STA 4853
Time Series and Forecasting Methods
Spring 2020

Lectures: Monday and Wednesday 3:35PM–4:50PM in Room HCB 214.

Instructor:
Fred W. Huffer
Room 306C Love Building (go through Room 306A to find 306C)
Office hours: Monday and Wednesday 2:15PM–3:15PM and 5:00PM–5:30PM
(or by appointment)
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(Put "STA 4853" somewhere in the subject line of all messages to me.)

Teaching Assistant:
Yue Mu
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Office hour: Thursday 3:30PM–4:30PM
in Room 303 Love Building

Text: None

Course Objectives:
This course discusses time series models including autoregressive models, moving-average models, general ARIMA models, dynamic regression models, and (time permitting) ARCH/GARCH models, and spectral analysis. These models have been widely applied to data in many fields. You will learn how to build time series models and how to apply the models to real world problems.

This course will use SAS as the computing environment, but no prior experience with SAS is assumed. We will use SAS Studio, which is available over the web via any browser. But if you have convenient access to SAS in some other way, you are free to use it. A class enrollment link will be e-mailed to you soon.

Prerequisites:
STA2122 or STA2171 or QMB 3200 (or equivalent or more advanced coursework). Some general knowledge of computer use. Familiarity with the basic ideas of statistics and probability including sample mean, sample standard deviation, expected value, variance, the normal distribution, and independence. Some prior exposure to covariance, correlation, and simple and multiple regression is useful, but not mandatory (since these topics will be discussed in lecture).

Topics:
- Covariance, Correlation, Independence
- Regression
- ARIMA models
- Model identification
- Model checking
- Estimation and forecasting
- Regression models with ARMA errors and lagged inputs
- Rational distributed lag models
- Intervention analysis
- Intervention and outlier Detection
- ARCH/GARCH models (time permitting)
- Spectral analysis (time permitting)

Grading Policy:

There will be two in-class tests (a mid-term and a final) which are equally weighted in determining your test average.

There will be several homework assignments which are equally weighted in determining your homework average. It is important to turn in all of the homework assignments (since there are not that many).

Your course total will be computed using the weights:
- 50% Test average
- 50% Homework average

Your course total will be used to determine your letter grade.

The grade cutoffs will be 90.0% for A, 87.0% for A–, 84.0% for B+, 80.0% for B, 77.0% for B–, 74.0% for C+, 70.0% for C, 67.0% for C–, 57.0% for D. These may be subject to **downward** adjustment.

The final exam is **not** cumulative, but only covers the second half of the course. Tests will **not** require writing SAS programs or commands, but may require interpretation of SAS output, and understanding of the SAS syntax for specifying ARIMA and transfer function models.

Test Dates (tentative):
Test #1 on Wednesday, March 4 from 3:35PM to 4:50PM (in HCB 214)
Test #2 on Wednesday, April 29 from 12:30PM to 2:30PM (in HCB 214)

Web Page:
Handouts, homeworks, and examples will be posted at:
http://ani.stat.fsu.edu/~huffer/mordor/timeseries

This address must be typed completely; you cannot get there by clicking on a series of links. The posted files are pdf files and require Acrobat Reader to read and print them.

University Attendance Policy:

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy:

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and...[to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at http://fda.fsu.edu/academic-resources/academic-integrity-and-grievances/academic-honor-policy.)

Americans With Disabilities Act:

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type.

Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Student Disability Resource Center has been provided.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center
874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
http://www.disabilitycenter.fsu.edu/