

**MATH 130.56 - Elements of Statistics**  
Final Exam Review Sheet

Your final exam will take place on Thursday, December 17th, 2009, from 6:00pm - 8:00pm in Room 10B at Liberty Place. You may bring a single sheet of paper containing formulas, and you may use your textbook for the tables.

**DON'T FORGET YOUR CALCULATOR!!!**

For this exam you need to be able to:

- Chapter 1
  - Distinguish between qualitative and quantitative, and discrete and continuous variables.
  - Identify whether a sample was obtained using simple random sampling, stratified sampling, systematic or cluster sampling.
- Chapter 2
  - Organize data into a frequency or relative frequency distribution.
  - Construct a bar graph, histogram and stem-and-leaf plot.
  - Interpret a bar graph, histogram, and stem-and-leaf plot.
  - Identify the shape of a distribution.
- Chapter 3
  - Determine the mean, median and mode of a data set.
  - Use the mean and median to identify the shape of a distribution.
  - Compute the range, variance and standard deviation of a data set.
- Chapter 6
  - Determine whether an experiment is a binomial experiment.
  - Compute probabilities of binomial experiment.
  - Compute the mean and standard deviation of a binomial random variable.
- Chapter 7
  - Understand the uniform probability distribution.
  - Understand the role of area in the normal density function.
  - Understand the relation between a normal random variable and a standard normal random variable.
  - Determine and interpret  $Z$ -scores.
  - Find the area under the standard normal curve.
  - Find the  $Z$ -scores for a given area.
  - Interpret the area under a standard normal curve as a probability.
  - Find and interpret the area under a normal curve.
  - Find the value of a normal random variable.

- Chapter 8
  - Find the mean and standard deviation of the distribution of the sample mean.
- Chapter 9
  - Compute a point estimate of the population mean and population proportion.
  - Construct and interpret a confidence interval about a population mean if  $\sigma$  is known.
  - Determine the sample size necessary for estimating the population mean within a specified margin of error.
  - Determine  $t$ -values in Student's  $t$ -distribution.
  - Construct and interpret a confidence interval about a population mean if  $\sigma$  is unknown.
  - Construct and interpret a confidence interval about a population proportion.
  - Determine the sample size necessary for estimating a population proportion within a specified margin of error.
- Chapter 10
  - Determine the null and alternative hypothesis.
  - Understand Type I and Type II errors.
  - State conclusions to hypothesis tests.
  - Perform a hypothesis test for  $\mu$  with  $\sigma$  known. (You may use either the classical or p-approach.)
  - Perform a hypothesis test for  $\mu$  with  $\sigma$  unknown. (You may use either the classical or p-approach.)
  - Perform a hypothesis test for  $p$ . (You may use either the classical or p-approach.)