

Instructor: Mark Greenwood

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Prerequisites: Stat 410/ 412

Recommended: Stat 420/424 and some background in Matrix algebra

Course Description: This course gives an introduction to time series analysis using time domain methods (ARIMA models, state space models) and frequency domain methods (spectral analysis). The goal is to acquire the theoretical and computational skills required to investigate data collected as a time series. The first half of the course concerns single time series; the second half addresses the relationships between multiple time series.

Required Text: Shumway, R. H. and Stoffer, D. S. (2006). *Time Series Analysis and Its Applications*. 2nd Edition, Springer-Verlag: New York.

Schedule: TTh 3:35-4:50, Wilson 2-105

Office Hours: TBA, by appointment or most any time that you find me in my office (but it is probably best to email me to make sure I will be around and don't have anything scheduled).

Course Evaluation:

There will be bi-weekly homeworks, a five-page midterm project analyzing a univariate time series of your choice, a midterm exam, a ten-page final project investigating the relationship between two or more time series of your choice and then a final exam.

Midterm Exam	20%
Final Project	15%
Final Exam	25%
Homework/Midterm Project	25%
Quizzes	10%
Self-Graded Component	5%

Grade cut-offs: >93% A; 90 to 92.9% A-; 87 to 89.9% B+; 83 to 86.9% B; 80 to 82.9% B-; 77 to 79.9% C+; 73 to 76.9% C; 70 to 72.9% C-; 67 to 69.9% D+; 60 to 66.9% D; <60% F

HW: We will have around 5 homework assignments and a midterm project that will be equally weighted to find your overall score on Homework. Late HW will be 10% off the total possible per day late (including weekends) and will only be accepted until the assignment is graded. Once grading is completed, no further homework will be accepted. Email submissions are ok, especially for late HW.

Quizzes: We will also have regular quizzes that will allow an opportunity to evaluate your understanding of the material as we are building to exams and homework assignments. The quizzes will be graded on a 5 point scale, 5 for perfection, 3 or 4 for a reasonable effort but with some errors, 1 or 2 for a very poor effort and 0 for not being in attendance for the quiz. The dates of the quizzes will not necessarily be announced in advance. Quizzes can be "made up" based on reasonable excuses if I am contacted in advance.

Exams: The first exam will take place outside of the regular class time around the middle of the semester, with the date announced at least two weeks prior. There will be some flexibility available for the exam time on the announced day, but assume that it will take place in the early evening. The final exam will be given during our scheduled exam time.

Self-Graded Component: You will also evaluate your own performance (preparation for class, participation in discussions, etc.) in the course. I reserve the right to modify this component of your grade.

Academic Dishonesty: It is expected that students will abide by university regulations regarding academic dishonesty. Instructions will be given on each type of activity regarding the use of outside resources and working together.

Group Work: You may work in small groups on some or all of the homework and project unless otherwise instructed. Please note the individual(s) that you have worked with if you are working together and make sure you understand everything that is turned in. Exams and quizzes will not be group work.

Computer package: Examples will be provided mainly using R and possibly using Minitab. You are free to use any package that can accurately produce the required results. You will be expected to provide edited computer output with your homework.

All aspects of the syllabus are subject to change. Any changes will be announced in class.

