STAT 497 (3-2) 4
COURSE OUTLINE
Spring, 2011

APPLIED TIME SERIES ANALYSIS

INSTRUCTOR: Ceylan YOZGATLIGİL, Ph.D.

Office: Dept. of Statistic Room 136
Phone: 210 2963
Email: ceylan@metu.edu.tr
Webpage: http://www.metu.edu.tr/~ceylan/STAT%20497.htm

TEACHING ASSITANT: Sipan Aslan

Office: Dept. of Statistic Room 236
Phone: 210 5315
Email: aslan.sipan@gmail.com

COURSE SCHEDULE

Wednesday	9:40 – 12:30 (Department of Statistics; Z-22)
Friday (R)	10:40 - 12:30 (Department of Statistics; Z-22 / Computer Lab)

OFFICE HOURS

By appointment

OBJECTIVES

The course intends to meet two goals. It provides tools for empirical work with time series data and is an introduction into the theoretical foundation of time series models. Much of statistical methodology is concerned with models in which the observations are assumed to be independent. However, many data sets occur in the form of time series where observations are dependent. In this course, we will concentrate on both univariate and multivariate time series analysis, with a balance between theory and applications. Students expected to prepare a project report on real life data. After completing this course, a student will be able to analyze univariate and multivariate time series data using available software as well as pursue research in this area. In order to emphasize application of theory to real (or simulated) data, we will use R or SAS.

PREREQUISITE

STAT 272

TOPICS

1. Fundamental Concepts
2. Properties of autocovariance and autocorrelation of time series
3. Stationary and nonstationary time series models
4. Time series modeling (identification, parameter estimation, and model selection)
5. Seasonal time series models
6. Time series forecasting
7. Testing for a unit root
8. Diagnostic Checking
9. VAR models, Granger Causality
10. Cointegration

TEXT

- Cryer, D. C. and Chan, K (2008). *Time Series Analysis with Application in R*, 2nd Edition, Springer. (Library call no: QA280 .C78 - ML Reserve Collection(C) 3 Day Loan)

REFERENCES

- Cryer, J.D. (1986) *Time Series Analysis*, PWS-Kent Publishing Company, Boston.
- Wei, William W.S. (2006) *Time Series Analysis, Univariate and Multivariate Methods, Second Edition*, Addison-Wesley.
- Box, G.E.P., Jenkins, G.M. & Reinsel, G.C. (2008) *Time Series Analysis: Forecasting and Control*, Hoboken, N.J. : J.Wiley.
- Montgomery, D., Jennings, C.L. and Kulahci, M. (2008) *Introduction to Time Series Analysis and Forecasting*, Hoboken, N.J. : Wiley-Interscience.
- Chatfield, C. (2004) *The Analysis of Time Series*, Sixth Edition Chapman & Hall/CRC,
- Pena, D, Tiao, G.C. and Tsay, R.S. (2001) *A Course in Time Series Analysis*, Wiley Interscience.
- Yaffee, Robert A. (2000) *Introduction to Time Series Analysis and Forecasting with Applications of SAS and SPSS*, San Diego, Academic Press.
- Akdi, Y. (2003) *Zaman Serileri Analizi, Birim Kökler ve Kointegrasyon*, Bıçaklar Kitabevi, Ankara.
- Tsay, R.S.(2002) *Analysis of Financial Time Series*, Wiley Interscience.
- Shumway, R.H. and Stoffer, D.S. (2000) *Time Series Analysis and Its Applications*, New York: Springer.

ATTENDANCE

Mandatory, though I will not take roll. You are responsible for everything we do in class, even on days you do not attend.

GRADING

Midterm exam 1 (20%) (April 22nd, 2010 – Friday at 5:40 p.m.?)
Midterm exam 2 (20%) (May 20th, 2010 – Friday at 5:40 p.m.?)
Homework & Quiz (10%)
Project (25%)
Final (25%)

MAKE-UP WORK

Make-up exams will only be given in **very unusual circumstances**, with one week prior notification (or, in the event of an emergency, ***very* strong documentation** of that emergency). If you have this kind situation and don't **contact with me one week before or after the exam**, you **cannot** take the make-up exam. Make-up exam will be given at the **end of the semester** and it will be **similar to the final exam** (cover all the topics).

LATE HOMEWORKS

Homework is collected in the recitation hours. Your homework will not be graded, if you bring it after the recitation hour.

ACADEMIC INTEGRITY

All assignments, quizzes, and exams must be done on your own. Note that academic dishonesty includes not only cheating, fabrication, and plagiarism, but also includes helping other students commit acts of academic dishonesty by allowing them to obtain copies of your work. You are allowed to use the Web for reference purposes, but you may not copy code from any website or any other source. In short, all submitted work must be your own. Should a student be caught cheating during an examination or be involved in plagiarism, a zero (0) will be assigned for the exam, quiz or writing assignment.

Please look at the following page for further information:
http://www.ueam.metu.edu.tr/TURKCE/ueam/ueam_ilkeler/ueam_ilkeler_honor_code_tab.htm

IMPORTANT DATES:

Week of the ADD-DROP for the classes: February 28 –March 4, 2011
Last date for the WITHDRAWAL: April 29, 2011
National Holiday: May 19, 2011 (Thursday)
End of lectures: May 27, 2011
Final exams: May 30- June 11, 2011