



## Stat 7550 (Spring 2018): Time Series Theory and Methods

### Lecturer

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Office hours in 205B Cockins Hall: Tues 12.30-1.30pm, Thu 2-3pm, or by appointment.

### Grader

Shuhan Tang

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### Lectures

Monday, Wednesdays and Fridays, 1.50–2.45am in [Dulles Hall 020](#)

Holidays: Martin Luther King, Jr. Day is January 15, Spring break is March 12–16.

Please download notes from the class website at <https://osu.instructure.com/courses/32268>

Lectures may not be recorded.

### Class Attendance Policy

You are expected to attend all lectures.

### Course Description

To provide a systematic advanced treatment of areas of current interest in the statistical theory and methods for the analysis of time series processes. Topics will include stationary processes, autocovariances and spectral analysis, linear time invariant filtering, autoregressive moving average (ARMA) processes, time series modeling and forecasting, Kalman filtering, and multivariate time series processes.

**Prerequisites:** Stat 6801-6802 and Stat 6950 and (Stat 6560 OR Stat 6860), or permission of instructor.

### Textbook

Brockwell and Davis, Time Series: Theory and Methods, Springer, 1991.

Available for download from <https://link.springer.com/book/10.1007%2F978-1-4419-0320-4>

I will highlight other useful references as the course progresses.

### Computing

This class requires you to use the statistical software package called R.

More details will be given in class and on the class web site.

### Evaluation

Homework	Project	Participation
45%	45%	10%

Grades will be recorded on [Carmen](#)

**Homework** will be due at the **beginning** of class on the day it is due. **No** late homework will be accepted. You are encouraged to work together on the homework, but **do not** copy any part of a homework. Each student must produce his/her own homework to be handed in. Electronic submissions are not permitted. Feel free to ask me for help after you have made an attempt of the questions. The grader for the course does not have the time to provide detailed explanations on each question that he/she grades. To make up for this, I will endeavor to make homework solutions detailed enough to allow you to understand how the question could be approached.

**Homework preparation rules:** Put your name and the homework assignment number on the top right-hand corner of every page. All homework must be submitted on 8.5”x11” paper. Staple the pages together. We are not responsible for lost pages. Submit the problems in order, making sure that the computer output and discussion is placed together (do not put the computer output at the end of homework). Raw computer output is not acceptable. Make it clear what parts of the output are relevant and show how they answer the questions posed in the homework.

**Group Project:** In **groups of two**, students will be responsible for producing a 25 minute lecture and a 10-15 page report on a topic in time series analysis. The lectures will be presented by all group members towards the end of semester. The report will be due by noon on Monday April 30 (exam week). Only one report is submitted per group, so you should each make the effort to equally contribute. Further details, including a list of possible topics, will be given as the semester progresses.

### **Academic misconduct**

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). For additional information, see the Code of Student Conduct (<http://studentaffairs.osu.edu/csc/>).

### **Disability Statement**

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; tel. 292-3307, TDD 292-0901; <http://www.ods.osu.edu/>.

### **Disclaimer**

**This syllabus should be taken as a fairly reliable guide for the course content. However, you cannot claim any rights from it and in particular I reserve the right to change due dates or the methods of assessment. Official announcements will ALWAYS be those made in class.**