ECON 4160: ECONOMIC FORECASTING
School of Economics, Georgia Institute of Technology
Spring 2012

Instructor: Dr. Kaushik Mukhopadhaya
Office: Old CE, G7   E-mail: kaushik.mukhopadhaya@econ.gatech.edu

Class Meeting: Every Monday, Wednesday, and Friday 9:05a.m.-9:55a.m., Old CE, G10

Office Hours: Every Monday, Wednesday, and Friday 10:00a.m.-11:00a.m.

Department Site: http://www.econ.gatech.edu/

General Expectation

Econometrics provides quantitative methods for the study of theoretical and empirical relationships involving data typically found in economics and other social sciences. This course has two parts. In the first part of the course, the classical linear regression model will be presented as the dominant structure for multivariate analysis. The violations of assumptions underlying the classical linear regression model will also be discussed. In the second part of the course, time series regression will be addressed with focus on forecasting. Building on the multiple regression mechanics and inference, we will analyze trends, seasonality, and cycles that make time series applications different from cross-sectional ones. By the end of this course, it is expected that all students will be able to estimate and evaluate econometric models that fit data well and perform economic forecasts. ECON 3161 is a prerequisite for this course.

Required Materials

• Stock, James H., and Mark W. Watson, *Introduction to Econometrics*, Second Edition/Third Edition, Pearson Addison-Wesley, 2007/2011.
• A USB storage device.

   Recommended: Wooldridge, Jeffrey M., *Introductory Econometrics*: *A Modern Approach*, Third/Fourth Edition, Thomson South-Western.

Computer Materials

Data analysis will be undertaken with the statistical software package STATA. An orientation session on the use of STATA will be arranged early in the semester. There are also extensive web-based tutorials as well as on-line help available on the use of STATA. STATA is available on all computers in G07, Old CE building. However, this room has limited hours (9a.m.-5p.m.) in weekdays and it is closed during weekends. If you would like to obtain a copy of Small Stata for personal use, you may order it through the Stata GradPlan (http://www.stata.com/order/new/edu/gradplans/gp-campus.html). This version is somewhat limited in the number of observations you can use and what you can do. Stata/IC version does not have such limitations. STATA is not a dedicated time series/forecasting program such as Eviews. Thus in some cases limited manual computation will be required using the results from the STATA output.

Class Participation, Exams, and Grading Policy

Participation in each class session is essential for you to obtain the full benefit from the course. The class meetings will rely on individual work on computers, discussion, group work, and other activities that require direct physical presence in the classroom. Keep in mind that you are responsible for the material covered during the lectures, not just what is in your textbook. For each class that you miss 5% of your participation grade will be deducted. You may miss three classes over the semester without penalty. You are not allowed to surf the internet or access your e-mail account during the class. 5% of your participation grade will be deducted for such infraction. Furthermore, tardiness will not be tolerated because it disrupts other students from learning.

Final course grades are based on a weighted average of numerical scores on in-class participation, a paper, and two in-class exams. The weights are respectively 20, 30, 25 and 25 percent. Grades will be assigned on the basis of relative performance, but anyone earning over 90, 80 or 60 percent of the points will be assured respectively of an A, B or C range letter grade. There will be no make-ups on exams or other assignments.

Homework Assignments and Paper

Homework assignments will use the data supplied with the textbook (available online at the companion website http://www.pearsonhighered.com/stock_watson/) and a software package. While the software package does most of the necessary computations, interpretation of the results is your responsibility. Assignments must be handed in on time, so solutions can be discussed in class and distributed in a timely manner. Grading will be as follows

$\checkmark+$ "you did well"
$\checkmark$ "you could do better"
$\checkmark-$ "you should do better"

A specific weight is not assigned to homework assignments so that you can treat homework problems as a learning experience. However, if you fail to do the assigned work (or, horror of horrors, you "borrow" a classmates work!) it will show on your exams. For those who do the work and who tend to avoid the low grade of $\checkmark-$ on homework, I will consider a marginal upward revision in the final grade. For those who do not do the work or who tend to receive $\checkmark-$ on homework, I will consider a marginal downward revision in the final grade. I will be the final arbiter of what constitutes a marginal adjustment. However, in no case will the change in grade be more than ± 3 percentage points.

You may work in groups of two or independently to fulfill the paper requirement of this course. The paper should include separate sections for each of the following: Abstract, Introduction, Data Description, Empirical Methods, Results, Conclusion, and References. The paper should be between 15 and 20 pages long including tables and graphs but excluding reference and title pages. The paper will be graded on multiple aspects: writing style, idea, methods/modelling, and forecast analysis. You should start thinking of an idea for your paper right away. The project proposal is due on **March 9**. Your proposal needs to include (i) Title, (ii) Brief description of the project, and (iii) Data source and availability. The finished paper/project is due on the last day of classes for this semester, **April 27**. Detailed instructions for the paper will be posted via University's T-square site.

Miscellaneous

If you require accommodations for a disability, religious belief, scheduling conflict, or other impairment that might affect your successful completion of this course, you must personally present the request in written (signed and dated) form to me within the first four meetings. Requests for special accommodations made after that will not be considered.

As a final note, I want to wish all of you good luck in this course and I encourage you to see me if you are having difficulty with the course material or need to discuss something with me. You can stop by my office during office hours, or schedule an appointment. I can also be reached through e-mail. Please do not hesitate to see me if you have any questions or concerns.

Tentative Course Outline

Keep in mind that although I have given you a course outline, I reserve the right to make what I consider reasonable adjustments to it.

1. Statistical Review   Chapters 1-3 (optional)

2. Linear Regression with One Regressor   4.1-4.6

3. Regression with a Single Regressor: Hypothesis Tests and Confidence Intervals   5.1-5.7

4. Linear Regression with Multiple Regressors   6.1-6.8

5. Hypothesis Tests and Confidence Intervals in Multiple Regression   7.1-7.7

Midterm Exam: Friday, 9:05a.m. - 9:55a.m., February 24, 2012

6. Assessing Studies Based on Multiple Regression   9.1-9.5 (selectively)

7. Introduction to Time Series Regression and Forecasting   14.1-14.8

8. Estimation of Dynamic Causal Effects   15.1-15.8

9. Additional Topics in Time Series Regression   16.2-16.6

Final Exam: Friday, 8:00a.m. - 10:50a.m., May 4, 2012