ECO376: Time Series Analysis
Online Hybrid Class (Wedensday 1:30-3:00 PM)
updated: 2/28/2021

INSTRUCTOR: Jin Man Lee
Office: Loop Campus (1 E Jackson DPC Room #6230)
Phone: (312)362-5970, Email: jlee141@depaul.edu

COMMUNICATION: he best way to reach me is to send an email. Please use ECO376 as a prefix on the subject line to get my attention. If you dont receive my reply within 24 hours, please remind me again. Due to some email filters, your email might be lost. Email is only for any personal issues. All questions related to course material and homework should be posted on D2L. You will find the right answers on the discussion in D2L.

COURSE OBJECTIVES
We will cover time series regression models throughout the quarter. Instead of technical and theoretical sides, we will mostly focus on the practical applications of time series regression model using macroeconomic and financial data.
The example data will be from the typical website, such as yahoo.com or wsj.com, and public website such as FRED (Federal Reserver Economic Data) maintained by St. Louis Federal Reserve Bank. We will use the latest available data from website and read them into STATA program. This course will help you to develop higher level of STATA program skills as well as methodologies to understand the time series process in economics and finance.

RECOMMENDED TEXTBOOK
Classnote in D2L
Applied Econometric Time Series Analysis, Walter Enders 3rd-4th Edition

SUPPLEMENTARY MATERIAL
Introductory Econometrics A Modern Approach (Selected Chapter in Time Series), 4-5th Edition, Jeffery M. Wooldridge.
Analysis of Financial Time Series, Ruey S. Tsay, 2-3rd Edition.
Along with the textbook and my lecture notes, I will assign mandatory readings of academic articles. The readings are available for download in PDF format from D2L.

SOFTWARE USED in CLASS (required for homework and lab classes)
This course will also use the statistical package, STATA. STATA will be available in some computer labs. However, it is strongly recommended to buy a copy to exercise at home. if you would like to buy a license for the software, you can purchase STATA/IC a 6 (12) month license for $69 ($98) by going to http://www.stata.com/coursegp.

GRADE
Homework (30%), Attendance (5%), Midterm Exam (20%), Financial Data Analysis Project (20%), Final Project (25%)
Scale of grade: A: 93 or above, A-: 88-92.9, B+: 85-87.9, B: 80-84.9, B-: 77-79.9, C+: 75-76.9, C: 70-74.9, C-: 68-69.9, D+: 65-67.9, D: 60-64.9, F: Below 60

EXAMS AND FINAL PROJECT SCHEDULE

- Midtem Exam (May 5 at 8:00 AM - May 11 at 10:00 PM)
- Financial Data Analysis Project (May 25 at 10:00 PM)
- Final Project (Written report submission to D2L on June 12 at 10:00 PM.)

ASSIGNMENTS

- Homework: Problem set will be posted in D2L and it is required to submit to submission folder in D2L
  - All assignments are to be prepared individually unless otherwise stated by me. You risk an academic integrity violation if submit the same work and answers with others. Group study is encouraged but not the submission of homework.
  - Assignments are graded based on completion and efforts. Failure to answer any questions or nonsensical attempts at answering questions will result in an incomplete assignment.
  - All weekly assignments should be uploaded to D2L by Monday at 10:00 PM
  - No Late submission will be allowed since we will discuss about the homework in class. Only limited exception will be granted due to emergency and extraordinary circumstance proved by appropriate document.

ACADEMIC HONESTY

Work done for this course must adhere to the University Academic Integrity Policy. Violations include but are not limited to the following categories: cheating; plagiarism; fabrication and academic misconduct.

- Cheating: any action that violates University norms or an instructor's guidelines for the preparation and submission of assignments. Such actions may include using or providing unauthorized assistance or materials on course assignments, or possessing unauthorized materials during an examination.
- Plagiarism: the representation of another's work as your own. You are to prepare your own homework assignments. Violations may result in the failure of the assignment, failure of the course, and/or additional disciplinary actions.
- Misconduct: This includes but is not limited to attempts to bribe an instructor for academic advantage; persistent hostile treatment of, or any act or threat of violence against, an instructor, advisor or other students. Violations may result in additional disciplinary actions by other university officials and possible civil or criminal prosecution.

You may review the Academic Integrity Policy in the Student Handbook or by visiting Academic Integrity at DePaul University (http://academicintegrity.depaul.edu)

ATTENDANCE POLICY

I do not take attendance. The attendance will be automatically checked by in-class material.

Excuses on exam days may be considered under extraordinary circumstances provided by official documentation.

CLASSROOM RULES & PROFESSIONAL POINTS

- Prohibitions: Cell phones must be turned OFF. Use of the internet is not permitted unless specifically directed by me. This includes checking of email and use of instant messengers. You must sit at the front of the classroom if you are using a computer. Tape recorders, unrelated reading materials, and food are also prohibited in the classroom.
- Behavior: You may not leave the classroom for any reason during an exam (go to the bathroom beforehand!). Further, unprofessional behavior such as inappropriate chatting, leaving in the middle of class, or showing up excessively late, etc. are disruptive and unacceptable. If you need to leave class early, let me know in advance.
- For first time violations you will receive a warning. In the event that violations continue, I will ask you to leave the classroom. (I reserve the right to add to this list as situations arise.)

Student with Disability: Students with Disability may register the The Productive Learning Strategies (PLuS) Program. You may request your exam schedule arrangement by requesting through the PLuS program. For more information on the PLuS program, you may visit http://studentaffairs.depaul.edu/plus/ or call: 312-362-8000.

SUMMARY OF WEEKLY SCHEDULE

Here is the schedule for each week

1. Tuesday 8:00 AM : New weekly material will be posted in D2L including lecture note and homework
2. Tuesday 10:00 PM : All weekly Assignment Due (One time revision of homework without penalty)

TENTATIVE SCHEDULE OF TOPICS
(The instructor may change the order or contents by needs, any special material needs for class will be available on D2L)

- Time Series Regression Model
  - Topic 0: Quick Review of Classical Regression Model
  - Topic 1: Classical Assumptions in Time Series (Serial Correlation, Heteroskedasticity)
  - Topic 2: Trend and Seasonality in Time Series
  - Topic 3: Stationary and Nonstationary Time Series
- Univariate Time Series Model (ARIMA)
  - Topic 4: Introduction to white noise, Autoregessive (AR), Moving Average (MA), Autoregressive Moving Average (ARMA), and Autoregressive Integrated Moving Average (ARIMA) models
- Midterm Exam (May 5 at 8:00 AM - May 11 at 10:00 PM)
- Financial Data Analysis
  - Topic 5: Introduction to the theory and practice of GARCH (Generalized Autoregressive Conditional Heteroskedasticity) family models
- Financial Data Analysis Project Due (May 25 at 10:00 PM)
- Multivariate Time Series Model and Macroeconomic Time Series Analysis
  - Topic 6: Vector Autoregressive Models for Multivariate Time Series
  - Topic 7: Nonstationary Time Series Model, Unit root tests, Cointegration, and Granger Causality
  - Topic 8: Applications of Multivariate Time Series Analysis
- Final Project on Time Series Analysis
  Each group will work on the topics of interest. Therer is a proposal presentation on June 2 using PowerPoint about the topic, data, and some descriptive statistics if available. The maximum number of members are two in a group.
- Final Project Due
  Written report submission to D2L until June 12 at 10:00 PM