STAT 100
Chance and Data Analysis

Summer 2007
Day Course

Students requiring accommodations as a result of disability, must contact the Centre for Students with Disabilities 604-291-3112 or csdo@sfu.ca

This course may be applied to the Certificate of Liberal Arts

Instructor: Dr. Brad McNeney

Prerequisite:

None. Students can choose which of STAT 100 and STAT 101 they take as their first STAT course. However, to receive credit for both STAT 100 and STAT 101, STAT 100 must be taken first. This course should not be taken by students who have 60 or more credits. Intended to be particularly accessible to students who are not specializing in Statistics.

Textbook:

Statistics A Guide To The Unknown, 4th edition, by Peck, et al., publisher: Duxbury, 2006

Calendar Description:

An Introduction to chance phenomena and data analysis through simulation and examination of real world contexts including, sports, investment, lotteries and environmental issues.

Outline:

Computing: No computing background is assumed. However, the instructor will introduce the statistical computing language R, and provide students with an opportunity to observe certain statistical phenomena using R. R is freeware, readily downloadable from the web.

Outline:

1. Introduction. Basics of Data Analysis. Distributions. Basics of Chance. Simulation.
   Peck xvii: Introduction;
   Peck 3-18: Statistics in the Courtroom.
2. Graphics – one and two variables. Time Series.
   Peck 183-194: Space Debris: Yet Another Environmental Problem;
   Peck 293-306: To Catch a Thief: Detecting Cell Phone Fraud;
   Peck 339-358: Assuring Product Reliability and Safety;
   Peck 373-390: Advertising as an Engineering Science.
3. Random Walks. Illusion of predictability. Stock Market Application.

7. Sampling. Randomized Response Technique.
   Peck 69-88: Evaluating School Choice Programs;
   Peck 227-242: Leveraging Chance in HIV Research.
8. Lotteries. Average and actual returns. Assessment of Coincidences.
9. Survival. Aging of cars, cells, and people.
10. Optimization. Spatial distributions.
11. Quality Control.
    Peck 323-338: Improving the Accuracy of a Newspaper: A Six Sigma Case Study of Business Process Improvement;
    Peck 339-358: Assuring Product Reliability and Safety.
12. Estimation. Change point detection.