STA 4853
Time Series and Forecasting Methods
Spring 2021

Instructor: Fred W. Huffer
  e-mail address: `huffer@stat.fsu.edu`
  (Put "STA 4853" somewhere in the subject line of all messages to me.)

Lectures: Monday and Wednesday 3:05PM–4:20PM via Zoom
  (The Zoom link for lectures is posted in the Canvas Announcements for this course.)

Office hours: Monday and Wednesday 4:30PM–5:30PM via Zoom
               (or by appointment)
  (The Zoom link for the Instructor's office hours is posted in the Canvas Announcements for this course.)

Teaching Assistant:
  Yue Mu
  e-mail address: `ym18e@my.fsu.edu`
  Office hour: Tuesday 3:00pm–4:00pm
  (The Zoom link for the TA's office hours is posted in the Canvas Announcements for this course.)

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 initial grade cutoffs are 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 are subject to **downward** adjustment if necessary to obtain a reasonable distribution of grades.

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. Tests might require HonorLock (to be decided).

Test Dates (tentative):
Test #1 on Monday, March 1 from 3:05PM to 4:20PM
Test #2 on Thursday, April 22 from 3:00PM to 5:00PM

Web Page:
Handouts, homeworks, and examples will be posted at:
`http://ani.stat.fsu.edu/~huffer/mordor/timeseries`
Some material may also be posted on Canvas.

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 written 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/Academics/Academic-Honor-Policy

Academic Success

Your academic success is a top priority for Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups, such as veterans and students with disabilities. The following information is not exhaustive, so please check with your advisor or the Dean of Students office to learn more.

Americans With Disabilities Act
Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Office of Accessibility Services; and (2) request a letter from the Office of Accessibility Services to be sent to the instructor indicating the need for accommodation and what type; and (3) meet (in person, via phone, email, skype, zoom, etc...) with each instructor to whom a letter of accommodation was sent to review approved accommodations. This syllabus and other class materials are available in alternative format upon request. For the latest version of this statement and more information about services available to FSU students with disabilities, contact the:
Office of Accessibility Services
874 Traditions Way
108 Student Services Building
Florida State University Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
oas@fsu.edu
https://dsst.fsu.edu/oas

Confidential campus resources
Various centers and programs are available to assist students with navigating stressors that might impact academic success. These include the following:

Victim Advocate Program University Center A, Room 4100, (850) 644-7161, Available 24/7/365, Office Hours: M-F 8-5 https://dsst.fsu.edu/vap	University Counseling Center, Askew Student Life Center, 2ndFloor, 942 Learning Way (850) 644-8255 https://counseling.fsu.edu/	University Health Services Health and Wellness Center, (850) 644-6230 https://uhs.fsu.edu/