Course Description

This introductory course in data analysis and statistical inference requires no background in statistics. Its objective is to provide individuals who aspire to enter IT management positions with the basic statistical tools for analyzing and interpreting data related to topics such as software cost estimation, internet usage, and online pricing. The course is divided into three distinct components: descriptive statistics, fundamentals of statistical inference, and regression analysis. The emphasis of the classes on descriptive statistics is the calculation and interpretation of summary statistical measures for describing raw data. The sessions on fundamentals of statistical inferences are designed to provide you with the background for executing and interpreting hypothesis tests and confidence intervals. The final component of the course focuses on regression analysis, a widely used statistical methodology. Throughout the course you will regularly analyze data relevant to IT management using the statistical software package Minitab. A copy of the Minitab software for installation in your PC will be provided at no charge.

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Office Hours: Monday and Wednesday
3:30 a.m.- 4:30
and by appointment

Regular Class (HbH 1001): Monday & Wednesday 2:00-3:20 p.m.
Weekly Review (HbH 1000): Friday 2:00 - 3:20 p.m.
The mini-projects will be done in 2-person teams and will involve the analysis of real data related to software cost estimation, internet clickstream analysis, and online pricing. In your 2-3 page mini-project reports you will describe the results of your analyses and your conclusions regarding the issues outlined in the assignment. Teams will be self selected and both team members will receive the same grade. The final exam is scheduled for the last class meeting date, Oct. 16.

**Cheating Policy:** We encourage discussion among teams about the mini-projects and among individual students on homework assignments. However, the project and that is submitted for grading must be the work of the 2-person team alone. Similarly, completed homework assignments must be your work alone. Specifically, discussion of results that are identical or nearly identical across projects will be regarded as cheating. Also, your answers on the final exam must reflect your work alone. Sanctions for cheating include lowering your grade including failing the course. In egregious instances, the instructors may recommend the termination of your enrollment at CMU.

**Class Bulletin Board:** Available on Blackboard

**TA Office Hours:** To be announced

(8/26 & 8/28) Introduction and Descriptive Statistics
- Review of Syllabus
- What is Statistics
- Types of Data
- Random Samples
- Histograms
- Measures of Central Tendency
- Measures of Variability
Reading: 1.1-1.3, 2.1-2.6

(8/30) Introduction to Minitab
Introduction to Probability and Random Variables

First mini-project due on September 9

Normal Distr. Done by 9/9, CLT by 9/11—add confidence interval material

Normal Distribution, Sampling Distributions, & the Central Limit Theorem

Reading: 5.3, 6.1, 6.2 (skim), 6.3

Hypothesis Testing (Single population)

· Elements of Hypothesis Test
· p-values
· Type I and Type II error

Reading: 8.1-8.5

Hypothesis Testing (Two populations)

Reading: 9.1 & 9.3

Simple Regression

· Linear Models and their Interpretation
· Least Squares Fit of a Linear Model
· Correlation
· Coefficient of Determination
· Using Minitab

Reading: 10.1-10.7

Multiple Regression

· Multivariate Models and Their Interpretation
· Hypothesis Testing
· Dummy Variables
· Using Minitab

Reading: 11.1-11.9

Exam & Second Mini-project Due