Master of Professional Studies in
APPLIED ECONOMICS

Econ 684: Applied Time Series Analysis and Forecasting
Course Information and Syllabus
Spring 2018

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Office: Morrill 1102C
Office Hours: Tuesdays 5:30-6:15, and by appointment
Lecture: Tuesdays 6:30-9:10   (Note, there will a break midway through class each week)
Class Location: Key 0100
Teaching Assistant: Rosa Lim (Lim@econ.umd.edu).
Teaching Assistant Office: Morrill 1102D
TA Office hours: Monday and Tuesday 5:15-6:30
Program Coordinator: Hardeep Chowdhary   (CPmastersTA@econ.umd.edu)

A. **Overview**
    Students will learn the theory of stationary processes and how it applied to econometric techniques for estimation and forecasting based on time series data. The techniques will be applied in macroeconomic, financial and business applications. An emphasis will be placed on hands-on estimation of models with assigned data sets. Students will learn to estimate and use models they estimate and program using the STATA software package. (Note: Students are required to have STATA loaded on their computers).

B. **Course Objectives**
    The class objectives are aimed to coordinate with the objectives of the degree program. Our program has 7 general learning outcomes for students:

    1. Ability to understand, evaluate and analyze economic data
    2: Ability to understand and interpret statistical evidence from economic data
    3: Ability to apply empirical evidence to assessing economic arguments
    4: Ability to apply macroeconomic theories to policy discussions
    5: Ability to apply microeconomic theories to policy discussions
    6: Ability to communicate economic ideas to a broader audience
    7: Ability to evaluate the effectiveness of policy programs using sound economic techniques

    The learning outcomes that pertain to this course are: 1, 2, 3

C. **Required Text and Supplemental Materials**
    The main focus will be on the readings and lecture materials. The required text will be **Enders,** *Applied Econometric Time Series, 4th Edition*, **Wiley (2014).   ISBN-10: 1118808568**.   Other supplemental materials and data will be supplied in class.

D. **Prerequisites**
    ECON 642 and ECON 645.

E. Course Requirements
The course grade will be averaged together with the following weights:

Midterm	25%
Final	25%
Problem Sets	25%
Final Research Paper	20%
Participation/In-Class Assignments and Discussion	5%

Exams. The exams will look similar in many ways to the problem sets, so successfully completing the problem sets will greatly assist you in studying for exams. If you feel you have not mastered a problem from the problem sets, please let me know and we can help you understand the concepts covered. This is good preparation for exams.

Problem Sets. Problem sets will typically be questions from the book or models based on concepts in the book. We will do some of the questions in class, and you are welcome to collaborate on the problems with classmates. But each person must turn in their own problem sets, in their own hand.

F. Letter Grades
Using the above course requirements, letter grades will be determined in the following table:

93-100	A
90-92	A-
80-89	B+
70-79	B
60-69	B-
50-59	C+
40-49	C
30-39	C-
20-29	D+
10-19	D
0-9	F

G. Late Penalty
All homework, assignments and discussions are subject to late penalties. The penalties are as follows: 20% for first day, 25% for second day, 30% for third day, 35% for fourth day, 40% for fifth day, 45% for sixth day, 50% for seventh day and so on. Late penalties apply except when prior approval is obtained.

H. Tentative Outline of Major Topics / Assigned Readings
The course will follow the textbook. We will generally alternate between classes that cover the theory and classes in which we will work hands-on. Be sure to bring your computers with STATA loaded for those days. We will work on modelling with data sets together.

I. Tentative Class Schedule

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	Tuesday	Readings (Read Before class)	Assignment Due
Week 1	January 30	Chapter 1: Difference Equations THEORY	
Week 2	February 6	Chapter 1: Difference Equations LAB	
Week 3	February 13	Chapter 2: Stationary Time-Series Models THEORY	Problem Set 1
Week 4	February 20	Chapter 2: Stationary Time-Series Models LAB	
Week 5	February 27	Chapter 3: Modeling Volatility THEORY	
Week 6	March 6	Chapter 3: Modeling Volatility LAB	Problem Set 2
Week 7	March 13	Mid-Term Exam	Mid-Term Exam
Week 8	March 20	Spring Break	
Week 9	March 27	Chapter 4: Models with Trend THEORY	
Week 10	April 3	Chapter 4: Models with Trend LAB	
Week 11	April 10	Chapter 5: Multiequation Time-Series Models THEORY	Problem Set 3
Week 12	April 17	Chapter 5: Multiequation Time-Series Models LAB	
Week 13	April 24	Chapter 6: Cointegration/Error-Correction THEORY	Proposal for Final Paper
Week 14	May 1	Chapter 6: Cointegration/Error-Correction LAB	
Week 15	May 8	Chapter 7: Nonlinear Models and Breaks	Problem Set 4
Exam Week	May 15	Final Exam	Final Research Paper

Important Notes:
1. **Problem Sets will be distributed in class and posted on ELMS**
2. **Assignments Will be submitted through ELMS**
3. **Data Sets for both classroom work and problem sets will be posted on ELMS**
4. **Please be sure to bring your computers to class, and have STATA loaded on them.**

J. **Purchasing Stata**: Students in our program must purchase Stata. Stata offers different "flavors" and different lengths of licensing. Price varies according to these two factors. We do not recommend Small Stata since it is too limited for the coursework in our program. Stata/IC is the least expensive and sufficient version for your coursework. With a single-user license, you can install Stata on up to three computers. Description of all the flavors are given here:

   a. http://www.stata.com/products/which-stata-is-right-for-me/
      You can obtain Stata at discounted rates through the Campus GradPlan, in which University of Maryland, College Park is a participating institution. To benefit from the discounted prices, click on the link below and pick the Stata version you would like to buy. (Note: Disregard the warning at the top which states that you must be a faculty or staff member. That is not correct.)

   b. http://www.stata.com/order/new/edu/gradplans/campus-gradplan/
      Through the Campus GradPlan you can buy either an annual ($125 for Stata/IC) or a perpetual license ($198 for Stata/IC). The perpetual license does not expire and is the most cost effective option assuming that you will stay in the program for at least 15 months. There are also upgrade discounts provided to perpetual license holders. During the checkout process you will be asked to verify your "@umd.edu" email address.

c. If you wish to buy a 6-month license ($75 for Stata/IC), you need to order it as a regular student using the following link: http://www.stata.com/order/new/edu/gradplans/student-pricing/ During the checkout process you will be asked to upload a copy of your student ID or another document as a proof of your enrollment.

K. **Logistical and Program Information and Policies**

Our program has policies common to all classes. These policies are shown below.

Course Website: Copies of the course syllabus, your grades, and other relevant links and documents will be posted on the course's ELMS/Canvas website. You can access the site via www.elms.umd.edu. You will need to use your university "directory ID" and password.

Email: Email is the primary means of communication outside the classroom, and I will use it to inform you of important announcements. Students are responsible for updating their current email address via http://www.testudo.umd.edu/apps/saddr/ AND for paying attention to messages I send to the class via ELMS. Failure to check email, errors in forwarding email, and returned email due to "mailbox full" or "user unknown" will not excuse a student from missing announcements or deadlines. I will do my best to respond to email within 36 hours.

Work Load: Mastering the material covered in this course requires a significant amount of work outside of class.   Students should expect to spend more time outside of class than in class – typically at least twice as much time.

Academic Integrity: The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards applicable to all undergraduate and graduate students, and you are responsible for upholding these standards as you complete assignments and take exams in this course. Please make yourself aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information see www.studenthonorcouncil.umd.edu

Student Conduct: Students are expected to treat each other with respect. Disruptive behavior of any kind will not be tolerated. Students who are unable to show civility to one another or myself will be referred to the Office of Student Conduct. You are expected to adhere to the Code of Student Conduct.

Excused Absences: The University of Maryland's policy on excused absences is posted here: http://www.president.umd.edu/administration/policies/section-v-student-affairs/v-100g

Please note: If you miss any class meetings for any reason, you are still responsible for all material covered during the meeting you missed. It is your responsibility – not the instructor's – to make sure you catch up on the missed material. Instructors routinely facilitate things by posting lecture notes, etc.

If you need to miss an exam or other graded course requirement because of illness, injury, or some other emergency: Follow doctor's orders and get documentation. Get in touch with the instructor as soon as you're able – preferably prior to missing the exam or deadline. Communicate with the instructor to make up the course requirement as soon as possible. You are entitled to recover before you make up the course requirement, but you are not entitled to extra days to study beyond the time the doctor's note says you're incapacitated. If you are incapacitated for more than a week or so beyond the end of the term, your grade in the course will be an "Incomplete". In such

cases you must negotiate a plan with your instructor for completing course requirements. Once you make up the requirements, the instructor will change your "I" to the appropriate letter grade.

School Closings and Delays: Information regarding official University closing and delays can be found on the campus website and the snow phone line: (301) 405-SNOW (405-7669) The program director will also announce cancellation information to the program as an announcement on the program's ELMS/Canvas site. This will generally be done by 1:00 p.m. on days when weather or other factors are an issue. If classes need to be cancelled during the semester, it may be necessary to move the final exam back a week so missed classes can be made up.

UMD Counseling Center: Sometimes students experience academic, personal and/or emotional distress. The UMD Counseling Center in Shoemaker Hall provides comprehensive support services that promote personal, social, and academic success. The cost of these services is covered by the fees you already paid when you registered for classes, and there is no additional charge if you use the services. Proactively explore the range of services available, including the Counseling Service, Accessibility and Disability Service, Learning Assistance Service, and the Testing Office, all described at http://www.counseling.umd.edu/

Students with Disabilities: The University of Maryland does not discriminate based on differences in age, race, ethnicity, sex, religion, disability, sexual orientation, class, political affiliation, or national origin. Reasonable accommodations will be arranged for students with documented disabilities. Students who have an accommodations letter from the Accessibility and Disability Service (ADS) should meet with me during the first few weeks of the semester to discuss and plan for the implementation of your accommodations. If you require reasonable accommodations but have not yet registered with ADS, please contact the Accessibility and Disability Service at 301-314-7682 or adsfrontdesk@umd.edu.

Academic Progress: The graduate school requires that students maintain a GPA of at least 3.0. Students whose cumulative GPA falls below 3.0 will be placed on academic probation by the graduate school. Students on academic probation must ask the program's director to petition the graduate school if they want to remain in the program. The petition must include a plan for getting the student's GPA up to at least 3.0. Students who do not live up to their plan can be forced to leave the program without having earned the degree. Note: a grade of "B" corresponds to a GPA of 3.0. A grade of "B-" corresponds to a GPA of 2.7.

Access to Morrill Hall and Morrill 1102: Morrill Hall is locked every day from 7:00 p.m. - 7:00 a.m. Your university ID gives you swipe access to the back door of the building.