ECON 6218: Advanced Business and Economic Forecasting

Syllabus for Fall 2014
Class Meets: Wednesday 5:30p.m. – 8:15p.m.
Class Room: 606, UNC Charlotte Center City Building

Instructor
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Office Hours: By appointment

Course Description
ECON 6218: Advanced Business and Economic Forecasting. Prerequisites: ECON 6112. Develops forecasting techniques used in business decision-making and techniques used in forecasting macroeconomic variables. Topics include: estimation, identification, and prediction using ARMAX, state space, and Box-Jenkins models; in addition we will employ spectral analysis and linear filtering.

Course Objectives
We will focus on understanding how and when to apply various forecasting techniques and how to interpret the results. Toward this end, we will develop and apply a number of time series and regression-based approaches to forecasting.

Course Requirements
Grades for the course will be determined by your performance on two in-class tests, several problem sets, and a capstone project. These components will have the following weights in the calculation of your final grade:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Test #1</td>
<td>30%</td>
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<tr>
<td>Test #2</td>
<td>30%</td>
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<tr>
<td>Problem Sets</td>
<td>20%</td>
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<tr>
<td>Capstone Project</td>
<td>20%</td>
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Letter Grades for the course will be based on the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90% and above</td>
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<tr>
<td>B</td>
<td>80% - 89.99%</td>
</tr>
<tr>
<td>C</td>
<td>70% - 79.99%</td>
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<tr>
<td>U</td>
<td>Below 70%</td>
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Test Dates
Test#1 (Midterm exam) will be given in class on October 8. Test#2 (Final exam) will be given at 5 p.m. on December 10 (the final exam slot for the course). The instructions for the capstone project are given at the end of this file and the completed project will be due at the beginning of class on December 3.
Attendance
Regular attendance is expected and should be considered essential to satisfactory performance in this course, since not all of the material presented in class will be found in the textbook. You are responsible for this material and for any other work missed because of an absence.

Academic Integrity
All students are required to abide by the UNC Charlotte Code of Student Academic Integrity. Violations of the Code of Student Academic Integrity, including plagiarism, will result in disciplinary action as provided in the Code. Definitions and examples of plagiarism are set forth in the Code. The Code is available from the Dean of Students Office or online at: http://legal.uncc.edu/policies/up-407.

Disability Accommodations
Students in this course seeking accommodations to disabilities must first consult with the Office of Disability Services and follow the instructions of that office for obtaining accommodations.

Others
The standards and requirements set in this syllabus may be modified at any time by the course instructor. Notice of such changes will be provided by announcement in class or by emails.

The last day to withdraw from course (s) with a grade of ‘W’ is October 20.

I will always try to be on time for each class during the semester. If I must be absent because of illness, emergencies, or other reasons, I will make every effort to notify you as far in advance as possible. On any given class day, though, if I am more than 30 minutes late for class and you have received no notification from me to the contrary, you may assume that class is canceled.

Between class meetings, any communication that I need to have with the class will be done by email; you should therefore check your University-assigned email account on a regular basis.

The Belk College of Business strives to create an inclusive academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.
Textbooks and Other Resources
There are three textbooks for this course:


Stock and Watson (2007) and Silvia et al. (2014) are required. Gujarati and Porter (2009) is the text required in the Graduate Econometrics course (ECON 6112), and it is also recommended for this course.

There are a number of other good introductory or specialized econometrics textbooks that you may also find useful from time to time.


On the course outline, I indicate the appropriate readings for each topic. From time to time, I may assign additional readings that are not currently shown on the outline.

Software
I will support SAS software for econometric analysis that you will be doing in this course. I encourage you to use SAS and will provide an overview of the software as well as key SAS codes to perform basic statistical analysis. The SAS website [http://www.sas.com/](http://www.sas.com/) is a very useful resource for SAS learning since SAS manuals are available on the website free of cost. But you are welcome to use other software such as E-Views, STATA, GAUSS and SPSS.
Outline of Topics and Reading Assignments

I. Review of Linear Regression Analysis
   Gujarati and Porter (2009), chapters 1-11 and chapter 13
   Stock and Watson (2007), chapters 1-7

II. The 10 Commandments of Applied Time Series Forecasting for Business and Economics
   Silvia et al. (2014), chapter 9

III. Linear Regression with Autocorrelated Disturbances
    Silvia et al. (2014), chapter 8, pp. 179-196
    Gujarati and Porter (2009), chapter 12, pp. 412-441

IV. Autoregressive Models, Autoregressive Distributed Lag Models, and Forecasting
    Stock and Watson (2007), chapter 14, pp. 525-554

V. Stationary and Nonstationary Stochastic Processes
    Stock and Watson (2007), chapter 14, pp. 554-578, and chapter 16, pp. 648-655
    Gujarati and Porter (2009), chapter 21, pp. 737-762
    Silvia et al. (2014), chapter 7, pp. 157-169

VI. Autoregressive Integrated Moving Average Models and the Box-Jenkins Approach to Forecasting
    Gujarati and Porter (2009), chapter 22, pp. 773-784
    Silvia et al. (2014), chapter 10, pp. 241-250

VII. Vector Autoregressions and Forecasting
     Stock and Watson (2007), chapter 16, pp. 638-648
     Gujarati and Porter (2009), chapter 22, pp. 784-790

VIII. Volatility Modeling and Forecasting
      Stock and Watson (2007), chapter 16, pp. 664-669
       Gujarati and Porter (2009), chapter 22, pp. 791-798
Capstone Project Guidelines

Each student is required to write a short paper on the project involving econometric analysis of the time series data using forecasting techniques. The project is an opportunity to apply the econometric tools learned in the class to a real-world issue chosen by the student. There are two approaches available for the project. The first is for you to choose your own topic and gather your own data. That is a bit more time consuming but can also be more rewarding (personally and professionally). The alternative is to analyze a time series dataset that I will provide (later in the semester). This approach requires you to propose your own model within the confines of the data provided. Regardless of the approach taken, I recommend that you choose a topic in which you are interested but also one with a narrow focus. A narrow focus increases the probability that the project will both be completed by the semester’s end and be of sufficient quality.

I encourage you to begin thinking about this project as soon as possible and to avoid putting off writing the paper until the last few days of class. A good strategy is to talk to me about your project early in the semester, keep in contact with me concerning your data and estimations and to have me review a rough draft before the final draft is submitted.

The final version of the project is due December 3, 2014.

1. Project should be at least 10 double-spaced, single-sided pages printed no greater than 12 font.
2. Project should be generally structured in the following manner:
   - Introduction of the economic/econometric problem—what are you going to do and why do we care?
   - Brief review of previous literature dealing with your problem (including standard academic references).
   - Introduction of your econometric model and data, including specific data source(s).
   - Review and interpretation of your estimation results.
   - If possible, provide at least two-year ahead out-of-sample forecast of the target/dependent variable (Optional but with high reward)
   - Concluding remarks
   - Reference list
   - Econometric results in tabular forms
   - Figures if necessary

3. You must provide an electric form of your data, programs and program output. If I do not receive all required files, you will receive a zero on the project.