INSTRUCTOR:
Sara McLaughlin Mitchell
307 SH
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Email: sara-mitchell@uiowa.edu
Personal website: www.saramitchell.org
Course website: http://icon.uiowa.edu
Office Hours: Monday 10:30am-12:00pm, Thursday, 1:00-2:30pm, or by appointment

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.
1) Homework Assignments (30%)
   You will complete four homework assignments throughout the semester using STATA 12.0. You can also do most of the assignments in STATA 11.0.
2) Final Exam (30%)
   The final exam will be administered during finals week on Tuesday, December 13th from 12:00-2:00pm in 177 SH. The exam will be comprehensive and includes multiple choice, short answer, and essay questions.
3) Poster (30%): December 9th, 1:30-3:30pm in 302 SH hall
   Choose a research question in your area of interest that involves some type of time series data. You will present your research in poster format at the end of the semester. The poster should identify your research question, identify one or more hypotheses to be tested (along with a causal story linking your variables), describe your research design, and present your empirical results. You expect the following empirical components in your poster: a) descriptive analysis of your data (plotting the data, ACF, PACF, ARIMA models, tests for stationarity, etc.) and b) some type of multivariate time series analysis (regression, ECM, VAR, ARFIMA, etc.). The poster will be judged both for its substantive content and its aesthetic qualities. You must submit a copy of your poster materials to the instructor by 5pm on Monday, December 5th. More detailed instructions will be distributed later this semester.
4) Applications (10%)
   Early in the semester, each student will sign up to discuss 3 articles that utilize the time series methods we are learning in class. For each application paper, the student will type a 2-3 page paper summarizing the method, describing how it is applied, and discussing any potential problems with the particular application of the method.
REQUIRED TEXTS (Order Online):
Assigned articles (marked with *) will be available on ICON.

OTHER USEFUL TEXTS:


**CLASS SCHEDULE:**

**August 23**

Introduction to Time Series & Graphing/Summarizing Time Series


**Recommended Reading**


**August 30**

No Class, APSA Conference

**September 6**

Stationarity and Normality, Introduction to ARIMA

*Enders, Chapter 2, pp. 49-78*

*Enders, Chapter 4, pp. 181-215*


**Recommended Reading**

Davidson and MacKinnon (1993), Chapter 10


Granger and Newbold (1986), Chapter 1

Hamilton (1994), Chapters 1-2


**September 13**

Autoregressive Integrated Moving Average (ARIMA) Models

*Enders, Chapter 2, pp. 79-103*

*Brandt and Williams, Chapter 1*

Recommended Reading
Granger and Newbold (1986), Chapter 5
Hamilton (1994), Chapter 3
McCleary and Hay (1980)
Mills (1990), Chapter 7, 8, 10
McDowall et al (1980), pages 1-54
Governmental Expenditures, Tax Revenues, and Global Wars.” American Political

September 20  
Panel Unit Root Tests and Near/Fractional Integration

Required Reading
Enders, Chapter 4, pp. 215-247
*Box-Steffensmeier, Janet M. and Renee M. Smith. 1998. “Investigating Political Dynamics
Using Fractional Integration Methods.” American Journal of Political Science 42(2):
661-689.

Recommended Reading
Lebo, Matthew J., Robert W. Walker and Harold D. Clarke. 2000. “You Must Remember This:
Levin, Andrew, Chien-Fu Lin, Chia-Shang James Chu. 2002. “Unit Root Tests in Panel Data:
Biometrika 75(2): 335-346.

September 27  
Intervention/Transfer Function Analysis

Required Reading
*Box, G.E.P. and G.C. Tiao. 1975. “Intervention Analysis with Applications to Economic and
Enders, Chapter 5, pages 272-294

Recommended Reading

**October 4**

Interrupted Time Series Analysis & Distributed Lag/OLS Models

Required Reading

Recommended Reading


**October 11**  
Cointegration and Error Correction Models, Part I  
Required Reading  
Enders, Chapter 6  
Recommended Reading  
Granger (1990)  

**October 18**  
Cointegration and Error Correction Models, Part II  
Required Reading  
Recommended Reading  


**October 25**

**Vector Autoregression (VAR) and Granger Causality**

**Required Reading**

Enders, Chapter 5 (pages 297-329)

Brandt and Williams, Chapter 2


**Recommended Reading**


Granger (1991), Chapters 8, 10 (Sims, Todd)

Hendry (1995)


Mills (1990), pp. 281-305


**November 1**

**VAR Applications**

**Required Reading**

Brandt and Williams, Chapter 3


**Recommended Reading**


November 8  ARCH Models

Required Reading
Enders, Chapter 3


Recommended Reading


Harvey (1989, 1993)


November 15  Dynamic Approaches to Time Series Modeling and Time Varying Parameters

Required Reading
Enders, Chapter 2, pp. 103-110.

Recommended Reading

November 22  No Class, Thanksgiving Break

November 29  Pooled Time Series Models

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.
Beck, Nathaniel and Jonathan N. Katz. 1996. “Nuisance vs. Substance: Specifying and

**December 6**  
Modeling Dynamics in Event Count Data & Temporal Aggregation

*Required Reading*

Teaching Policies & Procedures

Administrative Home
The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Student Academic Handbook.

Electronic Communication
University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences. (Operations Manual, III.15.2. Scroll down to k.11.)

Accommodations for Disabilities
A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements. See www.uiowa.edu/~sds/ for more information.

Academic Honesty
The College of Liberal Arts and Sciences expects all students to do their own work, as stated in the CLAS Code of Academic Honesty. Instructors fail any assignment that shows evidence of plagiarism or other forms of cheating, also reporting the student's name to the College. A student reported to the College for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

CLAS Final Examination Policies
Final exams may be offered only during finals week. No exams of any kind are allowed during the last week of classes. Students should not ask their instructor to reschedule a final exam since the College does not permit rescheduling of a final exam once the semester has begun. Questions should be addressed to the Associate Dean for Undergraduate Programs and Curriculum.

Making a Suggestion or a Complaint
Students with a suggestion or complaint should first visit the instructor, then the course supervisor, and then the departmental DEO. Complaints must be made within six months of the incident. See the CLAS Student Academic Handbook.

Understanding Sexual Harassment
Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather
In severe weather, class members should seek appropriate shelter immediately, leaving the
classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Public Safety [web site](http://).  

**Student Resources:** The Writing Center [www.uiowa.edu/~writingc/](http://wwwuiowaeu/~writingc/) and the Campus Information Center’s Tutor Referral Services [http://imu.uiowa.edu/cic/](http://imuuiowaeu/cic/) at the IMU. 

*These CLAS policy and procedural statements have been summarized from the web pages of the [College of Liberal Arts and Sciences](http://) and The University of Iowa *Operations Manual*. 