007-2008 *General Catalog*, p. 35). General rules of civil discourse, mutual respect, and decorum should be adhered to at all times. ***Please respect those that may hold alternative views from your own.***

5. I will make every attempt to answer any phone calls or emails as soon as possible. However, just like you, I have many responsibilities outside of class, and an immediate response may not be possible. A reasonable expectation is a response within 24 hours of the initial request. ***Please note that this likely precludes last-minute emails regarding homeworks or exams, so manage your time wisely.***

6. Please use office hours as a resource. However, it is your responsibility to make an effort to solve your problem *before* office hours. This includes, but is not limited to, the EXCEL help screens, various internet resources, etc...

7. I will make every attempt to be open and honest about class material, decisions, the grading system, and other issues. *If you have a question about these issues at any time, or would like to discuss other matters of academic interest in class, please ask.*

8. You are responsible for reviewing your recorded grades on RamCT. If there is any discrepancy, please contact the TA.

SCHEDULE (all EXCEPT exam dates subject to revision)

Review of Probability Theory – HGL Appendix B
Review of Statistical Inference – HGL Appendix C

MIDTERM #1: THURSDAY, FEBRUARY 11

The Simple Linear Regression Model – HGL Chapter 2
Hypothesis Testing – HGL Chapter 3
Prediction and Goodness of Fit – HGL Chapter 4

MIDTERM #2: THURSDAY, MARCH 11

Functional Forms – HGL Chapter 4
Multiple Regression – HGL Chapter 5
Inference in Multiple Regression – HGL Chapter 6
Dummy Variables – HGL Chapter 7

MIDTERM #3: THURSDAY, APRIL 15

Heteroskedasticity – HGL Chapter 8
Autocorrelation – HGL Chapter 9
Limited Dependent Variable Models – HGL Chapter 16

FINAL EXAM: MONDAY, MAY 10, 11:20 AM – 1:20 PM

OPTIONAL READING MATERIALS: Economics in the Popular Literature:

Fun Books:

Moneyball: The Art of Winning an Unfair Game, Michael Lewis
Eat the Rich: A Treatise on Economics, P.J. O'Rourke
Freakonomics: A Rogue Economist Explores the Hidden Side of Everything, Steven Levitt
New Ideas from Dead Economists, Todd G. Buchholz
The World is Flat, Thomas L. Friedman

There are plenty of interesting websites and blogs related to economics as well...check them out!