

Stat 5550: Time Series Analysis

Course Syllabus, Spring 2019

Lectures: Monday, Wednesday, Friday, 10:20–11:15am, University Hall 056

Instructor: Yuan Zhang

Office: 229 Cockins Hall

Office hours: Monday, 1–3pm (during period of instruction)

Email: yzhanghf@stat.osu.edu

Instructor: Dena Asta

Office: 317 Cockins Hall

Office hours: TBD (during period of instruction)

Email: dasta@stat.osu.edu or asta.1@osu.edu

Grader: Jiae Kim

Tutoring hours: [Monday 11:30–12:30, 5:20–6:20](#) and [Thursdays 9:10–10:10, 10:20–11:20](#); [Location: Cockins Hall 134](#)

Email: kim.3887@osu.edu

Course webpage: On Carmen: carmen.osu.edu.

Textbook: The course text is *Time Series Analysis and Its Applications, With R Examples*, by Robert H. Shumway and David S. Stoffer, Springer. The book is available for free at <http://www.stat.pitt.edu/stoffer/tsa4/>. We will use the EZ version of this book, which is mostly a subset of the full version.

Website: The course has a web page on Carmen. You will find the class schedule, homework assignments, solutions, and other course announcements on the web page. Please check it on a regular basis.

Course description: Stat 5550 introduces the statistical methodology and models required to analyze time series data in practice. The course emphasizes both modeling methodology (model identification, estimation and diagnostics) and the practical implementation of time series modeling using the statistical software R. Familiarity with introductory mathematical statistics and probability (random variables and their distributions, covariance and correlation, maximum likelihood estimation, confidence intervals, hypothesis tests, regression modeling) at the level of the prerequisites listed below is assumed. Topics covered include:

- Introduction to time series data
- Time series models and stationary processes
- Exploratory data analysis
- Methods for modeling trend and seasonality
- Estimating mean, autocovariance, and autocorrelation functions
- ARIMA models
- Forecasting and estimation
- Modeling nonstationary processes

Grading: Your course grade will be based on homework assignments, two midterms, one project, and a comprehensive final exam.

- Homework 15%
- Midterm 1: 20%, tentatively on Monday, February 18 in class
- Midterm 2: 20%, tentatively on Friday, March 22 in class
- Project: 15%
- Final Exam: 30%, on Thursday, April 25, 10:00am – 11:45am in class

Homework: Graded homework assignments will be assigned regularly during the semester. The assignments are to be turned in during class on the dates they are due. Students are allowed to consult with each other on the homework, but each student must hand in his or her own work. DO NOT copy any part of another students homework and DO NOT turn in solutions that you have taken from other sources.

Exams: No make-up exams will be given. The final exam will be cumulative, but will emphasize the more recent material. Exam rules will be announced in class.

Project: A course project will ask you to apply the data analysis techniques you learned from the course on a data set. Details will be announced by Dr. Asta

Ethics

All students are expected to adhere to the Ohio State University code of conduct:

trustees.osu.edu/rules/code-of-student-conduct/

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487).

You are encouraged to discuss the homework assignments with your classmates and both offer and receive advice. For quizzes, midterm exams and the final exam, you must work completely independently.

Special Accommodations

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; www.ods.ohio-state.edu/.