

Math 311
Elementary Probability and Statistics
Fall 2007
Kennedy 207
MWF 8:00am -- 8:50am

Instructor: Dr. Rachel Dunwell

Office: 319 Ohlendorf Hall

Office Hours: MTTh 2pm -- 4pm or by appointment

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Text: *Probability and Statistical Inference*, by Hogg and Tanis, Edition 7e, Person Prentice Hall, Upper Saddle River, NJ. 2006.

Course Description: This course is the first part of a two part sequence covering probability and statistics. 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 benefit 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. Probability is the language of statistics; it is a measure of the likelihood of an event occurring.

Course Content: This course will be split into two parts. The first will teach you how to perform basic hypothesis tests and confidence interval calculations. The theory behind these calculations will be explained in a concrete, non-rigorous manner. This introduction to these statistical calculations is a motivation for the rigorous study of statistical theory that is to follow in this course and in Math 312. The starting point of any rigorous treatment of statistics is probability. We will examine basic concepts and theories of probability, including Bayes' Theorem. Then we will study the fundamental properties of probability distributions, both continuous and discrete, and the role of moment generating functions. This course will finish with a detailed examination of the normal distributions and the central limit theorem (the fundamental theorem of statistics).

Technology: We will use Mathematica, Excel and possibly R and SPSS. All can be found installed on most computers on campus. Also, we will use the software provided by the book. You may also use a calculator; however, you must show your work on tests and homework.

Course Prerequisites: Calculus I, II, III(co-requisite).

Attendance Policy: The official college attendance policy will be enforced. There will be a number of in-class quizzes and one in-class test. If you are absent from these you will be scored zero, unless you have arranged the absence in advance and provided appropriate documentation to support your reason for the absence.

Finally, the student is responsible for all material and notes issued during their absence. Get the notes from another student. Come to my office for any materials handed out in class.

Structure of the Course: For the “Introduction to Statistics” section of the course weekly homeworks will be graded. These will be account for 16% of your final grade. This section end with an in-class test on 14th September, and this will account for 10% of your final grade.

For the remainder of the course each week you will be assigned a set of basic exercises and a set of problems (note: a “week” may or may not run from Mon to Fri, depending on recess times). A quiz will be taken at the end of the week that will be based on the exercise questions you were assigned. Problems may be worked on in groups of at most three students and will be submitted for grading at the beginning of the following week. Each problem will be given a score, although some harder problems may be designated as double or triple problems, and easier problems as half problems.

The average of your quiz scores will be taken at the end of the course and this will account for 25% of your final grade.

The average of the best 12 problem scores will be taken at the end of the course and this will account for 25% of your final grade.

There will be a cumulative final examination at 5:30pm on 8th December. This will account for 24% of your final grade.

Late work will not be accepted for grading. It does not, however, have to be handed in person.

Grades: Grades will be earned for the following percentages:

A	Score \geq 93%	C	73% \leq Score $<$ 77%
A-	90% \leq Score $<$ 93%	C-	70% \leq Score $<$ 73%
B+	87% \leq Score $<$ 90%	D+	67% \leq Score $<$ 70%
B	83% \leq Score $<$ 87%	D	63% \leq Score $<$ 67%
B-	80% \leq Score $<$ 83%	D-	60% \leq Score $<$ 63%
C+	77% \leq Score $<$ 80%	F	Score $<$ 60%

Honor Code: The student is expected to conduct him or herself within the guidelines of the College’s Honor Code. If you have any questions about what is or not allowed, please ask.

If you have a documented disability and wish to receive academic accommodations, please contact myself and the Office of Student Disability Services as soon as possible.