

# STAT - S426/S626 ASSIGNMENT 1

Due Tuesday Feb 9th, 2014

**Remember (from syllabus):** Solutions must be neatly word-processed (using Latex or a word processor) and stapled. Please annotate your work with brief, clear sentences explaining your approach and interpreting your results (you are not expected to write full-blown data analysis reports however). For assignments involving mathematical manipulations, students can write answers by hand provided penmanship is neat; illegible answers will be marked as incorrect.

1. Go back to the entry test and review all the questions you missed. Make sure you understand how to solve them now. If there's anything that's not clear, please ask in class or come to see the instructor or AI during office hours. You can check the solutions posted in OnCourse. You don't have to turn anything in.
2. Hoff 2.1.
3. Hoff 2.3. Note that  $f, g$  and  $h$  are just functions. They are not necessarily densities (this is, they don't need to sum to one).
4. (Gelman et al., 2003) Discuss the following statement. "The probability of event  $E$  is considered "subjective" if two rational persons  $A$  and  $B$  can assign unequal probabilities to  $E$ ,  $\Pr_A(E)$  and  $\Pr_B(E)$ . These probabilities can also be interpreted as "conditional":  $\Pr_A(E) = \Pr(E|I_A)$  and  $\Pr_B(E) = \Pr(E|I_B)$ , where  $I_A$  and  $I_B$  represent the knowledge available to persons  $A$  and  $B$ , respectively. Apply this idea to the following examples:
  - (a) The probability that a '6' appears when a fair die is rolled, where  $A$  observes the outcome of the die roll and  $B$  does not.
  - (b) The probability that Brazil wins the next World Cup, where  $A$  is ignorant of soccer and  $B$  is a knowledgeable sports fan.