

University of Oklahoma  
Department of Economics  
Spring 2009

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**Economics 4223**  
**Meeting time: Tuesday-Thursday 10:30 AM**  
**Econometric Analysis**

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This course provides an introduction to the practice of econometrics. It provides coverage of the most important techniques of econometric estimation and hypothesis testing, addressing the use of both cross-section and time series data. Econometrics is the combination of economics and statistics. It is a vital skill in any field where it is difficult to run controlled experiments. Economic theory can often provide highly useful qualitative conclusions, but for quantitative results econometric modeling is necessary. Modern computer packages make the mechanics of econometrics (the application of various econometric techniques to actual data) quite easy. This course focuses on helping students develop an understanding of what they are doing, so that they can use such packages intelligently. We will study regression analysis and discuss the econometric issues arising from the nature of typical economic data. Students will also be exposed to applied econometric issues through computer based homework assignments, a modeling project, and the extensive analysis of case studies in class.

**PRINCIPAL TEXTBOOKS:**

*Statistics for business and Economics* by Paul Newbold et. al., 6th edition, Prentice Hall, 2006.  
*An Introduction to Econometrics. Data Analysis Using Minitab* by Georgia Kosmopoulou.

**OTHER RECOMMENDED TEXT:**

*Basic Econometrics* by D. N. Gujarati, 4rd edition, McGraw-Hill Inc., 2003.

**COMPUTER SOFTWARE : MINITAB.**

The Physical Sciences computer lab has installed the version of MINITAB that will be used for this class. We will have class in the computer lab (Ph.Sc. Room 230) every Thursday so that we can use MINITAB during our class sessions. Always carry with you the computer guide that I prepared for you. It is available for a small copying fee through the university printing services located at the Union.

**GRADING POLICY:**

- I. **EXAMS:** There will be a midterm and a final exam. The midterm counts for 30% of your grade and the final counts for 40%. The final exam will be on Monday May 11, 8:00-10:00am. The tentative date for the midterm is Thursday March 26th.
- II. **COMPUTER ASSIGNMENTS:** We will have four computer assignments and a modeling project. The computer assignments will count for 8% of your grade. The modeling project will count for 20%. For this project, you will have to collect data and prepare a proposal (5%), do regression analysis (10%) and present your results in class

(5%). In particular, upon completion of the work, each student or group of students working on a project will have to give a 15-minute presentation in class.

**III. CLASS PARTICIPATION:** Class participation can give you an additional 5%. I will keep records of your activity in each class session to ensure that you will receive appropriate credit. Activities that disrupt the flow of the lecture, such as sending an e-mail during a lab session or typing your homework for another class will reduce your participation credit.

**OFFICE HOURS:** I will hold office hours every Tuesday 2:00-3:00 and Friday 1:30-2:30. My office is in 203 Hester Hall. My phone number is 325-3083 and my e-mail is: [georgiak@ou.edu](mailto:georgiak@ou.edu).

**TOPICS:** The following is a list of topics we will cover in class. The chapters and sections noted are from the principal textbook.

### **I. Hypothesis Testing**

Review of the material from your Econ 2843 class  
Chapter 9

### **II. Simple Regression**

- A. Correlation Analysis  
Section 10.1
- B. Linear Regression Model  
Section 10.2
- C. Least Squares Coefficient Estimations  
Sections 10.3
- D. The Explanatory Power of a Linear Regression Equation  
Section 10.4
- E. Statistical Inference: Hypothesis Tests and Confidence Intervals  
Section 10.5
- F. Prediction  
Section 10.6

### **III. Multiple Regression**

- A. The Multiple Regression Model  
Section 11.1
- B. Estimation of Coefficients  
Section 11.2
- C. Explanatory Power of the Multiple Regression Equation  
Section 11.3
- D. Confidence Intervals and Hypothesis Tests on Individual Regression Coefficients  
Section 11.4
- E. Tests on Sets of Regression Parameters  
Section 11.5
- F. Prediction

- Section 11.6
- G. Transformations for Nonlinear Regression Models  
Section 11.7
- H. Dummy Variables for Regression Models  
Section 11.8
- I. Multiple Regression Analysis Application Procedure  
Section 11.9

#### **IV. Additional Topics in Regression Analysis**

- A. Model Building Methodology  
Section 12.1
- B. Dummy Variables and Experimental Design  
Section 12.2
- C. Lagged Values of the Dependent Variables as Regressors  
Section 12.3
- D. Specification Bias  
Section 12.4
- E. Multicollinearity  
Section 12.5
- F. Heteroscedasticity  
Section 12.6
- G. Autocorrelation  
Section 12.7

#### **V. Time Series Analysis and Forecasting**

- A. Index Numbers  
Section 17.1
- B. A Nonparametric Test for Randomness  
Section 17.2
- C. Components of Time Series  
Section 17.3
- D. Moving Averages  
Section 17.4
- E. Exponential Smoothing  
Section 17.5
- F. Autoregressive Models  
Section 17.6
- G. Autoregressive Integrated Moving Average Models  
Section 17.7