STATISTICS 333
"STATISTICS FOR THE LIFE SCIENCES"
FALL 2004
SYLLABUS

NOTE: All quizzes will be written in the lab. No formula sheets permitted for the Quizzes or Midterm!!

Tentative schedule for quizzes and midterm

Quiz 1 Sept 30th and Oct 1st
Quiz 2 Oct 14th and 15th
Quiz 3 Oct 28th and 29th
Midterm Nov 5th (written in class)
Quiz 4 Nov 18th and 19th
Quiz 5 Dec 2nd and 3rd
Final – decided by register's office (1 standard sized formula sheet permitted)

No classes or labs on October 11th (Monday), November 11th (Thursday) & November 12th (Friday). Classes end on Thursday, December 9th.

Topics Covered

Sections covered in suggested text "Statistics for the Life Sciences 3rd edition". Try to do as many questions as possible from the text that relate to these sections and topics.

(1) **Descriptive Statistics (chapter 1 & 2, omit 2.7):** Distributions: location, spread, shape. Mean, median, variance, percentiles, quartiles, histograms, boxplots. Stem and Leaf plots. Numerical and graphical methods.
(2) **Probability (chapter 3.1-3.6)**: sample spaces, events, frequency, Venn diagrams, tree diagrams, mutually exclusive, independent events, combinatorics.
(3) **Discrete probability distributions (chapter 3.7-3.8):** 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 (chapter 4):** 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 (chapter 5 & 6):** Confidence intervals and hypothesis testing for means and proportions. Sample sizes for desired error margins. T – distribution.
(6) **Hypothesis testing for one-sample inference and two sample inference and paired data (Chapter 7.1-7.10 & 9.0-9.3& 10.7-10.8):** for mean and proportions, p-value as well as confidence intervals for two-samples as well as paired data.
(7) **Non-parametric methods (chapter 7.11 & 9.4):** Wilcoxon-Mann-Whitney Test, Wilcoxon-Signed-Rank Test
(8) **Hypothesis testing for categorical data (chapter 10.1-10.5):** Goodness-of-fit Test, independence and association test with 2×2 and $r \times k$ contingency tables
(10) **Regression and correlation (chapter 12.1-12.6)**