Basic Applied Statistics  
STAT 0200  
4 Credits

Description: This course teaches methods of descriptive and inferential statistics. Topics include data collection and description, hypothesis testing, correlation and regression, the analysis of variance, and contingency tables (chi square). Students will learn how to use a statistical computer package, MINITAB.

Prerequisite: Two years of high school algebra are recommended.

Grading: The grade is determined by the student’s performance on two mid-term exams, a comprehensive final, and teacher evaluation.

Textbook: The recommended textbook is The Basic Practice of Statistics, 4th ed., by David S. Moore, W.H. Freeman & Co. Publishers; or, Elementary Statistics: Looking at the Big Picture, 1st ed., by Nancy Pfenning, Brooks/Cole Cengage Learning [Cengage can be reminded that books are to be sold royalty-free to Pitt CHS students]. Alternate textbooks may be used but must include the material in this course outline. By fall 2016 we will no longer certify CHS STAT 0200 courses that use Triola as their sole textbook.

The following topics are covered in the University of Pittsburgh STAT 0200 course. The statistical package MINITAB is used for all topics below:

1. Introduction: What is statistics? Types of data.

2. Descriptive statistics (one variable): Histograms, box plots, symmetry and skewness, mean, median, percentiles, range, interquartile range, the standard deviation.

3. Association and Regression: Scatter plots, correlation, fitting straight lines, meaning of slope and intercept, residuals, coefficient of determination (r-squared).

4. Causation and Evidence: Use of observational studies or experiments to attempt to answer questions of causation. Some basic types of sampling and experiments-stratified samples, simple and blocked designs.


6. Distribution of sample proportion and distribution of sample mean from random samples: Central limit theorem, law of large numbers. Hands-on or computer simulations of sampling distributions.

7. Confidence intervals for means (known standard deviation) and proportions in one sample: Construct confidence intervals from data; use computer experiments to illustrate concept.
8. Tests of hypotheses about means (known standard deviation) and proportions in one sample: P-value, level of significance. Type I and Type II error. Meaning of (but not calculation of) power and relation to effect size, sample size, and size of standard deviation. Computer experiments to illustrate these concepts.

9. One-sample, paired-sample and two-sample t-tests: Degrees of freedom and use of t-tables. Related confidence intervals. Interpretation of computer output concerning tests and confidence intervals. Advantages and disadvantages of paired designs over two-sample designs.

10. Introduction to more advanced topics: One-way analysis of variance tests (ANOVA table, degrees of freedom, sums of squares and mean squares, F statistic and F tables), contingency tables and chi-square tests for independence, inference concerning the slope(s) and intercept in linear regression models.

Additional course credit information for STAT 0200:

At the University of Pittsburgh:

- Majors: This is a course that can be used for some social sciences. Students intending to major in a math- or science-related field should not take this course and would need to take a statistics course for science majors such as the University of Pittsburgh’s STAT 1000.
- Electives: Individual Schools and Colleges of the University (such as Engineering, Arts & Sciences, Business, Information Sciences, and so on) have different policies about elective credits and may count this course as an elective. Students interested in studying at the University of Pittsburgh should contact their School/College of interest to see if this course would be counted.