**SYLLABUS**

Economics 385 (Econometrics) and Finance 325 (Data Analysis)

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Office Hours: Wednesday 10AM-1PM and

Thursday 9AM-11AM and by appointment

**Textbook:**

James H. Stock and Mark W. Wilson , Introduction to Econometrics, 3rd Edition, Addison-Wesley, 2011.

**Course Objectives**

This course is designed to give students a detailed understanding of the mathematical methodologies associated with Econometrics. Emphasis is placed on simple and multiple regression, single equation problems, and simultaneous model estimation. Students will also be required to demonstrate competence in on-line ECONOMAGIC data bases supplied at Pace University and the statistical/econometric programs residing in MINITAB and SAS.

As partial fulfillment towards receiving credit for the course, students must sit for two examinations; a midterm and final. Each of these examinations is worth 25 points. In addition, subject to the instructors’ approval, students are required to submit a 5-10 page research paper that demonstrates to the instructor a measure of competence in the forecasting area. The topic of the paper should be in a specific area of Econometrics and it is worth an additional 25 points. Homework assignments located in the “Assignments’ folder in Blackboard count for 25% of the final mark.

Students are expected to attend and participate in class. Homework is assigned, required and reviewed in class and is an integral part of the course. The homework is found under the ‘*ASSIGNMENTS*’ menu located in your BLACKBOARD account. **All homework must be submitted to your folder on the date and time specified in the ‘Assignment’ folder. It cannot be emphasized enough that under any circumstances late submissions will not be allowed. Homework may NOT be submitted through email.** Students are strongly advised that this course requires an intensive amount of preparation that is most readily grasped in a classroom environment. If you miss a class or a computer workshop the covered material is your responsibility.

**Course Assessment**

1. Mid-term Examination 30%

3. Final Examination 30%

4. Research Paper 30%

5. Assignments 10%

What follows is a partial listing of covered topics.

**Course Outline**

**Topic 1: Statistical Review and Introduction to Regression Analysis**

*Chapters 1-5*

A brief review of the statistical concepts used in class. The important univariate statistics are the t-test and the F-test (i.e., ANOVA). Bi-variate regression is introduced by estimating coefficients using ordinary least squares. Hypothesis testing, confidence intervals, *p*-values, and goodness of fit measures are reviewed. Forecasting through the use of regression analysis is developed. A brief introduction to statistical/econometric/forecasting program MINITAB is covered in this section and a financial/economic data base is introduced (i.e., ECONOMAGIC). Students are instructed on the downloading capacity of ECONOMAGIC into MINITAB.

**Topic 2: Multiple Regression, Functional Forms, and Dummy Variables**

*Chapters 8,9*

The multiple regression model is estimated and interpreted. Non-linear regression analysis is introduced. Log linear models, reciprocal specifications, and various polynomial functional forms are highlighted. Dichotomous or Dummy variables are estimated and interpreted. Several economic and financial applications are introduced.

Advanced demonstrations of MINITAB, SAS and ECONOMAGIC are carried out.

**Topic 3: Regression Analysis with Binary Dependent Variable.**

*Chapters 11*

Regression when the Dependent Variable is “Binary” or ‘Dichotomous”. Probit and Logit Regression analysis.

Advanced demonstrations of MINITAB, SAS and ECONOMAGIC are reviewed

**Topic 4: Single Equation Forecasting Problems in Regression Analysis with Reference to Time Series Data**

*Chapters 14-16*

Single equation regression problems such as multicollinearity, autocorrelation and heteroscedasticity are covered in detail. The approach here is to first identify the cause of the problem, then discuss the consequences, develop a test statistic to detect the problem, and finally come up with a correction procedure to remedy it. Several economic/financial applications with regard to these single equation problems are addressed.

Advanced demonstrations of MINITAB, SAS and ECONOMAGIC are performed.

**Topic 5: Current Issues in Econometrics**

Topical issues are discussed and tailored toward specific interests of the student. The topics are selected in accordance with the research interests of the student. Vector Autoregression (VAR), Autoregressive Conditional Heteroscedastic (ARCH and GARCH) models are discussed. The issue of stationarity in time series data is addressed. Co-integration and its application to credit markets is highlighted.

**Topic 6: Data/Text Mining and Forecasting**

(Handout on Blackboard (Ereserves)

A brief introduction on Data and Text Mining and its applications to forecasting issues. Three techniques of Data Mining are introduced—Classification Trees, Regression Trees, and Neural Networks. Examples are drawn from bank fraud, financial forecasting, student retention rates, and stylography, etc. A brief introduction to Data and Text Mining computer software in SAS Enterprise Miner 6.2 is introduced.

**Quality of Homework Assignments**

You will receive a grade for each of the Homework assignments and what follows is a brief description of exactly how you are graded. In either case you must submit your assignments on time in order to receive credit.

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **A or A-** | **B+ or B** | **B- or C+** | **C or C-** | **D+ / D / D-** | | Timeliness | Responses are always posted on time. | Responses are on time - one occasionally missed. | Responses usually on time or  occasionally missed | Responses missed or late more than once. | Responses consistently posted late or missed. | | Questions | Provides provocative questions on time that help us rethink readings. | Questions adequate but not provocative. | "Surface" questions that provide not critical analysis | Questions off base, inappropriate, or irrelevant for readings. | Doesn't post questions on time. | | Thorough | Consistently addresses all parts of questions well. | Usually all parts addressed, some better than others. | Sometimes some parts are missing but what is posted is usually thorough. | Responses to questions are often quite incomplete. | Responses consistently  address questions minimally. | | Thoughtful Connections | Consistently responses  make  thoughtful & specific connections to readings.  Links theory to practice and across posts, readings, or discussions. | Usually thoughtful connections to readings but often lacking  connections made across posts, readings, or class discussions. | Sometimes responses do not demonstrate an under-standing of readings.  Connections may be forced or incomplete. | Often responses are lacking in substance and, quite possibly,  inaccurate.  Connections made may be inaccurate or incoherent. | Responses are consistently  done in a hasty fashion with no thoughtful connections  made. | | Substantive Responses to Classmates | Often reads others' posts and offers informed questions, comments, & connections. | Usually comments on others' posts.  Interesting comments but they may not indicate clearly a close read. | Sometimes comments on others' posts.  Comments are sometimes off base - not clearly relating to others' posts. | Infrequently comments on others' posts and comments are sometimes inappropriate - unhelpful, not constructive, rude. | Rarely comments on others' posts or, when does, comments are often inappropriate - unhelpful, not constructive, rude. | |  |

Other Important Information.

Students must accept the responsibility to be honest and to respect ethical standards in meeting their academic assignments and requirements. Integrity in the academic life requires that students demonstrate intellectual and academic achievement independent of all assistance except that authorized by the instructor. The use of an outside source in any paper, report or submission for academic credit without the appropriate acknowledgment is *plagiarism*. It is unethical to present as one’s own work, the ideas, words or representations of another without the proper indication of the source. *Therefore, it is the student’s responsibility to give credit for any quotation, idea or data borrowed from an outside source.*

Students who fail to meet the responsibility for academic integrity subject themselves to sanctions ranging from a reduction in grade or failure in the assignment or course in which the offense occurred to suspension or dismissal from the University. Students penalized for failing to maintain academic integrity who wish to appeal such action may petition the department chair to request a hearing on the matter.

Pace University believes that it is important that students receive appropriate accommodation for any disability. If you have a disability for which you are or may be requesting an academic accommodation, you must register with the Coordinator of Services for Students with Disabilities. Trained professional Counselors will:

-Evaluate your medical documentation;

-Conduct appropriate tests or refer you for same;

-Make recommendations for your plan of accommodation; and

-Contact your professors (with your permission) to arrange for the

recommended accommodations.

Your professor is not authorized to provide any accommodation prior to you arranging for same through the Counseling/Personal Development Center. If you have, or believe you have, a disability, be sure to follow the above procedure