STAT 101
Introduction to Statistics

Summer 2011
Day Course Ian

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Prerequisite:

To receive credit for both STAT 100 and STAT 101, STAT 100 must be taken first. Intended to be particularly accessible to students who are not specializing in Statistics. Students with credit for ARCH 376, 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, 201, 203 (formerly STAT 103), 301, MATH 101 or 102 may not take STAT 101 for further credit.

Textbook:

There is no required textbook for this course.

Students looking for extra reading material can use the following textbook:

The Basic Practice of Statistics, 5th Edition, by David S. Moore, W.H. Freeman Publishers

Calendar Description:

The collection, description, analysis and summary of data, including the concepts of frequency distribution, parameter estimation and hypothesis testing. **Quantitative.**

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.
The course will include an introduction to JMP, a computer package for statistics. You will need access to a computer and to JMP 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. **Statistical thinking** - The need for data. The omnipresence of variability.
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 introduced.
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:

and chi squared tests and related confidence intervals are introduced with emphasis on the role of the chance model, and the interpretation of the results.