Week 03
February 20–24, 2006

This is one of several "abnormal" weeks of the term. Monday, February 20, is the Presidents Day Holiday. On Tuesday, February 21, MIT runs the Monday schedule, so we have Lecture 4 instead of recitations.

- **Recitation 04: Thursday, February 23**
  - Follows two lectures:
    - L04, T Feb 21: Counting (1.6)
    - L05, W Feb 22: Discrete random variables; PMFs; expectations (2.1–2.4)

    Thus, this can be a very challenging part of the course, with lectures seeming to race ahead without a lot of opportunities for reinforcement in recitation and tutorials.
  - Problem 1 can be treated as a counting problem or sequential description with multiplication rule. It leads to a standard dinner-party fact.
  - Problem 2 allows a quick review of the key with/without replacement and with/without ordering distinctions in counting problems. The problem itself allows a slightly sophisticated trick to be taught—one that the students can't easily come up with on their own.
  - If you can fit in a review of definitions associated with discrete random variables, do it here.
  - Problem 3 has easy expectation calculations and a nice qualitative point to make.
  - You could reassure the students that L06 and L07 is still in Chapter 2, and so you will do more on discrete random variables in R05 and R06.
- **Tutorial 02: Thursday, Friday**
  - Problem 1: Probability question that boils down to counting.
  - Problem 2: PMF and PMF of a function of a random variable.
  - Problem 3: Means, variances, and independence.
- **Problem Set 03: Out 2/22, Due 3/01**
  - Covers Sections 1.6 and 2.1–2.4 plus very lightly on 2.5–2.6
  - Problem 1: Small counting problem
  - Problem 2: Find PMFs and expectations.
  - Problem 3: PMFs, means, and variances, plus a cautionary tale on independence.
  - Problem 4: Prove that mean is the MMSE estimate.
  - Problem 5: Basics of joint PMFs. Harder such problems next week.
  - Grad: Prove version of Cauchy-Schwarz.