BASICS OF STATISTICS - SYLLABUS

COURSE DESCRIPTION

This course is an introduction to several topics in statistics, covering four major components:

- Descriptive Statistics: Graphical and numerical summaries of data, regression and correlation (Examples: graphing pie charts, stem and leaf plots, and histograms; understanding the mean, median, standard deviation, and variance, describing bivariate data)
- Sampling plans and experimental design: collecting data, asking the right questions, bias
- Probability: Counting, conditional probability, random variables, expectation, and probability distributions, with emphasis on normal distributions
- Inferential Statistics: Estimation, sampling distributions, confidence intervals, hypothesis testing

The text will be Mind on Statistics by Utts and Heckard (4th or 5th edition). There are many practice problem sets in the book. In the class sessions, time will be spent explaining ideas as well teaching you some basic methods for conducting and analyzing statistical studies. We will cover the first 13 chapters of the textbook. This course will be fast paced, so it is extremely important to stay on top of the material.

The table on the next page provides an approximate daily schedule of the topics studied (corresponding to chapters of the textbook).

TENTATIVE OUTLINE

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Relationships Between Quantitative Variables (scatterplot, correlation, regression)	Relationships Between Quantitative Variables (median, mean, standard deviation)	Relationships Between Categorical Variables (Null and Alternative Hypotheses)	Relationships Between Categorical Variables (Chi-Square Statistic, the p-value of the Chi-Square Test)	Sampling Survey and How to Ask Questions
Gathering Useful Data for Examining Relationships	Probability	Probability	Random Variables	Midterm 1
Understanding Sampling Distributions Statistics as Random Variables	Understanding Sampling Distributions Statistics as Random Variables	Estimating Proportions with Confidence	Estimating Means with Confidence	Testing Hypotheses about Proportions
Testing Hypotheses about Means	Inference about Simple Regression	Analysis of Variance	Final	Review