

## Statistics Lab

### General Information

The purpose of the statistics labs is to prepare you for the problem portion of each exam. Therefore, in order for you to benefit maximally from the lab, you must work on the lab on time and **pick up the graded lab before the exam**. This will enable you to receive feedback on what, if anything, you did wrong on the problems. Labs are due by 5 pm on Tuesday, regardless of your lab section. Each week, late labs will be accepted through Friday, but 10 points per day will be deducted from your late lab.

**If your attendance in class is poor, do not expect to use the lab as a private tutoring session to catch up on material and notes that you should have gotten during the lecture.**

**It is important for you to keep all of your labs**, because the midterm and final in the lab are **comprehensive**. The midterm covers labs 1-5, and the final covers labs 6-9.

Your lab average is computed as follows:

Average of the 9 weekly labs =	1/3
Midterm =	1/3
Final =	1/3

**Remember: this lab average will be used as a major test grade to determine your overall average for both the class and the lab—one combined grade for both.**

### Labs

- **Lab #1 – Measurement**

Purpose - Practice in distinguishing between discrete and continuous variables  
Identifying level of measurement  
Computing the actual limits of measurement of continuous variables

Tip - When identifying level of measurement, remember to start at the lowest level and work your way up until you cannot justify a higher level.

Remember that to compute the true limits of any measurement of a continuous variable, identify the finest measuring unit, then take off half of one of those units and add it to the measurement and subtract it from the measurement.

Example: 3.986      The measuring unit is thousandths  
Half of one-thousandth is 5 one hundredthousandths (.0005)  
Limits - 3.9855 and 3.9865

- **Lab #2 – Frequency Distributions and Graphs**

Purpose - Practice in organizing and summarizing data in tabular and graphic form  
Using graphs and tables to obtain information

Tip - Tables should be set up using the four rules in your text.  
Cumulative percentages should be computed directly from the cumulative frequency column.

Check your graphs for the following:

Proper proportion of the vertical and horizontal axes.

Labels

Midpoints of intervals on the horizontal axis.

- **Lab #3 – Measures of Central Tendency**  
**Summation Notation**  
 Purpose - Practice in computing measures of central tendency (mean, median, mode)  
 Practice with summation notation  
 Tip - When using summation notation, be sure to follow the rules of order of operation rigidly. “Please excuse My Dear Aunt Sally”
  
- **Lab #4 – Measures of Variability**  
 Purpose - Practice in computing measures of variability, especially the interquartile range and the standard deviation.  
 Interpretation of summary statistics.  
 Tip - Do calculations methodically and neatly. Do not skip steps.  
 Be sure your interpretations are based on the statistics, not the original scores.  
 This is a writing-intensive class.  
 Please write legibly – my eyes are getting worse every year.  
 Check your grammar and spelling; do not abbreviate.
  
- **Lab #5 – Our Friend, The Normal Distribution**  
 Purpose - Practice in using the standard normal distribution and standard scores to answer questions about distributions of raw scores.  
 Tip - Remember that different questions require different strategies. Be sure you take the time to understand the question – then choose the appropriate strategy and formula.
  
- **LAB MIDTERM – Labs 1-5**
  
- **Lab #6 – Single Sample Z- and T-tests**  
 Purpose - Practice in the computation of simple hypothesis-testing statistics  
 Practice in interpreting and writing up the results of hypothesis tests.  
 Tip - Be sure your hypotheses are in terms of population parameters ( $\mu$ ).  
 Be sure your population parameters have subscripts.  
 In writing your interpretation, take care to answer the question posed in the original problem.
  
- **Lab #7 – Between- and Within-Subject T-tests**  
 Purpose - Recognition of the difference between two types of research design.  
 Recognition of the difference between true experiments and *ex post facto* designs.  
 Tip - Check population parameters for subscripts.  
 Check to be sure you have the correct degrees of freedom for the particular type of t-test you are computing.  
 Check the alpha ( $\alpha$ ) level.  
 Be sure to mention the names of both the independent and dependent variables in your interpretation, and address the questions posed in the problem.
  
- **Lab #8 – Correlation**  
 Purpose - Computation and interpretation of two correlation coefficients (Pearson and Spearman)  
 Tip - Be sure your hypotheses are in terms of population parameters ( $\rho$ ).
  
- **Lab FINAL – Labs 6 - 8**