Statistics 701 Applied Time Series Analysis
Spring 2007

Instructor: Jun Zhu

URL: `www.stat.wisc.edu/courses/st701-jzhu/`

E-mail: `jzhu@stat.wisc.edu`

Phone: 263-3615, or 262-1009 (secretary)

Office Hours: TBA

Course Objective: The course is directed towards graduate students in statistics who are interested in learning statistics for analyzing time series data. The focus of the course is on the statistical methods and some of the underlying theory. The course is also suitable for students with strong quantitative skills in other disciplines such as economics, engineering, and mathematics.

Tentative Topics: General nature of time series; fundamental concepts of time series; linear models for stationary and nonstationary time series; identification and estimation of ARIMA models; forecasting theory and techniques; models for seasonal time series; spectral analysis of stationary time series; regression models and linear dynamic systems; further special topics.

Assignments: There will be about one homework assignment every two weeks. Homework assignments should be well organized and reasonably neat. It is required that you show your work in order to receive credit. Late homework assignments will be penalized unless extenuating circumstances exist. If possible, prior arrangements should be made in such cases.

Exams: There will be one midterm exam/project and one final exam/project. The exact format of the midterm and final exams/projects will be announced at a later time.

Grading: The course will be for 3 credits, graded on an A-F scale. The homework assignments will count 30%, the midterm exam/project will count 30%, and the final exam/project will count 40%.

Prerequisites: To take the course, students must have completed one of the following:

- Stat 310 or equivalent; or consent of Instructor.

Required Text:

- Box, Jenkins, and Reinsel, *Time Series Analysis: Forecasting and Control* (3rd Edition), Prentice-Hall, 1994.

Reference Texts:

- Brockwell and Davis, *Time Series: Theory and Methods*, Springer-Verlag, 1991.
- Brockwell and Davis, *Introduction to Time Series and Forecasting*, 2nd edition, Springer-Verlag, 2002.
- Fuller, *Introduction to Statistical Time Series*, 2nd edition, Wiley, 1998.
- Priesley, *Spectral Analysis and Time Series*, Academic Press, 1981.