

Block H+, Tuesdays and Thursdays 1:30-2:45

Instructor: Marjorie Hahn

Office Hours (Fall 2004): Tues. 3-4; Thurs. 9:30-10:30 or by appointment

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Prerequisites: Math 161 or consent

Text: To be determined.

Description:

Statistics is the science of gaining information from numerical data. Our modern technological world generates data at an enormous rate. Newspapers, business meetings, and governmental committee meetings are often inundated with data. However, all too often the data is improperly obtained and improperly assessed. Important everyday decisions for individuals, corporations, societies, and governments hinge on a proper understanding and assessment of data. Every facet of industry, science, engineering, economics and business benefits from a solid knowledge of statistics. This is why there are more statisticians employed in the United States than mathematicians from all other branches of mathematics combined.

Math 161, Probability, provides the theoretical underpinnings (major ideas and concepts) for statistics. Math 162, Statistics, is the exciting subject of bringing this theoretical knowledge to bear on real-world problems. This is where the hard work put into understanding the theoretical probability in Math 161 pays big dividends and for some students becomes one of the most useful courses of their entire college career.

Most statistical problems, beyond the design of experiments or sampling procedures, fall into one or more categories, which include: (1) estimating an unknown parameter of the underlying population (such as the true proportions in polls or the true average lifetime, etc.); (2) turning data into evidence (as in testing a hypothesis); (3) determining the existence and strength of a correlation between several variables or factors; (4) making predictions; (5) testing models for goodness-of-fit, etc; (6) simulations.

Our approach to these topics will involve a combination of lecture, discussion, group work, and projects. The student will experience the statistical thinking that a functioning statistician must develop and use constantly. In particular, students will learn the whys and be able to develop techniques to meet new situations. A final project will replace a final exam.

The statistics covered in Math 162 prepares students for actuarial exams, graduate work in statistics, and university courses in economics, engineering, computer science, physics, biology or psychology which require statistical methodology.