Stat 519 – Time Series Analysis

Don Percival, Tour Guide
http://faculty.washington.edu/dbp/s519/

- office hours: Thursdays, 12:30PM to 3:30PM in C–310, Padelford Hall (just outside of Math Library)
- textbooks (all available online):
  - Brockwell & Davis (2016), *Introduction to Time Series and Forecasting* (Third Edition)
  - Cryer & Chan (2008), *Time Series Analysis: With Applications in R* (Second Edition)
  - Shumway & Stoffer (2017), *Time Series Analysis and Its Applications: With R Examples* (Fourth Edition)

Homework, Exam and Term Project

- seven homework assignments (40% of grade)
  - please check Web site for homework policy
- 50 minute in-class exam on 6 March (20% of grade)
  - closed-book, but 'crib sheet' allowed
- term project (40% of grade)
  - either data analysis, simulation study, methodological or theoretical study (or combination thereof)
  - short oral presentation on 19 March (or possibly on 11 and/or 13 March during last week of instruction)
  - written report (5 to 10 pages) due 20 March
- 'Overview' page on course Web site has details

Software

- you are encouraged to use `R` (but you don't have to)
  - any code I post will be in `R` (will post code for reproducing material on lecture overheads)
  - Cryer & Chan and Shumway & Stoffer books use `R`

Topics to Be Covered: I

- introduction to time series analysis
- simple time series models and stationary processes
- simple methods for handling trend and seasonality
- basic theory for ARMA processes
- modeling and forecasting time series with ARMA processes
- nonstationary models with stationary differences
- seasonal time series models
- modeling long-range dependence

Topics to Be Covered: II

- if time permits, would like to touch on
  - regression models with time series errors
  - state-space models
  - Kalman filtering
  - nonlinear models
  - ARCH/GARCH models
  - multivariate time series
- will focus on time-domain analysis of time series
- will *not* be covering frequency-domain (spectral) analysis, but I'll be happy to entertain questions about this topic during office hours

Dates to Note

- in-class exam on Friday, March 6 (50 minutes)
- presentation of course projects
  - Thursday, March 19 (during 2+ hours reserved for final exam)
  - if need be, Wednesday, March 11, or Friday, March 13 (during final week of instruction)