Final Exam Preparation

Logistical details:
- Date/time
  - Wed Dec 8 from 1:10-4pm (Sec 1)
  - Fri Dec 10 from 1:10-4pm (Sec 2)
- Coverage: roughly one-half to two-thirds on newer material
  - Sections 10.1-10.10, 10.12, 11.5 of text
  - Handouts 20-24
  - Quizzes 20-24
- Extra office hours during finals week:
  - Mon Dec 6: 1:10-3pm
  - Wed Dec 8: 8:10-9am
  - Thur Dec 9: 3:10-4pm
- Open book, notes, handouts, quizzes, solutions
  - You may use anything that I have provided or that you have produced yourself
- Bring calculator, normal probability table, Fourier transform table

Advice for preparing:
- Organize your notes
  - Helpful to have well-organized notes during exam
  - Very effective way to study regardless
- Make use of online resources
  - Handouts, quiz solutions, problem solutions
  - Previous exam preparation, exam solutions
- Review key ideas, definitions, results from handouts
- Re-work questions from handouts, quizzes
  - Without looking at answers first
- Work on optional problems from text
  - Check answers in Blackboard
- Don’t study less because it’s open book/notes
  - Likely to refer to book, notes less than you expect

Advice during exam:
- Show method of solution
  - Use clear notation
  - State any assumptions
  - Indicate what rules you are using
  - Be on lookout for simplest way to solve problem
- Read carefully
  - Answer what is asked for
  - Make use of information provided
Outline of key ideas (since last exam):

- **Stochastic processes**
  - Classification
    - Discrete- vs. continuous-value
    - Discrete- vs. continuous-time
  - Probability distribution at given point in time
  - Functions related to stochastic process
    - Mean function
    - Autocovariance function
    - Autocorrelation function
    - Variance function

- **Stationary processes**
  - Intuitive idea
  - Wide-sense stationarity
    - Conditions to check
    - Properties of autocorrelation function with WSS process

- **Particular types of stochastic processes**
  - Bernoulli process
  - Poisson process
    - Definition
    - Probability calculations
    - Distribution of inter-arrival times (exponential)
    - Distribution of times until $k$ arrivals (Erlang)
  - Gaussian process
    - Definition
    - Probability calculations
    - Distribution of sum, difference
    - Role of covariance
  - Brownian motion

- **Power spectral density functions**
  - Goal: see how power is distributed across frequencies
  - Relationship with autocorrelation function
    - Fourier transform
  - Properties
  - (Ensemble average) power
    - Calculated from autocorrelation function
    - Calculated from power spectral density function