

## Fall 2011 AREC 570/ECON 530: METHODS OF ECONOMIC RESEARCH

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**OFFICE HOURS: Mon, Wed & Friday: 9-10am; 11-11:30; 2:00-3** and by appointment

REQUIRED TEXTS: Methods of Social Research, 4th Ed, by Bailey & Reader in Bookstore

### OBJECTIVES OF THE COURSE:

This course has two broad objectives: 1. To provide you with the background on various approaches for "doing science" within economics, i.e., the different ways in which knowledge in economics can be expanded. 2. To provide you with practical skills to carry out research in economics. A majority of the course will emphasize this second purpose with the specific objectives of developing your ability to take a general problem or issue, and operationalize it into a researchable hypothesis or model. To this end, the term project is an opportunity to develop your thesis or dissertation prospectus. Further, this course will develop your ability to design data collection efforts (e.g., surveys) that allow implementation or testing of a model. The course will allow you to see how economic theory is used with econometrics and other quantitative methods to test hypotheses and perform economic analyses.

**EXAMS, PROJECT, EXERCISES and GRADING:** There will be 2 mid-term examinations and a comprehensive final examination. There will also be a term project in which you will be required to select a researchable problem, develop a testable hypothesis or behavioral model, and then design a data collection approach (i.e., identify existing data sources that can be assembled together or design a survey or questionnaire, but not actually administer it) that would enable you to collect the necessary data. You must propose your problem statement, formal hypothesis and model (including variable definitions, relationship between variables), in writing, by September 26th. The final report must be turned in during class on November 30th. You can treat the term project as a draft of a real or practice thesis or dissertation prospectus. More details on this term project will be provided later in a separate handout.

The mid-term exams will count for 40% of your grade, the class project will count for 20% of your grade, with the final accounting for 30%. There will be several take-home exercises totaling 10% of your grade. There will also be some exercises that carry no credit.

Milestones	<u>TENTATIVE DATES</u>	<u>% of Final Grade</u>
Exercise #1 Data Analysis	TBA	3%
Midterm #1	Most likely Oct 7th	20%
Exercise #2 Project Description	September 26 <sup>th</sup>	5%
Midterm #2	TBA	20%
Exercise #3 Question Ordering	TBA	2%
Term Project	November 30th	20%
Final Exam	As Sch'd by CSU	30%

## CLASS OUTLINE AND READINGS

### I. RESEARCH METHODOLOGY

#### **Lecture 1: Discussion of Course Outline**

What is Research Methodology:

A Search for Universal Truths or Practical Problem Solving?

Applying the Scientific Method to the Economics

Overview of Modes of Data Collection in Economic Analysis

Introduction to Philosophy of Science

READINGS covered in Lecture 1: Pages 4-11 in Bailey;

READINGS to be read prior to Lecture 2: Pages 52-58 in Bailey;  
pages 1-8 in Gebremedhin & Tweeten (in Reader).

#### **Lecture 2: Different Scientific Approaches**

Inductive vs Deductive (Grounded vs Classical)

Popper's Falsification and a Strict Scientific Method

READINGS to be read prior to Lecture 3: Pages 12-27 in Bailey.

#### **Lecture 3: Overview of Steps in a Typical Research Process**

Defining the Research Problem:

What kind of problems are amenable to scientific investigation?

The Role of Paradigms in Defining Researchable Topics and Approaches:

Are Paradigms World Views Allowing New Discoveries or Blinders?

READINGS to be read prior to Lecture 4: pages 9-14 in Gebremedhin & Tweeten

#### **Lecture 4 Lakatos' Research Program and Laudan's Science as Problem Solving**

READINGS to be read prior to **Lecture 5: Friedman, Methodology of Positive Economics-in Reader**. Hint: Be Prepared to Discuss this paper in class!

#### **Lecture 5: Instrumentalism and Friedman's Methodology of Positive Economics Role of Assumptions in model building**

READINGS for lecture 6: On Farmers Who Solve Equations: R. Levins, Choices  
(in Reader) plus the comments and responses that follow (also in Reader).

A. Randall: What Practicing Economists Need to Know About Methodology; AJAE (Reader)

Hint: Read these papers carefully and be prepared to discuss them in class!

#### **Lecture 6a & 6b: Synthesis of different schools of thought & pluralistic approaches**

READINGS to be read prior to Lecture 7: Chapter 3:40-52 in Bailey

## **II. MECHANICS OF PERFORMING RESEARCH**

### **Lecture 7: Constructing Theories and Models**

Description, Explanations and Predictions: Role of Theory as a Guide.  
Propositions and Hypotheses;  
Relationships between Variables: Theory as a guide to causality.  
Necessary and sufficient conditions; development of conceptual models.  
Spurious Relationships and Intervening Relationships;

### **Lecture 8: The unit of analysis in research: Time series vs. cross section research approaches**

Individual versus aggregate units of observation  
Measuring and Operationalizing Variables  
Degree of Information and Aggregation in the Level of Measurement

READINGS: Pages 35-38 and 62-66 in Bailey

Small Group Take Home Exercise: Research problem definition, study design & hypothesis tests.

### **Lecture 9: Small Group presentations of their problem definition, hypotheses, study designs;**

#### **Matching Level of Measurement to Statistical Techniques & Test Statistics:**

Nominal: Chi-Square, Logit, Probit, Dummy Variables in OLS  
Ordinal: Rank Correlation, Ordered Logit/Probit  
Interval/Ratio: Parametric Statistics: T-test, ANOVA, OLS

**Friday October 6<sup>th</sup> estimated time of Mid-Term Exam on material covered to date**

HANDOUT ON SIMPLE HYPOTHESIS TESTING: T-test, ANOVA, Chi-square, Regression

### **Lecture 10: Using a statistics package to perform hypothesis tests**

**Lecture 11: Bring your (or someone else's) Laptop to class for hands on use of statistics package for hypothesis testing: make sure you have Excel and make sure that the Data Analysis pack is loaded or installed under Tools (you may need to reinsert the Office CD if it is not on your computer).**

Validity and Reliability  
Mono Lake Test-Retest Reliability Example

READINGS: Chapter 4:67-77 in Bailey

### **Exercise #1 Due: Statistics and Hypothesis Testing**

### **Lectures 12: Sample Design in Brief:**

Probability Sampling and External Validity,  
Considerations of Sample Size

READINGS: Chapter 5 in Bailey and pages 16-18 in Gebremedhin and Tweeten.

### **III. DATA ACQUISITION: PRIMARY (SURVEYS & INTERVIEWS) VS EXPERIMENTS, QUASI-EXPERIMENTS AND CORRELATIONAL STUDIES (SECONDARY)**

#### **Lecture 13: Finding Existing Sources of Data and Models**

Document Study, Coding and Meta analysis: Gov Doc's, Libraries & Other's Data, Data on Disk; Library's JEL EconLit, AgEcon Search, Census CD ROMs, BEA, etc.

#### **Lectures 14 and 15: Experiments: Lab and Field Experiments in Economics**

READINGS: Pages 218-228 and 234-239 in Bailey.  
Theory, Experiment and Economics by Vernon Smith, 1989; Rebecca Boyce, AER (1992).  
(Be prepared to discuss in class both articles from the Reader)

#### **Lecture 16 Simulations and Games**

LP models and Spreadsheets as simulation tools: Principles and Examples  
READINGS: Chapter 13 in Bailey

#### **Lecture 17: Agent Based Modeling in Economics.**

READINGS: Loomis and Bond, Introduction to Agent Based Modeling.  
Agent Based Computational Economics: A Constructive Approach to Economic Theory  
(Leigh Tesfatsion, Chapter 16 in Reader and Computationally Intensive Analyses in Economics (Kenneth Judd) Chapter 17 in Reader.

#### **2nd Mid term likely**

#### **Lecture 18: Primary Data Collection: Surveys and Interviews**

The Total Design Method  
Overview of Components of Survey Design  
Principles of Constructing Questionnaires and Surveys  
READINGS: Chapter 7 (bottom of 151 to top of 153) in Bailey

#### **Lecture 19: Introducing the Survey to Respondent, Cover Letters, etc.**

Question Ordering  
Wording of Questions (what type of variables are you trying to measure)  
Open-ended versus Closed-ended Questions  
Response Format, Level of Wording  
Asking Sensitive Questions  
Pre-testing  
READINGS Chapter 6 in Bailey

#### **Lecture 20: Special Requirements of Mail Surveys**

The Total Design Method Revisited  
READINGS: Chapter 7 in Bailey

**Lecture 21: Special Requirements of Telephone**

READINGS: Chapter 8 (Pages 196-208)

**Lecture 22: Special Requirements of In-Person Interviews**

Conclusion of Questionnaire Design and Administration

READINGS: Chapter 8 (Pages 174-to top of 194 and 208-210) in Bailey

EXERCISE #3 on question ordering

**Lecture 23: Choosing between Mail, Telephone and In-Person Surveys**

**Mixed Mode Surveys; Internet Surveys**

Combining Different Types of Surveys;

Options on Internet Surveys: Survey Monkey, SSI and Knowledge Networks

Data coding in brief

READINGS: Chapter 14 (Data coding)

**Lecture 24: Presentation of Study Results**

Preparing Graphics for Presentations

Preparing Written and Oral Presentations for Different Audiences

Example of Research Study and Presentation of Results

READINGS: Snooze Alarm: Avoiding Powerpoint Perils by Fraidenburg.

Alice Vandermeulen's How to Fabricate an Article (be prepared to discuss this article)

Gebremedhin and Tweeten, pages 25-38

**Reminder: TERM PROJECT DUE: November 30<sup>th</sup>.**

**Lectures 25: Turning that Thesis or dissertation into an article, responding to reviewers and the journal game**

READINGS: Observations of the Journal Review Process by Wade Brorsen; (Reader)

**Lecture 26: Obtaining grant funding, writing grants, etc.**

READINGS: Environmental and Natural Resource Economists, Great Research, and the National Science Foundation by Robert O'Conner (in Reader).

**Lecture 27: Ethics in research with emphasis on Human Subjects Compliance**

Ethics in Research, Surveys, data sharing, co-authoring, etc.

READINGS: Chapter 18 (Ethics) in Bailey;

Young Economists Guide to Professional Etiquette by D.S. Hammermesh in Reader.

Additional topics, catch up

Review for Final, Any Last Questions

Final, As scheduled by the University