



STATISTICS 101-3 INTRODUCTION TO STATISTICS

Spring 2002
DAY COURSE

Instructor: DR. B. McNENEY
Lab Instructor: R. Insley

Prerequisite:

BC Math 11 (or equivalent) or Basic Algebra. Students with credit for ARCH376, BUEC 232 (formerly 332) or STAT 270 (formerly MATH 272 and 371) may not subsequently receive credit for STAT 101-3. Students with credit for STAT 102, 303 (formerly STAT 103), 301, MATH 101 or 102 may not take STAT 101 for further credit.

Textbook:

The Basic Practice of Statistics (2nd Edition) by David S. Moore, Published by W.H. Freeman and Company

Course Description:

An introductory course in random variables and their distributions, estimating and hypothesis testing.

Outline:

Aimed at a non-mathematical audience, this course discusses procedures that are most commonly used in the summary of statistical surveys and in the interpretation of experimental data. The rationale for these procedures is explained in detail, but the use of mathematical formulas is kept to a minimum. Students with B.C. Algebra 12 (or MATH 100) may wish to take STAT 102-3 instead. Either STAT 101 or STAT 102 is a satisfactory prerequisite for STAT 302.

The course will include an introduction to JMP IN, a computer package for statistics. You will need access to a computer and to JMP IN to complete the course.

1.The Design of a Statistical Study

The two major design types, controlled experiments and observational studies, are discussed, with special emphasis on the limitations of each.

2.Descriptive Statistics

The following methods of summarizing the information in large data sets are introduced: histograms and other graphs, averages, standard deviations, and the normal approximation.

3.Correlation and Regression

The correlation coefficient is introduced as a measure of the strength of association between two quantities; the regression line, as a graph of averages. Deviations from this line are discussed.

4.Probability

Methods are presented for computing the probabilities of chance occurrences. The binomial formula is stressed.

5.Chance Variability

Fallacious interpretations of "The Law of Averages" are brought to light, and the predictable patterns that do indeed emerge in repetitions of chance experiments are discussed.

6.Sampling and Chance Models

The concept of a sample survey is studied from the design stage through the conduct of the survey to the analysis of the results. Special attention is given to the role of chance errors on the accuracy of the results.

7. Estimation and Tests of Significance

Elementary methods of analyzing the results of controlled experiments and observational studies are presented. Standard t-tests and c2-tests and related confidence intervals are introduced with emphasis on the role of the chance model, and the interpretation of the results.

Grading:

Homework: 20% - 5 assignments, best 4 of 5 weighted equally

Midterm: 30% - or 0% if you do better on the final exam.

Final: 50% - or 80% if you do better on the final than on the midterm

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester and be sure to fill out the Freedom of Information and Protection of Privacy form before the first homework is due.

Revised October 2001