Hunter College of CUNY Department of Mathematics and Statistics

SYLLABUS

STAT 213 **Introduction to Applied Statistics**

Course Description: Sampling, estimation, tests of hypotheses, including one-and two-sample tests, two- and three-way tables for nominal and ordinal data, linear regression, analysis of variance through two-way with interaction.

This course emphasizes statistical literacy and develops statistical thinking. Statistical literacy is promoted throughout the text in the many examples and exercises, drawn from published research findings and the popular press Understanding the nature and role of variability is key to developing sound skills in statistical thinking.

Expected Learning Outcomes:

At the end of the course, students in STAT 213 will be able to

- demonstrate an understanding of basic Probability and Statistics
  - Interpret and draw appropriate inferences from quantitative representations, such as formulas, graphs, or tables.
  - Use algebraic, numerical, graphical, or statistical methods to draw accurate conclusions and solve mathematical/statistical problems.
  - Represent quantitative problems expressed in natural language in a suitable mathematical/statistical format
  - Effectively communicate quantitative analysis or solutions to mathematical and statistical problems in written or oral form.
  - Evaluate solutions to problems for reasonableness using a variety of means, including informed estimation
  - Apply mathematical/statistical methods to problems in other fields of study.

Prerequisites: MATH 125 *or appropriate score on placement exam.*

Textbook: Introduction to Statistics and Data Analysis, Enhanced Review Edition (5th Edition) with WebAssign by Roxy Peck, Chris Olsen, Jay L. Devore, Duxbury Press. WebAssign is mandatory!

Suggested Class Schedule [These are the topics covered each semester]

CLASS	Topic
WEEK 1	Nature & role of variability; the data analysis process; graphical methods for describing data.
	Measuring center and spread; the five number summary; boxplots.
WEEK 2	Empirical rule; Chebychev Inequality.
	Z-scores; interpreting & communicating results.
WEEK 3	Chance experiments and events; definition of probability; basic properties of probability.
	Conditional Probability; independence; law of total probability; Bayes Theorem.
WEEK 4	Discrete random variables; continuous random variables; binomial and geometric distributions
	Mean & variance for rv's & linear combinations; normal distribution.
WEEK 5	Review for test 1.
	Test 1.
WEEK 6	The Central limit theorem; sampling distribution of a sample mean; point estimation
	The Central limit theorem; sampling distribution of a sample proportion. point estimation.
WEEK 7	Large-sample confidence interval for population proportion; large-sample confidence Intervals for population mean.
	Small –sample confidence Intervals for population mean; interpreting & communicating results.
WEEK 8	Large-sample hypothesis tests for population proportion; hypothesis tests for population mean.
	Comparing two means: independent and paired samples; comparing two proportions.
WEEK 9	Contingency tables; chi-square and goodness-of-fit tests.
	Two-Way Tables: independence and homogeneity tests.
WEEK 10	Review for test 2.
	Test 2.
WEEK 11	Summarizing bivariate data; the correlation coefficient.
	Least-Squares regression: fitting a Line to bivariate data; diagnostics.
WEEK 12	Inferences about the slope of population regression line; residual analysis.
	Inferences about population correlation coefficient; interpreting & Communicating results.
WEEK 13	Analysis of Variance; One-Way ANOVA
	Randomized block experimental design.
WEEK 14	Nonparametric (distribution-free) tests.
	Review for the final
WEEK 15	FINAL EXAM

GRADING DETAILS

There are two in-class non-cumulative tests, regular homework assignments (worth 20% of the grade), and a final exam. The tests and final are closed book exams. Calculators and formula sheets are allowed. The final is comprehensive. ***There will be no remake for the tests and final!*** *The final counts twice as much as the tests. Lowest score will be dropped (if lowest score is at the final exam, that score will be counted only once).*

Incomplete and Credit/Non-Credit

Students wishing to request an INC grade must do so in writing explaining the reasons, AND have AT LEAST a C average. Students wishing to request a CR/NCR grade must have taken the exams, and have at least a 40% average.

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The college is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

IF YOU HAVE A DISABILITY THAT YOU BELIEVE REQUIRES SPECIAL ACCOMODATIONS: In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical and/ or Learning) consult the Office of AccessABILITY located in Room E1124 to secure necessary academic accommodations. For further information and assistance please call (212- 772- 4857)/TTY (212- 650- 3230).

Dolciani Mathematics Learning Center Resources

The Dolciani Mathematics Learning Center is located on the 7th floor East Building (in the library). The Center provides multimedia materials (videotape & CDs), as well as tutoring, specifically for STAT 213 students. Drop by to sign in!