TIME SERIES ANALYSIS
ICPSR Summer Program
June 23-July 18, 2014
Lecture: 1:00-3:00pm, M-F

INSTRUCTORS:
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TEACHING ASSISTANTS:
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TR, 10:00am-12:00pm; Sunday,
2:00-5:00pm

COURSE DESCRIPTION:
This course is an introduction to methods of time series analysis. Students are assumed to
understand basics of statistical inference, regression analysis, and scalar and matrix algebra.
Some topics that will be covered include ARIMA models, intervention analysis, regression
analysis of time series, cointegration, error correction models, vector autoregression, pooled time
series, and time varying parameter models.

COURSE REQUIREMENTS:
Each student is expected to attend all class meetings and to have completed all required readings
prior to each class. The course grade will be based on four homework assignments throughout
the semester. We will be using STATA, which is available in the Newberry computer lab. We
will also provide instructions for doing the assignments in R. We will provide time series
datasets that you can use for the assignments on the shared drive.

We will use a straightforward grading scale for the assignments:
4 – Excellent
3 – Good
2 – Fair
1 – Unsatisfactory

REQUIRED TEXTS (Available at Ulrich’s Bookstore):
Assigned articles (marked with *) will be available on the Mitchell directory on the shared drive.
OTHER USEFUL TEXTS:


**CLASS SCHEDULE:**

**June 24**

Introduction: History, Approaches, Features of Time Series,

Prof. Linn

Basic Arithmetic of Time Series

**Required Reading**

Enders, Chapter 1, sections 1-6 and 9

**Recommended Reading**


**June 25-26**

ARIMA Models and Difference Equations, Box-Jenkins Analysis

Prof. Linn

Receive Assignment #1 (due July 1)

**Required Reading**

Enders, Chapter 2, through section 2.10


**Recommended Reading**


Granger and Newbold (1986), Chapter 3 & 5.


McCleary and Hay (1980).

McDowall et al (1980), pages 1-54


**June 27 & June 30**  Nonstationarity, Unit Root Tests, Near and Fractional Integration

**Prof. Linn**  Receive Assignment #2 (due July 3)

**Required Reading**

Enders, Chapter 4


**Recommended Reading**


**July 1-2**  Regression Models: Stationary Time Series

**Prof. Linn**

**Required Reading**


**Recommended Reading—Serial Correlation**


Recommended Reading—Dynamic Regression for Stationary Time Series


Granger and Newbold (1986), Chapter 5.


July 3

Regression and Nonstationary Data: Spurious Regression and Cointegration

Required Reading

Enders, Chapter 6


Recommended Reading—Theory and Texts.


**Recommended Reading—Applications.**


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**July 4**

No Class

**July 7**

Panel Unit Root/Cointegration Tests

Prof. Mitchell

Receive Assignment #3 (due July 14)

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**Required Reading**


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**July 8**

Interrupted Time Series Analysis

Prof. Mitchell

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**Required Reading**

Enders, Chapter 5, pages 272-294


Recommended Reading


**July 9-10**

Vector Autoregression (VAR) and Granger Causality

Prof. Mitchell

Required Reading
Enders, Chapter 5 (pages 297-329)
Brandt and Williams, Chapters 1-2


Recommended Reading
Cromwell et al. (1994), pages 32-67
Granger (1991), Chapters 8, 10 (Sims, Todd)
Hendry (1995)
Mills (1990), pp. 281-305

July 11 VAR Applications
Prof. Mitchell

Required Reading
Brandt and Williams, Chapter 3


**Recommended Reading**


**July 14**

**Prof. Mitchell**

Receive Assignment #4 (due July 17)

**Required Reading**

Enders, Chapter 3


Recommended Reading
Harvey (1989, 1993)

July 15
Time Varying Parameter Models

Prof. Mitchell

Required Reading

Recommended Reading


**July 16-17**

**Pooled Time Series Models**

**Prof. Mitchell**

**Required Reading**


**Recommended Reading**

Special Issue of *Political Analysis*, “From Statistical Nuisances to Serious Modeling: Changing How We Think About the Analysis of Time-Series-Cross-Section Data.” 2007, Volume 15, Number 2.


**July 18**

Modeling Dynamics in Event Count Data & Temporal Aggregation

**Prof. Mitchell**

**Required Reading**


