ECON 7801
ECONOMETRICS II

Fall 2018

Instructor:	Ivan Mendieta-Muñoz, Ph.D.	**Time:**	T & Th; 02:00PM-03:20PM
Email:	ivan.mendietamunoz@utah.edu	**Place:**	BEH S; Room 115

Office: Room 4230, 260 Central Campus Drive.
Office Number: (+1) 801-213-6921.
Office Hours: T; 04:00PM-06:00PM.

Course Pages:

- Canvas

Prerequisites: ECON 7800; or an equivalent background.

This assumes that students have a working knowledge in econometric theory, matrix algebra and multivariate calculus.

Course Description and Objectives: This course concentrates on time series applications. Its primary purpose is to introduce you to a variety of state-of-the-art estimation techniques used in empirical macroeconometric research. Estimation techniques for panel time series will also be handled if the time permits.

Textbook References:

- Enders, Walters. (2015). *Applied Econometric Time Series*. New York: Wiley. 4th Edition.
- Favero, Carlo. (2001). *Applied Macroeconometrics*. Oxford: Oxford University Press.
- Kim, Chang-Jim, and Nelson, Charles R. 1999. *State-space Models with Regime Switching. Classical and Gibbs sampling Approaches with Applications.* Cambridge: The MIT Press.
- Lütkepohl, Helmut. (2005). *New Introduction to Multiple Time Series Analysis*. Berlin: Springer.
- *Hamilton, James. (1994). *Time Series Analysis*. Princeton: Princeton University Press.
- *Hayashi, Fumio. (2000). *Econometrics*. Princeton: Princeton University Press.

Readings outside this text may also be assigned.

Exams and Grading Policy: The course grade will be based on three homework assignments; a final exam; and a final research paper submitted at the end of the semester:

Homework Assignments (30%) + Final Exam (35%) + Final Research Paper (35%)

The final research paper needs to be an econometric project of the student's own design. It could be an exercise in applying econometric techniques to some economic, social or financial issue amenable to empirical testing. It must be a time series application.

Your final report should be typewritten and follow conventional footnoting and bibliographic rules. It should be between 10 and 12 pages long, double-spaced. Papers more than 12 pages lose points. Your paper should briefly review the relevant literature. It should define measurable versions of the variables of interest and fit them into an econometric specification. It should apply appropriate estimation techniques, reporting the results clearly and concisely; and it should discuss the inferences that are justified from your results. Please do not include raw computer output.

There will be no make-up exams and late assignments will not get credit except in the cases of: a) medical emergencies; b) officially sanctioned University activities; and c) religious obligations. As indicated in PPM 9-7 Sec 15, the appropriate unit should provide a written statement for the reason of absence. In cases b) and c), students should get in touch with me at least one week before the exam and reschedule the exam. Students will not be assigned extra credit work to improve their grades. Senior class students' work will not be graded differently.

Grading system follows the university standards:

- Excellent, superior performance: A (90-100%), A- (85-89.9%)
- Good performance: B+ (80-84.9%), B (75-79.9%), B- (70-74.9%)
- Standard performance: C+ (65-69.9%), C (60-64.4%), C- (55-59.9%)
- Substandard performance: D+ (50-54.9%), D (45-49.9%), D- (40-44.9%)
- Unsatisfactory performance: E (0-39.9%)

Important dates:

Homework Assignment #1	Tuesday, September 18
NO CLASS	Thursday, October 4
Fall Break	Sunday-Sunday, October 7-14
Homework Assignment #2	Tuesday, October 16
Homework Assignment #3	Tuesday, November 13
Discussion of Research Papers #1	Tuesday, November 20
Thanksgiving Break	Thursday-Sunday, November 22-25
Discussion of Research Papers #2	Tuesday, November 27
Revision Session	Thursday, November 29
Final Research Paper	Monday, December 10
Final Exam	Monday, December 10: 1:00PM-3:00PM

Class Rules:

1. I encourage student cooperation in homework assignments. However, each student must present his or her own assignment. Duplication of the same assignment under different names is not acceptable and is considered cheating. Cheating in homework assignments or exams and other types of academic misconduct will be dealt with in accordance with the University regulations. Full details on procedures and penalties can be found here: http://regulations.utah.edu/academics/6-400.php#SECTION%20V. Punishments can be severe, so don't do it.

2. No electronic submissions will be accepted. You must hand in a hard copy of your assignments (either a manuscript or a printed document).
3. Come to class in time.
4. Read the assigned material in advance and familiarize with the subject before the lecture.
5. I will use Canvas for announcements, homework assignments, posting extra readings, etc. However, Canvas is not a substitute to attending class. It is your responsibility to keep up with the class.
6. Turn off your cell phones and remove them from your desk.
7. Do not believe any of the material you read in the textbook or elsewhere. Learn it well and critically.
8. Do not believe any of the material I present in class. Learn it well and critically.

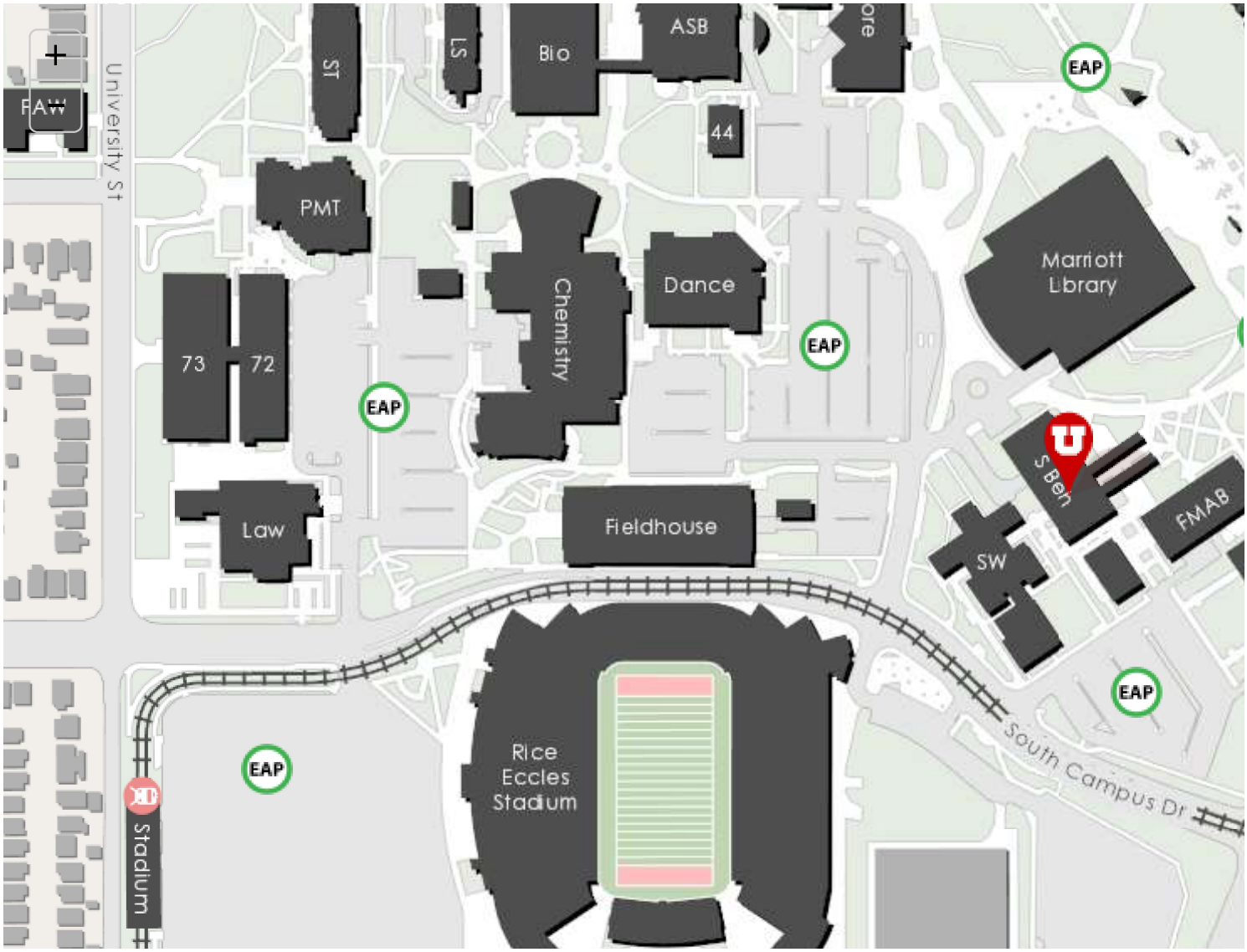
Students with Disabilities: The Department of Economics at the University of Utah, seeks to provide equal access to its programs, services and activities for people with disabilities. If you need accommodations in this class, reasonable prior notice needs to be given to the instructor and to the Center for Disability Services (162 A. Ray Olpin Student Union Building, 581-5020 (V/TDD)) to make arrangements for accommodations (see also http://disability.utah.edu/).

Reminder: As the only institution in the state classified in the highest research category (R1), at the University of Utah you will have access to state-of-the-art research facilities and be able to be part of the knowledge creation process. You will have the opportunity to do research of your own with faculty who are leading experts in their field, engaging in programs that match your research interests. Further, you will interact with and often take classes with graduate students that provide an advanced understanding of the knowledge in your field.

Course Outline: The time schedule is approximate. We may slow down or speed up in accordance with the needs and demands of the class.

1. **Univariate Time Series Analysis**
   - ARMA Models
     - Stationarity, Invertibility and Ergodicity
     - Moving Average and Autoregressive Processes
     - Autocovariance-Generating Function
     - Model Selection and Estimation
     - Principles of Forecasting
   - Non-Stationary Time Series
     - Trend- vs. Difference Stationary Series
     - Unit Root Non-Stationarity Tests
     - ARIMA Models
     - Time Series Decomposition Methods

2. **Multivariate Time Series Analysis**
    - Approaches to Macroeconometric Identification
    - VAR Models
        - Stationary Conditions and Properties
        - Model Selection and Estimation
        - Innovation Accounting and Granger Causality
        - SVAR Models
    - VEC Models
        - Cointegration and Error Correction
        - Short-run and Long-run Dynamics
        - Estimation
        - SVEC Models
    - ARDL Models
3. **Non-linear Time Series Models**
    - Structural Change
    - Non-Linearity in Econometric Models
    - STAR Models
4. **Financial Time Series Analysis**
    - Modeling Heteroskedasticity
    - ARCH and GARCH Models
5. **State-Space Models**
    - Specification
    - The Kalman filter and the Likelihood Function
    - Filtering and Smoothing
    - Estimation of Linear State-Space Models
    - TVP and MS Models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