

Syllabus

STA 6857: Applied Time Series Analysis

Fall Semester, 2007

Instructor: Arthur Berg

The best way to reach me outside of class is by email. I will always be available right after class and during office hours should you wish to speak with me in person.

- **Email:** berg@ufl.edu

Please include "STA 6857" in the subject line.

- **Office:** 408 McCarty Hall C

Office hours are Mondays 5:00–6:00pm and Wednesdays 2:00–3:00pm

Class Info

- Section #6084, MWF, 12:50–1:40 pm (period 6), FLO 230

Class Webpage

- <http://www.stat.ufl.edu/~berg/sta6857>

You can access the homework assignments, lecture notes, datasets, and other relevant course material from the course website.

Textbook

Time Series Analysis and Its Applications: With R Examples, 2nd edition (2006), by Shumway and Stoffer.

References

- *Time Series Analysis: Univariate and Multivariate Methods*, William Wei, 2nd edition (2006), Pearson/Addison Wesley.
- *The Analysis of Time Series: An Introduction*, Chris Chatfield, 6th edition (2003), Chapman & Hall / CRC.
- *Time Series: Theory and Methods*, Brockwell and Davis, 2nd edition (1991), Springer.
- *Time Series Analysis*, James Hamilton, (1994), Princeton University Press.

Prerequisites

STA 4322 (an introductory statistics course) and a basic computer language are the prerequisites.

Topics Covered

We will (try to) go over most of the textbook. This includes the following topics:

- Characteristics of Time Series
- Time Series Regression and Exploratory Data Analysis
- ARIMA Models
- Spectral Analysis and Filtering
- Additional Time Domain Topics
- State-Space Models
- Methods in the Frequency Domain

Software

We will be using the free, yet powerful, statistics software package R. R will be used in the homework and in the lectures, and you will be tested on R's commands and output at the end of the class.

Grading Policy

Course averages of at least 90%, 80%, and 70% will guarantee the passing grades of A, B, and C, respectively. Course averages below 70% are candidates for the failing grades of D and E. If your course average starts to fall into an undesirable (or catastrophic) category, it is your responsibility to counsel with me about what your options are, and what you might realistically be able to get.

Midterm	35%	A	90%—100%	C	70%—75%
Homework	35%	B+	85%—90%	D	60%—70%
Final Project	20%	B	80%—85%	E	<60%
R Test	10%	C+	75%—80%		

Assignments

Reading Textbook reading should be kept up with the lectures. The lectures will closely follow the reading material and you will undoubtedly do much better in the class having kept up with the reading.

Homework Homework will be assigned and collected periodically. Homework must be turned in at the beginning of the lecture on the due date. Late homework will not be accepted. All work must be entirely your own.

Midterm The midterm will be on the material from the first four chapters of the textbook. You should review the lectures, homework and textbook readings for preparation of the midterm.

Final Project The final project will be a topic of your choice. I will happily suggest a topic should you wish. You will be required to submit a typed report as well as give a 12 minute presentation during the class. The written portion should describe the project, introduce the statistical methodology, present results, and provide discussions. The presentation should be a vibrant powerpoint-type presentation with at most a few words on each slide. Everyone should meet with me at least once before the presentation.

R Test The R test is a paper exam during the scheduled final exam period that will examine your understanding of R's commands and output relevant to the course. R will be frequently referred to in the lectures, textbook and homework, and the R test questions will be derived from these sources. The exam should take at most one hour to finish, but you will be allowed to use the entire two hour time slot.

Changes to the Syllabus

I reserve the right to change the syllabus as circumstances necessitate, but no new policy will be enforceable until after you have been notified in class.