

(disclaimer) This is a list of sections we have covered in class that will be tested in Exam I. This lists some of the highlights from each section but it is not a comprehensive list of every concept you will need to know.

- §2.1 It will be assumed that you know the basics of set theory (definitions of intersection, union, and complements) and the proper notation.
- §2.2 You must be familiar with the basic ideas of probability and how the probability of events relates to the relations of sets.

$$e.g. P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

- §2.3 Be familiar with calculating the number of permutations and combinations of objects in a finite set. These calculations will allow you to count the number of outcomes in sample spaces and events. And given a uniform sample space, this allows you to calculate probabilities of events.
- §2.4 Be able to calculate conditional probabilities and be able to use tree graphs and Venn diagrams to visualize conditional probabilities. Be familiar with the conditional probability calculation

$$P(B|A) = \frac{P(A \cap B)}{P(A)}$$

and the associated multiplication rule for events

$$P(A \cap B) = P(A)P(B|A)$$

Also, you should be able to calculate the probabilities of certain events using the Law of Total probability and Bayes' Theorem. Keep in mind that constructing a tree diagram makes this fairly easy.

- §2.5 Be able to use the multiplication rule for independent events. If A and B are independent events then

$$P(A \cap B) = P(A)P(B)$$

- §1.1,1.2 Be familiar with dot plots and stem and leaf displays. Know the difference between inferential and descriptive statistics.
- §1.3, 1.4 Be familiar with the calculation of median, mean, trimmed mean, variance, sample standard deviation.

As mentioned in class, you will need to perform one proof chosen from the three I have put on my web page.