

**COURSE SYLLABUS
FOR
AGRICULTURAL ECONOMICS 607**

Research Methodology

Gott würfelt nicht.

– Albert Einstein

George Box has [almost] said “The only way to find out what will happen when a complex system is disturbed is to disturb the system, not merely observe it passively.” These words of caution about “natural experiments” are uncomfortably strong. Yet in today’s world we see no alternative to accepting them as, if anything, too weak.

– F. Mosteller and J. Tukey

Deep understanding means knowing, not merely how things behaved yesterday, but also how things will behave under new hypothetical circumstances

– Judea Pearl

Prerequisite: Graduate standing

Purpose of Course:

To enable the M.S. and Ph.D. student to (1) become acquainted with the concept of science and scientific method as a means of gaining human knowledge, (2) define research problems, develop research problem statements with objectives and hypotheses, and specify relevant models to accomplish the objectives, (3) appreciate the need for relevance and quality of data, (4) develop skills in written scientific communication.

Evaluation of Student Performance:

Exams (2)	80 %
Project Proposal	20 %

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Office Hours: Tuesday and Thursday 3:30 - 4:30, or by appointment

Class Lectures: Monday, Wednesday, and Friday, 11:30 AM - 12:20 PM
Room 110 AGLS Building

Final Exam: Monday May 7 10:30 AM – 12:30 PM, Room 110 AGLS Building

Course Outline

*Approximate
time in weeks*

General Topic

- (3) 1. Philosophy of science
 - a. What is science?
 - b. Methods of "knowing"
 - c. Causality

- (4) 2. Status of economics as a science
 - a. Why softer than natural science
 - b. Appears harder than other social sciences
 - c. How judge scientific status
 - d. Controversy over the "best" way to knowledge
 - e. Causality in economics

Examination 1

- (3) 3. Problems in inference from data
 - a. Structure
 - b. Validity

- (3) 4. Agricultural Economics
 - a. Problems
 - b. Methods
 - c. Student presentations

- (1) 5. Fraud
 - a. Evidence
 - b. Remedies

- (1) 6. Communication of research findings
 - a. Thesis
 - b. Writing papers

Examination 2

**Agricultural Economics 607
Reading List**

1.a Philosophy of Science: Some Concepts and Problems

Russell, B. 1954. "The Rise of Science" and "Hume", in *A History of Western Philosophy*, Simon and Schuster: pp.525-540 and 659-674. Chapters 6 and 17.

Popper, Karl. 1959. "Survey of Some Fundamental Problems," in *The Logic of Scientific Discovery*, New York: Harper and Row, Chapter 1.

Popper, Karl. 1968. "Science: Conjectures and Refutations," in *Conjectures and Refutations*, New York: Harper and Row, Chapter 1.

Einstein Revealed NOVA Video, WGHB/Boston, MA, 1996.

Kuhn, T.S. 1962. *The Structure of Scientific Revolutions*. Chicago: The University of Chicago Press.

Howson, C. and P. Urbach. 1989. *Scientific Reasoning: The Bayesian Approach* LaSalle, Illinois: Open Court, chapter 1 (PP. 3-11) and chapter 4 (pp 79-118).

1.b Philosophy of Science: Some Views on Causality

Bunge, M. 1959. "A Clarification of Meaning." Part I in *Causality: The Place of the Causal Principle in Modern Science*, Cambridge: Harvard University Press.

Suppes, P. 1970. "Introduction," *A Probabilistic Theory of Causality*, Chapter 1.

Simon, H. 1952. "On the Definition of the Causal Relation." *Journal of Philosophy* 49:517-28.

Holland, P. W. 1986. "Statistics and Causal Inference." *Journal of American Statistical Association*, 81:945-60.

Meek, C. and Glymour, C. 1994. "Conditioning and Intervening." *British Journal of the Philosophy of Science* 45:1001-1021.

Pearl, Judea. 1996. "The Art and Science of Cause and Effect," 81st UCLA Faculty Research Lecture, October 29, 1996, Westwood: University of California, Los Angeles.

2. Status of Economics as a Science

Friedman, Milton. 1953. *Essays in Positive Economics*. Chicago: The University of Chicago Press, Part I.

Haavelmo, T. 1944. "The Probability Approach in Econometrics," *Econometrica* 12 (supplement): pp1-40.

Hicks, J. 1979. *Causality in Economics*, New York: Basic Books.

Sims, C. 1981. "What Kind of Science is Economics?" *Journal of Political Economy*, 89:578-83.

Drakopoulos, S. and T. Torrance. 1994. "Causality and Determinism in Economics," *Scottish Journal of Political Economy* 41:176-93.

McCloskey, Donald. 1985. *The Rhetoric of Economics*, Madison: The University of Wisconsin Press.

Rosenberg, Alexander. 1988. "Economics is too Important to be Left to the Rhetoricians," *Economics and Philosophy* 4:129-49.

Mirowski, P. 1988. "Rhetoric, Mathematics, and the Nature of Neoclassical Economic Theory," in *Against Mechanism: Protecting Economics from Science*, Lanham, MD: Rowman and Littlefield, pages 137-60.

Sims, C. 1996. "Macroeconomics and Methodology," *Journal of Economic Perspectives* pp 105-120.

Myrdal, Gunnar. 1973. "How Scientific are the Social Sciences?" *Bulletin of the Atomic Scientists*, pp. 31-7.

3. Research Tools- An Introduction

Ladd, G. 1979. "Artistic Tools for Scientific Minds." *American Journal of Agricultural Economics*, 61:1-11.

The Proof, NOVA Video, WGHB/Boston, MA, 1996.

4. Problems in Inference from Data

Campbell, O.T. and J.C. Stanley. 1966. *Experimental and Quasi- Experimental Designs for Research*, Houghton Mifflin Company: Boston.

Leamer, Edward, 1983. "Let's Take the Con out of Econometrics," *American Economics Review*, 31-43.

Pratt, J. and R. Schlaifer. 1988. "On the Interpretation and Observation of Laws." *Journal of Econometrics*, 39:23-52.

Smith, V. 1989. "Theory, Experiment and Economics," *Jo.Economic Perspectives* 5:151-69.

Scheines, Richard (2005): "The similarity of causal inference in experimental and non-experimental studies," *Philosophy of Science* 72:927-940.

5. Agricultural Economics

Gardner, B. 1992. "How data we make can unmake us: annals of factology," *American Journal of Agricultural Economics* 74:1067 - 1075.

Dearmont, D. and D. Bessler. 1997. "A Bayesian treatment of Duhem's Problem: The Case of the 'Farm Problem' in Agricultural Economics," *Economics and Philosophy* 13(2).

Pope, R. and A. Hallman. 1986. "A Confusion of Agricultural Economists? A Professional Interest Survey and Essay," *American Journal of Agricultural Economics*, 68:572-94.

Just, R. and G. Rausser. 1989. "An Assessment of the Agricultural Economics Profession," *American Journal of Agricultural Economics* 71:1177-1190.

Tomek, W. 1993. "Confirmation and Replication in Empirical Econometrics," *American Journal of Agricultural*, 75: 6-14.

6. Fraud

Dewald, W. G., J. G. Thursby, and R. G. Anderson. 1986. "Replication in Empirical Economics." *American Economic Review*, 76(4):587-603.

Broad, W. and N. Wade. 1982. *Betrayers of the Truth*, New York: Simon and Schuster.

Hamilton, David P. 1990. "Data Sharing: A Declining Ethic?" *Science*, 248:952-957.

7. Communication of Research Findings

Thesis Manual: Instructions Concerning the Preparation of Proposals, Theses, Dissertations, and Records of Study, Texas A&M University, The Graduate College.

8. Final Prayer

Nancy Cartwright, *The Dappled World and A Hippocratic Oath*

9. Graduation

Pearl, Judea, 2007. Commencement Address to the Class of 2007, University of Toronto, June 21, 2007, in Toronto, Ontario, Canada. [Pearl, Judea.MOV.MP4]

ADA Policy Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room 126 of the Koldus Building. The phone number is 845-1637.

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Scholastic Dishonesty Statement: Do not cheat lie or steal other people's stuff (ideas or words). If you give them credit, they become your scholastic friend.

As commonly defined, plagiarism consists of passing off as one's own ideas, work, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty."

Cheating on Examinations and Homework

I have found graduate students cheating on examinations. **I will assign a grade of zero to any student found cheating on an exam.** This will result in a "D" or "F" as a final grade; as it is virtually impossible to recover, even a final grade of "C" from a zero on an exam. A course grade of "D" or "F" will almost surely mean you will be dropped from further graduate studies here in Agricultural Economics or any other program here at TAMU.

As requested and stated in the following: Essential Elements for Class Syllabuses
Faculty Senate and University Curriculum Committee, Summer 2003
 Fuller Bazer, September 16, 2003 per COALS UPC, Thursday, September 11, 2003