STANFORD UNIVERSITY
STATISTICS DEPARTMENT

Statistics 207 Introduction to Times Series Analysis
Summer 2001

Lecture: MTWTh 1:15-2:05, Sequoia Hall 200

Instructor: Prof. Eric A. Suess
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Office Hours: TBA

Required Text:

- Shumway and Stoffer: Time Series Analysis and Its Applications, Springer-Verlag, 2000

Recommended Text:

- Krause and Olson: The Basics of S and S-Plus, Second Edition, Springer-Verlag, 2000

Topics:

In this course we will cover the fundamentals of Statistical Time Series analysis, the study of correlated random variables over time. Descriptive methods will be introduced to describe trends, seasonal patters, and autocorrelation in time series data. Time Domain Methods of analysis such as Autoregression and ARIMA modeling will be presented. Frequency Domain Methods will also be covered. The class will be roughly split between the discussion of theory and computer applications of the methods to real data. Examples will come from such fields as Economics, Biology, Medicine, Seismology, and Engineering.

Homework:

Weekly homework assignments will be assigned and collected on Mondays. The assignments will include problems from the textbook and will require the use of computer software.

Computers:

The Windows software, ASTSA, will be introduced and used for some of the introductory homework assignments. Splus will also be introduced and used to perform the statistical analyses in the homework.

References:

- Box, Jenkins, and Reinsel: Time Series Analysis, Forecasting and Control, Third Edition, Wiley, 1994
- Brockwell and Davis: Time Series: Introduction to Time Series and Forecasting, Springer-Verlag, 1996
- Chatfield: The Analysis of Time Series, An Introduction, Fifth Edition, Chapman-Hall, 1996
- Diggle: Time Series, A Biostatistical Introduction, Oxford Science Publications, 1996
- Spector: An Introduction to S and S-Plus, Duxbury, 1994
- Venerables and Ripley: Modern Applied Statistics with S-Plus, Third Edition, Springer-Verlag, 1999

Grading:

Homework 60%, Midterm 20%, Final 20%