ECON 6070-5001, Spring 2021
GRADUATE ECONOMETRICS
TuTh 4:00PM – 5:15PM, Maurer 336

Administrative Details
   Instructor: Isabel Zeng
   Office: Maurer 316
   Phone: (419) 372-8397
   E-mail: zzeng@bgsu.edu
   Office Hours: by appointments
   Prerequisites: ECON 5020

Required Text: *Applied Econometric Time Series, 3e,* Walter Enders
Recommended Readings:
   Time Series Analysis, James D. Hamilton
   Introductory Econometrics: A Modern Approach, 4e, Jeffrey M. Wooldridge
   State-Space Models with Regime Switching, Chang-Jin Kim, Charles R. Nelson

Course Description:
   The major purpose of this course is to extend the student's econometric tools to univariate and multivariate time series analysis. A medium level of mathematical reasoning and statistical background is required. The course also emphasizes computer skills and economic application. The goal is to integrate economic theories with the practical use of analyzing and interpreting real-world data. Students will study the econometric computer software *Eviews* for empirical work.

Course Information:
All courses documents can be accessed using ***Canvas***.

Evaluation and Grading
   Homework Assignments — **30%**
   Midterm Exam (take home) — **20%**
   Final Exam (take home) — **20%** (Friday, April 30 3:00-5:30 pm)
   Final Project — **30%**

A	90% -100%	**B**	80% - 89%	**C**	70% - 79%
D	60% - 69%	**F**	0 - 59%		

About the final project

(1) It needs to be a Time Series analysis.

(2) It can be a group project. Each group needs to have 3 members or less. <u>Students are responsible for forming groups</u>.

(3) Each group needs to come up with a topic for the project. It can either be your own topic, a replication of a paper that you are interested in, or an extended study of any existing case study in the literature. Once you come up with a topic, you need to get my approval before you start working on it.

(4) The whole project for each group must include:

    i.   <u>A paper</u> (including data and *Eviews* programs.) (20%)

            Feel free to use other software that you feel comfortable with.

    ii.   <u>A 20 to 30-minute presentation</u> (including presentation slides) (8%)

            It can either be a group or solo presentation.

    iii.   <u>A one-page summary of your comments on projects of the other groups</u>. (2%)

            You will be judged according to the questions that you ask during their presentations and your comments submitted afterwards.

(5) The projects will be evaluated by the instructor only. A group contribution form will be signed by all members and submitted to me along with the paper.

(6) The presentations will be scheduled on *April 20 and April 22*. The due date of submitting your papers is *Monday, April 26*.

About the homework assignments

Homework will be assigned as determined by me. To receive credits, homework must be handed in on the specified date due, during class or prior to class time, unless the student has a physician-documented illness or a documented personal tragedy on the due date.

About the exams

(1) I will curve the grades for each exam by adding (or taking) points to (from) everybody. Homework grades will NOT be curved.

(2) Make-up exams are permissible only with evidence (like a doctor's note) of a legitimate excuse. <u>You are responsible to notify me within 2 days of your absence and to talk with me to set up a time for the makeup exam</u>. Otherwise, no makeup exam will be scheduled. **The final exam will not be given early**.

Excused Absences for University Extracurricular Activities

Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. <u>It is the responsibility of the student to make arrangements with me prior to any missed scheduled examination or other missed assignment for making up the work</u>.

Honor Code

All work undertaken and submitted in this course is governed by the University's honor code. If any student is unclear about the University's honor policy – either in general or its particular application in this course – please contact me immediately. <u>Students who submit assignments that are word-for-word identical in any portions will be considered as cheating.</u>

Course Outline (subject to change)

Topics			Readings
Introduction and overview			
Difference Equations			Chp 1
Stationary			
Univariate	ARMA(p,q) model		Chp 2
	The Autocorrelation Function		
	The partial Autocorrelation Function		
	Box-Jenkins Model and Forecasting		
	Structural Change*		
VAR	Simple VARs and Impulse Response Functions		Chp 5
	VARs and Structural Decompositions		
	State Space Model*		Kim Nelson Chp 1
Nonstationary			
Univariate	Trend	Detrending	Chp 4
		Unit Roots and Regression Residuals	
		Dickey-Fuller Tests	
		Univariate Decomposition*	
	Volatility	ARCH Process	Chp 3
		GARCH model	
		MLE of GARCH model	
Multivariate	Cointegration*		Chp 6
	ECM, VECM*		
	Multivariate GARCH model*		Chp 3