This course builds on the econometrics courses (either Economics 212 and 213, or 310, or 411 and 412) and supplement work in macroeconomic theory courses (Economics 309, 419, and 429). Nevertheless, some students may not have taken Economics 309, 346, 347, 419 and 429. Thus, these courses are not prerequisites for this course. Either Economics 212 and 213, or 310, or 411 and 412 is highly recommended. In fact, if you do not have one of the econometrics sequences, you are well-advised not to register for this course. The graduate assistant for this course is Maneechit Pattanapanchai. She will assist you in learning the necessary software to perform the homework assignments. The book in the Coop uses RATS, but you can also use SHAZAM and E-VIEWS to complete the homework assignments.

Course Grading Procedure:

Your grade will be based on homework assignments (20 percent), a mid-term exam (40 percent), and a final exam (40 percent). I encourage you to form study groups. The study groups can consult on the homework assignments. In fact, I do encourage you to work on your homework in your study groups. When you prepare your homework assignments, however, it should be in your own words. Also, please list the names of the other members of your study group on the front page of your homework assignment.

Textbooks: (All textbooks are available in the UConn Coop)


Homework Assignments:

I expect you to work through RHETS on your own (in study groups). You may hand in your homework assignments as you complete them. The due dates for homework assignments are listed in the course outline.

Course Outline and Bibliography:

I. Introduction and Background

A. Time Series Models

B. Difference Equations

1. Solution Techniques

Readings:

1. AETS, Chapter 1.

Homework (Due Wednesday, February 4):

1. RHETS, Chapter 1, Additional Exercises 1, 2, and 3.

II. Univariate Time Series Models: Box-Jenkins Analysis

A. Stochastic Difference Equations

B. ARIMA Models
1. Autocorrelation Function

2. Partial Autocorrelation Function

C. Box-Jenkins Model Selection

Readings:

1. AETS, Chapter 2.

Homework (Due Wednesday, February 25):

1. RHETS, Chapter 2, Additional Exercises 1, 2, 3, 4, and 5.

III. Volatility and Trends in Time Series

A. Stylized Facts

B. Modeling Volatility in Time Series

1. ARCH
2. GARCH
3. ARCH-M

C. Decomposing Time Series into Trends and Cycles

1. Deterministic Trend Decomposition
2. Stochastic Trend Decomposition

D. Detrending Time Series

Readings:

1. AETS, Chapter 3.

Homework (Due Wednesday, March 25):

1. RHETS, Chapter 3, Additional Exercises 1 and 2.
IV. Testing for Trends and Unit Roots

A. What is a Unit Root?
   1. Spurious Regression Problem

B. Tests for a Unit Root
   1. Dickey-Fuller Test
   2. Augmented Dickey-Fuller Test
   3. Philips-Perron Tests
   4. Structural Change and Unit Root Tests

C. Problems with Unit Root Tests
   1. Power of Tests
   2. Choice of Deterministic Regressors

D. Unit Roots in Panel Data

Readings:
1. AETS, Chapter 4.

Homework (Due Wednesday, April 8):
1. RHETS, Chapter 4, Additional Exercises 1, 2, and 3.

V. Multivariate Time-Series Models

A. Intervention Analysis

B. Transfer Function Models

C. Vector Autoregression (VAR) Analysis
   1. Estimation
2. Impulse Response Function
3. Variance Decomposition
4. Granger Causality

D. Structural VARs
1. Structural Decomposition

E. Bayesian Vector Autoregression (BVAR) Models

Readings:
1. AETS, Chapter 5.

Homework (Due Wednesday, April 22):
1. RHETS, Chapter 5, Additional Exercises 1.

VI. Cointegration and Error-Correction Models

A. Cointegration
1. Solution to Spurious Regression Problem
2. Common Trends

B. Cointegration and Error-Correction
1. Granger Representation Theorem

C. Testing for Cointegration
1. Engle-Granger Method
2. Johansen Method

Readings:
1. AETS, Chapter 6.

Homework (Due Wednesday, May 6):
1. RHETS, Chapter 6, Additional Exercises 1 and 2.