

# Math 391 / Econ 391      Econometric Theory      Spring 2008

**Class Meeting:** MWF 12:50 - 2:00 PPHAC 113

**Instructor:** Natant Shank

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**Office Location:** PPHAC 219

**Office Hours:** M,W,F 10:00 - 11:00 and F 2:00 - 3:00 (other times by appointment)

**Required Text:** *Econometrics* Badi H. Baltagi 4th Edition: Springer, 2008.

**Other Texts:**

- *Introductory Econometrics a Modern Approach* Jeffrey M. Wooldridge 3rd edition: Thomson, 2006.
- *Econometric Analysis* William H. Greene 5th Edition: Prentice Hall, 2003.

## Course Description

This course will be a combination of mathematic, statistics, and economic theory. Topics will include estimators, linear regression, regression analysis, classical assumptions, dynamic models, regression diagnostics, generalized least squares, and time series analysis. While an emphasis will be placed on the mathematical theory behind these topics, their application to economic theory will also be considered. The course will conclude with a individual applied research project.

**Course Goals:** After completing the course, successful students will

- understand the mathematics behind regression models;
- understanding of consequences of violating classical assumptions;
- understand the inter-connection between mathematics, statistics, and economic theory;
- gained proficiency in developing and interpreting regression models as applied to a variety of economic problems and data;
- use statistical software to confirm the mathematical underpinnings of data analysis;
- use statistical software to preform appropriate statistical analysis;
- be able to explain clearly, both orally and in writing, how the results of their statistical analysis relate to the context from which they were obtained;

**Course Topics:** Throughout this course, the student will learn a theoretical approach to econometrics. Topics covered will included estimators, linear regression, regression analysis, classical assumptions, dynamic models, regression diagnostics, generalized least squares, and time series analysis. This course will provide an in depth look at the theory behind analyzing economic problems using numerical methods.

**Assignments/Assessment:** The following will be used to determine the students grade for the course:

- **Homework:** Homework assignments will be given for each chapter. Homework will be done in pre-assigned groups. You will need to prepare typed solutions for distribution to the entire class. At the end of the chapters, your solutions will be distributed to another group. That group will have one week to evaluate your solutions for correctness and clarity. Then they will present your solutions to the entire class. You will be graded on completeness, correctness and presentation. Each group will also have to write a paragraph evaluation of the other members of their group after each assignment. Please see the section on academic honesty policy for more information. You are always welcome to come to office hours to see me. Late homework is unacceptable because the class depends on your solutions. Homework problems will help you prepare for the tests.
- **Tests:** You will have 2 tests and a cumulative final exam. These test can not be made up except for extraordinary circumstances which must be properly documented. A health center note is not a extraordinary circumstance or proper documentation for missing a test. You also must notify me of your situation before the test date. The two hour tests are tentatively scheduled for Wednesday, February 27, and Friday, April 11.
- **Research Project:** The research project will consist of 3 parts; a proposal, a research paper, and a presentation.
  - *Proposal:* The proposal is worth 25% of your project grade. It should define and provide motivation for your topic, describe the model and plan for collecting the data, and provide a literature review. If you already have the data, you should present summary statistics and sources.
  - *Research Paper:* The paper is worth 50% of your project grade. It should read like a paper from an economics journal. It should include a presentation of the data, model estimates, and interpretation of the results.
  - *Presentation:* The presentation is worth 25% of your project grade. This will be done in the last 2 weeks of class and will be open to the general public. The presentation should include a computer presentation of your results. Details on the presentation will be discussed at a later date.

**Grading:** You are responsible for keep track of your own grade. Grades will be computed as follows:

Homework	25%
Tests	15% each
Research Project	20%
Final Exam	25%

**Class Structure:** Class will consist of lecture, group work, individual work, and problem sessions. Please come to class prepared with you text, notes, and calculator everyday. Please be prepared to participate in class. Class will start promptly at 12:50, and class will not end prior to 2:00. Please turn off your cell phones prior to the start of class.

**Attendance:** Attendance will be taken everyday. There is a very strong correlation between attendance and grades. In order to understand the material, you need to be present in class. Group work also requires everyone to participate. I understand that there are circumstances that you must miss class. Remember that no late homework or quizzes are accepted.

**Software:** Statistics software will be used extensively throughout the course. It will be used on homework, and your projects. In class tests will not be computer based but more theory based. Software could include Reviews, SAS, STATA, TSP, SPSS or GAUSS. Most work during class will be done on SPSS or STATA. You will also be required to type your solutions in LaTeX.

**Academic Honesty:** For graded homework assignments and projects, you may use your class notes and any books or library sources except a solutions manual. Any resources you use must be documented at the top of the homework assignment. As an example if you get help from the Tutor Center for problem 4 only, please write "Help with problem 4 from Tutor Center". No points will be deducted for honestly acknowledging help. However if you do not document any appropriate resource this is considered cheating.

The College academic honesty policy appears in your Student Handbook; you are expected to be familiar with it. The Academic Honesty Policy Guidelines specific to mathematics classes are reiterated at the end of the syllabus. They apply to work done outside of class as well as to in-class quizzes and tests. Please read them carefully. If you are unsure about the propriety of a particular procedure or approach, please consult with your instructor before continuing with the assignment.

**Special Accommodations:** Students with disabilities who believe that they may need accommodations in their class are encouraged to contact the Learning Services Office as soon as possible to enhance the likelihood that such accommodations are implemented in a timely fashion.

### **Academic Honesty Policy Guidelines Mathematics Courses**

The Department of Mathematics and Computer Science supports and is governed by the Academic Honesty Policy of Moraine College as stated in the Moraine College Students Handbook. The following statements will help clarify the policies of members of the Mathematics faculty.

In all homework assignments which are to be graded, you may use your class notes and any books or library sources. When you use the ideas or thought of others, however, you must acknowledge the source. For graded homework assignments, you may not use a solution manual or the help, orally or in written form, of an individual other than your instructor. If you receive help from anyone other than your instructor or if you fail to reference your sources you will be violating the Academic Honesty Policy of Moraine College. For homework which is not to be graded, if you choose, you may work with your fellow students. You are responsible for understanding and being able to explain the solution of all assigned problems, both graded and ungraded.

All in-class or take home tests and quizzes are to be completed by you alone without the aid of books, study sheets or formula sheets unless specifically allowed by your instructor for a particular test.