

STATISTICS 333
“STATISTICS FOR THE LIFE SCIENCES”
FALL 2003
SYLLABUS

NOTE: All quizzes will be written in the lab. No formula sheets permitted for the Quizzes or Midterm!!
Assigned questions from handout will be given at the beginning of the lab and must be passed in at the end of the lab for marking otherwise, they will not be marked.

Tentative schedule for quizzes and midterm

Quiz 1 Sept 26th
Quiz 2 Oct 10th
Quiz 3 Oct 24th
Midterm Nov 7th (written in lab)
Quiz 4 Nov 21st
Quiz 5 Dec 5th
Final – decided by register’s office (1 standard sized formula sheet permitted)

In order to write a missed quiz or midterm due to an illness, a valid letter from a physician must be presented as soon as possible and instructor notified (email is best). The quiz or midterm must be written before they are passed back otherwise that quiz is taken as the one (out of the five) that is dropped.

Topics Covered

- (1) **Descriptive Statistics:** Distributions: location, spread, shape. Mean, median, variance, percentiles, quartiles, histograms, boxplots. Stem and Leaf plots. Numerical and graphical methods.
- (2) **Probability:** sample spaces, events, frequency, Venn diagrams, mutually exclusive, independent events, combinatorics.
- (3) **Discrete probability distributions:** Expectations: random variables, discrete and continuous. Distributions with the Binomial as the prime example. Simple functions of random variables. Expectations including theoretical means and variances.
- (4) **Continuous probability distribution** Normal Distribution: Basic introduction to using Normal tables and calculating outcome frequencies. Simple examples using the Normal and Binomial. Central Limit theorem
- (5) **Sampling and Estimation:** Confidence intervals and hypothesis testing for means and proportions. Sample sizes for desired error margins. T – distribution.
- (6) **Hypothesis testing: one-sample inference** for mean and proportions, p-value
- (7) **Hypothesis testing: two-sample inference** for means and proportions as well as confidence intervals for two-samples as well as paired data.
- (8) **Non-parametric methods:** Wilcoxon-Mann-Whitney Test, Wilcoxon-Signed-Rank Test
- (9) **Hypothesis testing: categorical data:** Goodness-of-fit Test, independence and association test with 2×2 and $r \times k$ contingency tables
- (10) **Regression and correlation**