

## STATISTICS 7 - REVIEW FOR SECOND EXAM (CHAPTERS 7 TO 10, EXCEPT PARTS OF 9)

### CHAPTER 7:

1. Understand interpretations of probability
2. Understand concepts of complementary, mutually exclusive and independent events
3. Use the probability rules to compute probabilities
4. Construct and use hypothetical hundred thousand table and tree diagrams to compute probabilities
5. Know how to find conditional probabilities in one direction, given them in the other direction
6. Understand the various psychological issues related to probability (Section 7.7 & related lecture)

### CHAPTER 8:

1. Identify discrete versus continuous random variables.
2. Find probability distribution functions for discrete random variables in simple circumstances, using the probability rules from Chapter 7.
3. Understand the use of pdfs and cdfs for finding probabilities for discrete random variables.
4. Understand the concept of “expected value” and be able to compute it for a discrete random variable. (Expected value is also the mean for a random variable.) You do *not* need to know how to compute the variance or standard deviation, except for the special case of *binomial* random variables (below).
5. Know the conditions that define a *binomial experiment* and *binomial random variable*. Be able to determine whether situations fit the definition or not. If they do, be able to specify  $n$  and  $p$ .
6. You do not need to know how to compute binomial probabilities by hand but you should know how to use the probabilities once you have them (see Example 8.17 and Case Study 8.1).
7. Know how to find the mean (expected value) and standard deviation for binomial random variables.
8. Understand what a continuous random variable is, and how probabilities are found (areas under curves). Know how to find standardized scores (already done in Ch 2) and then use them to find probabilities for any normal random variable (using Table A.1)
9. Know how to use the normal approximation to the binomial distribution to find probabilities for binomial random variables when  $n$  is large. See Example 8.30 on pages 294-295 for an illustration.

### CHAPTER 9: (Summary Table on page 353 should be helpful for this Chapter)

1. Identify the 5 situations given in Section 9.2, including notation for parameters and statistics.
2. Understand what a sampling distribution is.
3. Know the general format for sampling distributions for the 5 situations (see summary on page 353)
4. Find the sampling distribution for one proportion, given the values for  $p$  and  $n$ ; know the conditions required for it to hold, know how to use it to answer probability questions about sample proportions.
5. Find the sampling distribution for the difference in two proportions, including everything listed in #4.
6. Know how to find standardized scores for sample statistics  $\hat{p}$  or  $\hat{p}_1 - \hat{p}_2$ , given  $p$  or  $p_1 - p_2$  and  $n$ 's

### CHAPTER 10:

1. Understand how to interpret the confidence level
2. Understand how to interpret a confidence interval
3. Understand how the sampling distribution for  $\hat{p}$  leads to the confidence interval formula (p. 381-382)
4. Know how to compute a confidence interval for one proportion, including conditions needed
5. Know how to compute a confidence interval for the difference in two proportions, including conditions needed
6. Understand how to find the multiplier for a specified confidence level
7. Understand how margin of error from Chapter 5 relates to the 95% confidence interval formula in Chapter 10
8. Know the general format for a confidence interval for the 5 situations defined in Chapter 9 (see summary on page 439, at the end of Chapter 11).