ECEn 370 Winter 2011

Homework Problem Set 1

Due at 8 AM, Friday, January 14, 2011 in CB Fourth-Floor Homework Box.

From Bertsekas and Tsitsiklis, Introduction to Probability, 2nd Ed. This is a one-and-a-half week problem set and so is a bit longer than will be normal. Please take the time to firmly understand the material, especially MATLAB, before moving on. The solutions to all of the Bertsekas problems are found on the publisher’s website, but should be used only after a serious first attempt by yourself, and then preferably just to check your answers. You will find that this course is cumulative so getting a solid understanding now will pay off in the future.

1. Chapter 1 Problem 1.
2. Chapter 1 Problem 2.
3. Chapter 1 Problem 5.
5. Chapter 1 Problem 10.
7. Chapter 1 Problem 16.
8. Chapter 1 Problem 17.
11. Chapter 1 Problem 26. I hope you take the time to think about this problem a bit before turning to the answers.
12. (Schaum’s 1.50) A company producing electric relays has three manufacturing plants producing 50, 30, and 20 percent, respectively of its product. Suppose that the probabilities that a relay manufactured by these plants is defective are 0.02, 0.05, and 0.01, respectively.
   (a) If a relay is selected at random from the output of the company, what is the probability that it is defective?
   (b) If a relay selected at random is found to be defective, what is the probability that it was manufactured by plant 2?
13. MATLAB Assignment. Please do the tutorial (2 hours) found accompanying this homework on the course website (Matlab_introduction_2010.pdf). Spend the time to understand what is going on so that way you are able to easily write m-files for future assignments. After completing the tutorial, write an m-file that does something useful, like calculating your annual budget by figuring your monthly rent, insurance, food, entertainment as well as your expected income. Turn in printouts of your m-file and its MATLAB output for credit.