INSTRUCTOR: Professor Wei Zhu
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OFFICE HOURS: Tuesday/Thursday 2:30-3:30PM
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Graduate TA: Kecheng Xu (Frank)
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Text:
Chapman & Hall/CRC.

This course will cover linear time series models, moving average (MA),
autoregressive (AR), ARMA and ARIMA models, estimation and forecasting, interval
predictions, and forecast errors.

Prerequisite: AMS311 (Probability theory) and AMS315 (Data analysis)
For your information, AMS311 covers probability spaces, random variables,
moment generating functions, algebra of expectations, conditional and marginal
distributions, multivariate distributions, order statistics, law of large numbers; and
AMS315 covers statistical analysis of data, exploratory data analysis, estimation,
parametric and nonparametric hypothesis tests, power, robust techniques, use and
interpretation of statistical computer packages, such as SPSS.

Homework:
Assignments will be given every Thursday and collected the following Thursday. (*However, it
is possible that sometimes homework are assigned and collected on different days.)

Tests & Grading:
Grading policy: homework (15%), two midterms (40%), final (45%)
1. There is homework every 1.5 week, and it is due in the first 30 minutes of
the lecture. Late homework is NOT accepted. Homework solutions will be
posted on the course website.
2. Two midterms will be on October 7 and November 13.

*** All exams will be close book exams with one 8x11 formula sheet (double-sided). ***
Tentative syllabus:
The following is a tentative agenda for homework, midterms, projects and presentation (the schedule is subject to change).

Week 1 Introduction, review of probability and statistics
Week 2 Chap2
Week 3 Chap2 and R introduction I
Week 4 Sec 3.1 - 3.3 (probability concepts)
Week 5 Sec 3.4.1 - 3.4.3 (MA models)
Week 6 Sec 3.4.3 - 3.4.4 (MA and AR models)
Week 7 Midterm 1; Sec 3.4.4 (AR model)
Week 8 Sec 3.4.4, Sec 3.4.5 (ARMA model)
Week 9 Sec 3.4.6 (ARIMA model)
Week 10 Sec 4.1 (Estimation of ACF), R introduction II
Week 11 Sec 4.2 (Estimation of AR)
Week 12 Midterm 2
Week 13 Sec 4.3 (Estimation of MA)
Week 14 Sec 4.4 (Box - Jenkins method), R introduction II
Week 15 Chap 5 (forecasting)
Week 16 review