ECON 6218: Advanced Business & Economic Forecasting
Syllabus for Spring 2020
5:30 p.m. – 8:15 p.m. W
Center City 606

Instructor
Rob Roy McGregor
227C Friday Building
Phone 704-687-7639
Email rrmcgreg@uncc.edu

Office Hours
9:30 a.m. – 10:15 a.m. MW (Friday Building)
4:00 p.m. – 5:30 p.m. M (Friday Building)
5:00 p.m. – 5:30 p.m. W (Center City Building)
If the hours established are not convenient, feel free to make an appointment with me for another time or to stop by at another time when I am in the office.

Course Objectives
We will focus on understanding how and when to apply selected time series and regression-based forecasting techniques and on how to interpret the results produced by these techniques.

Textbooks and Other Resources
There are two textbooks that are required for this course:

(1)   Johnston, Jack, and John DiNardo. 1997. *Econometric Methods*, 4th edition. New York, NY: McGraw-Hill.

(2)   Stock, James H., and Mark W. Watson. 2019. *Introduction to Econometrics*, 4th edition. Boston, MA: Pearson Education.

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.

There are other introductory or specialized econometrics textbooks that you may find useful:

Baltagi, Badi H. 2008. *Econometrics*, 4th edition. Berlin: Springer-Verlag.

Diebold, Francis X. 2007. *Elements of Forecasting*, 4th edition. Mason, OH: Thomson South-Western.

Enders, Walter. 2010. *Applied Econometric Time Series*, 3rd edition. New York, NY: John Wiley and Sons.

Greene, William H. 2012. *Econometric Analysis*, 7th edition. Upper Saddle River, NJ: Pearson Prentice Hall.

Gujarati, Damodar N. 2015. *Econometrics by Example*, 2nd edition. New York, NY: Palgrave Macmillan.

Gujarati, Damodar N., and Dawn C. Porter. 2009. *Basic Econometrics*, 5th edition. New York, NY: McGraw-Hill/Irwin.

Hamilton, James D. 1994. *Time Series Analysis*. Princeton, NJ: Princeton University Press.

Judge, George G., R. Carter Hill, William E. Griffiths, Helmut Lütkepohl, and Tsoung-Chao Lee. 1988. *Introduction to the Theory and Practice of Econometrics*, 2nd edition. New York, NY: John Wiley and Sons.

Kennedy, Peter. 2008. *A Guide to Econometrics*, 6th edition. Malden, MA: Blackwell.

Kmenta, Jan. 1986. *Elements of Econometrics*, 2nd edition. New York, NY: Macmillan.

Maddala, G.S. 1992. *Introduction to Econometrics*, 2nd edition. New York, NY: Macmillan.

Pindyck, Robert S., and Daniel L. Rubinfeld. 1998. *Econometric Models and Economic Forecasts*, 4th edition. New York, NY: Irwin/McGraw-Hill.

Verbeek, Marno. 2017. *A Guide to Modern Econometrics*, 5th edition. New York, NY: John Wiley and Sons.

Wooldridge, Jeffrey M. 2010. *Econometric Analysis of Cross Section and Panel Data*, 2nd edition. Cambridge, MA: The MIT Press.

Wooldridge, Jeffrey M. 2020. *Introductory Econometrics*, 7th edition. Boston, MA: Cengage Learning.

Gujarati and Porter (2009), Maddala (1992), Pindyck and Rubinfeld (1998), and Wooldridge (2020) are other useful introductory texts. Gujarati (2015) is an introductory text that focuses more on applications of econometric analysis and less on the theory of econometrics. Baltagi (2008), Johnston and DiNardo (1997), Judge, Hill, Griffiths, Lütkepohl, and Lee (1988), Kmenta (1986), and Verbeek (2017) are more advanced but still accessible introductory texts that rely on matrix algebra to a greater extent than Gujarati and Porter (2009), Maddala (1992), Pindyck and Rubinfeld (1998), Stock and Watson (2019), and Wooldridge (2020). Enders (2010), Greene (2012), Hamilton (1994), and Wooldridge (2010) offer especially advanced treatments. Kennedy (2008) emphasizes the intuition behind econometric analysis. Diebold (2007) offers an excellent introductory treatment of forecasting.

Software

I will support STATA for the applications that you will be doing in this course. You are free to use other software, but I may not be able to help you if you have any trouble completing assignments with other software. STATA is available on all Belk College computers. You can purchase STATA at a reduced rate through the STATA website (http://www.stata.com/order/new/edu/gradplans/student-pricing/). The STATA/IC version is sufficient for the problem sets and capstone project that you will be assigned in this course. The websites http://data.princeton.edu/stata/, http://www.ats.ucla.edu/stat/stata/, and https://www.ssc.wisc.edu/sscc/pubs/sfr-intro.htm have a number of examples and other resources that you may find helpful as you work with STATA.

Means of Student Evaluation

Grades will be determined by your performance on four problem sets (10% each), a capstone project (20%), and two tests (20% each). Letter grades assigned for the course will be based on the following scale: A, 90%-100%; B, 80%-89.99%; C, 70%-79.99%; U, below 70%.

NOTE WELL: Grades will be based only on your performance on the four problem sets, the capstone project, and the two tests. Individual extra credit assignments will **NOT** be made.

Problem Sets

Problem sets must be typed and must be submitted in class on the assigned due dates. A problem set may be submitted after the due date, but there will be a penalty of 10 points for each day that the submission is late. Once a problem set has been graded and returned to the class, no late submission will be accepted, and you will receive a grade of zero on that problem set. The first problem set will be due on January 22; the second, on February 12; the third, on March 18; and the fourth, on April 15.

Capstone Project

The instructions for the capstone project will be distributed on April 15. Your completed project will be due by email by 5:00 p.m. on April 29.

Tests

The first test will be given in class on February 26. The second test will be given on May 6 (in the exam slot assigned for this course).

Academic Integrity

All students are required to read and abide by the 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. Please be aware that faculty may ask students to produce identification at examinations and that faculty may require students to demonstrate that assignments completed outside of class are their own work.

Disability Accommodations
UNC Charlotte is committed to access to education. If you have a disability and need academic accommodations, please provide a letter of accommodation from the Office of Disability Services early in the semester. For more information about accommodations, you may contact the Office of Disability Services at 704-687-0040 or visit the Office of Disability Services itself in Fretwell 230.

Revision of Syllabus during Semester
The standards and requirements set forth in this syllabus may be modified at any time by the course instructor. Notice of such changes will be by announcement in class and by email.

Attendance
Students are expected to attend every class and remain in class for the duration of the session. Failure to attend class or arriving late may affect your ability to achieve course objectives, which could affect your course grade. An absence—whether excused or unexcused—does not relieve a student of any course requirement. Regular class attendance is a student's obligation, as is a responsibility for all the work done during class meetings. If you have to miss a class, you should NOT ask me to go over with you the lecture material that you missed. It is your responsibility to get this information from one of your classmates.

Consistent class attendance is a strong predictor of academic success. If you earn a grade of U in this course, your last date of attendance/participation will be reported. This may require you to pay back any financial aid money received for this course.

Instructor Absence or Tardiness
If I am late in arriving to class, you must wait a full 30 minutes after the start of class before you may leave without being counted absent, or you must follow any written instructions that I give you about my expected tardiness.

Computer Use in the Classroom
Students are permitted to use computers during class only for taking notes and for doing other class-related work. Those using computers during class for work that is not related to this class must leave the classroom for the remainder of the class period.

Recording in the Classroom
Electronic video and/or audio recording is not permitted during class unless the student obtains permission from the instructor. If permission is granted, any distribution of the recording is prohibited. Students with specific electronic recording accommodations authorized by the Office of Disability Services do not require instructor permission, but the instructor must be notified of any such accommodation prior to recording. Any distribution of such recordings is prohibited.

Belk College of Business Diversity Statement
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.

Outline of Topics and Reading Assignments

I assume that you have a working knowledge of calculus, matrix algebra, statistics, and basic econometric techniques. Chapters 2 and 3 of Stock and Watson (2019) cover the material on probability and statistics that these authors assume, while Appendices A and B of Johnston and DiNardo (1997) cover the material on matrix algebra and statistics that these authors assume.

I.   Review of Linear Regression with One Regressor
           Johnston and DiNardo (1997), Chapter 1
           Stock and Watson (2019), Chapters 4 & 5
II.   Review of Linear Regression with Multiple Regressors
           Johnston and DiNardo (1997), Chapter 3
           Stock and Watson (2019), Chapters 6 & 7
III.   Linear Regression with Autocorrelated Disturbances
           Johnston and DiNardo (1997), Chapter 6, pp. 162-166 & pp. 174-195
IV.   Regression with a Binary Dependent Variable
           Stock and Watson (2019), Chapter 11
           Johnston and DiNardo (1997), Chapter 13, pp. 414-431
V.   Autoregressive Models, Autoregressive Distributed Lag Models, and Forecasting
           Stock and Watson (2019), Chapter 15, pp. 513-540
           Johnston and DiNardo (1997), Chapter 2, pp. 41-44 & pp. 52-64
VI.   Stationary and Nonstationary Stochastic Processes
           Stock and Watson (2019), Chapter 15, pp. 540-554, & Chapter 17, pp. 616-620
VII.   Autoregressive Integrated Moving Average Models and the Box-Jenkins Approach
           Johnston and DiNardo (1997), Chapter 7
VIII.   Vector Autoregressions and Forecasting
           Stock and Watson (2019), Chapter 17, pp. 607-616
IX.   Volatility Modeling and Forecasting
           Stock and Watson (2019), Chapter 17, pp. 625-629
           Johnston and DiNardo (1997), Chapter 6, pp. 195-197