Applied Time Series Analysis
Rutgers Business School 26:711:685 · Spring 2011

Instructor: Xiaodong Lin Email: linxd@rci.rutgers.edu Office 1053A
Lecture: Tuesday 2-4:50, 1WP-118. Office hour: Tuesday 12:20-1:50 or by appointment.

Objectives
This course covers applied statistical methodologies pertaining to time series, with an emphasis on model building and accurate prediction. Completion of this course will provide students with enough insights and modeling tools to analyze time series data in the business world. Students are expected to have basic working knowledge of probability and statistics including linear regression, estimation and testing from the applied perspective. We will use R throughout the course so prior knowledge of it is welcome, but not required. The course is designed for Ph.D. students in all departments of the Rutgers Business School.

Recommended textbook:

Time Series Analysis and Its Applications: With R examples, by Robert Shumway and David Stoffer. A free version of this book will be posted on blackboard.

Analysis of Financial Time Series, by Ruey S. Tsay

Lecture notes will also be provided.

Exams:
There will be two exams. Both exams will be closed book and in-class. If you have a conflict for the exam, notify me at least one week ahead.

Homework:
Due Tuesday in class. Late homework is NOT accepted.
The lowest homework will be dropped.
Credit for homework is given based on HOW the problems are solved instead of a numerical answer.
**Attendance:**

Attendance to each class meeting is required. Students are responsible for all announcements and supplements given within each lecture and/or via course email/blackboard.

**Course Materials:**

Lecture notes, homework assignments, supplemental materials and announcements will be posted on blackboard.

**Grading:**

Homework 20%
Exam one 30%
Exam two 50%

**Tentative Course Outline:**

- Chapters 1 and 2 (Shumway and Stoffer) (4 weeks)
- Chapter 3 (Shumway and Stoffer) (4 weeks)
- Chapter 4 (Shumway and Stoffer) (3 weeks)
- Chapter 5 (Shumway and Stoffer) (2 weeks)
- Plus supplement topics throughout the course.

**Learning Outcomes**

A student graduating this course will gain knowledge in the following topics:

1. The ability to approach and analyze any discrete time signal from a time series perspective.
2. The ability to differentiate between various time series models.
3. The ability to perform cross-validation of the model developed.
4. The ability to forecast future observations of the time series.
5. A running knowledge of R for applied time series analysis.