Mathematics MAT 112: Basic Statistics  
Fall 2011  
MWF 8:30 a.m. - 9:20 a.m., Hubbard 209A  
MWF 9:30 a.m. - 10:20 a.m., Hubbard 209A

Instructor: Dr. Brad Emmons  
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Course Materials  
Introductory Statistics, Seventh Edition, Prem S. Mann (required)  
A four-function calculator (required)

Introduction  
Statistics is the branch of mathematics devoted to the study of collecting, organizing and interpreting data. Increasingly it is recognized that any educated person, regardless of the field of study, shall be acquainted with statistical reasoning. It is a goal of this class to make you more familiar with how statistical reasoning plays a roll in our lives. We will be studying both descriptive and inferential statistics throughout the course. We will find out how to organize data in a meaningful way, and how to make decisions based on data.

Exams  
There will be two in-class exams as well as a final cumulative exam. The exams will test your understanding of statistical concepts, your ability to work through some of the computations, as well as your ability to apply the techniques to certain applications. The first exam is scheduled for Friday, September 30, the second exam is scheduled for Friday, November 4. The final exam will be held on Wednesday, December 14 from 9:00 - 12:00 for section A, and on Friday, December 16 from 1:00 - 4:00 for section B. All exams will count for 25 percent of your final grade. There will be NO make-ups for missed exams. Please look over your schedule as soon as possible. If you see a potential conflict, inform me immediately.

Homework  
The best way to learn Mathematics is to solve problems. I will be offering suggested problems to look at for the next class, but these problems will not be turned in for a grade. The homework problems will range in difficulty and include both computational problems as well as conceptual problems. The purpose of this is to help you identify where you might have difficulties. If you encounter any trouble with an assignment or a concept, seek help!

Quizzes  
Every other Friday, starting with September 9th, we will have an in-class quiz. There will be a total of 6 quizzes throughout the semester. You should treat the quizzes as mini-exams, covering material from approximately 6 days worth of course work. The quizzes will consists of 4 or 5 problems similar to problems from your graded homework, and they are to make sure that you are keeping up with the concepts presented in class, and to identify where you are having problems before you take the exams. The quizzes will count for 25% of your final grade.

Attendance  
Attendance in MAT 112 is extremely important. There is no official attendance policy for my courses. Although I highly recommend that you make an effort to be in class each day, on time, and willing to learn. If you are late to class, you may stay to enjoy the wonderful learning experience. But please be respectful of the rest of the class and join us quietly.
Grading
Your grade in this course will be based on three main factors: homework, quizzes and exams. The quizzes will be worth 25% of your final grade, and the exams 75%. In addition to these factors, minor ethereal factors such as attendance, class participation, attitude, and improvement over the course of the semester can also affect your grade. To determine your final grade, 90–100% = A, 80–89% = B, 70–79% = C, 60–69% = D, 59 and below = F, with the top two percents receiving a + and the bottom two percents receiving a −.

Calculators
Because we will be dealing with a reasonable amount of data in this course, the use of calculators will be allowed on homework, quizzes, and exams. However, the only type of calculator that you can use during the exams are the basic four-function calculators. That is, programmable calculators or cell phone calculators will not be allowed.

Important Dates
- Friday, September 9 – Quiz I
- Friday, September 23 – Quiz II
- Friday, September 30 – Exam I
- Monday, October 10 – Fall Break
- Friday, October 14 – Quiz III
- Friday, October 28 – Quiz IV
- Friday, November 4 – Exam II
- Friday, November 18 – Quiz V
- Wednesday, November 23 - Sunday, November 27 – Thanksgiving Break
- Friday, December 19 – Quiz VI
- Monday, December 12 – Last Day of Classes
- Wednesday, December 14, 9:00 - 12:00 – Final Exam, Section A
- Friday, December 17, 1:00 - 4:00 – Final Exam, Section B

Suggestions
- Come to class with your homework assignment completed every day
- Study for at least 30 minutes each day in addition to completing your homework assignment
- Read the section we will be covering in class before arriving to class
- Do not fall behind!
- Come to office hours to discuss concepts. I am here to help!
Syllabus
MAT 112 : Basic Statistics
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Week 1 August 1 Course Policies, Syllabus, Basic Terms
September 2 Section 1.8 – Summation Notation

Week 2 September 5 Section 2.2 – Qualitative Data
September 7 Section 2.3, 2.4 – Quantitative Data
September 9 Section 3.1 – Measures of Central Tendency, Quiz I

Week 3 September 12 Section 3.2 – Measures of Dispersion
September 14 Section 3.3 – Mean, Variance for Grouped Data
September 16 Section 3.4 – Standard Deviation

Week 4 September 19 Section 4.1 – Experiments, Outcomes, and Sample Space
September 21 Section 4.2 – Calculating Probability
September 23 Section 4.3, 4.4 – Marginal and Conditional Probability, Quiz II

Week 5 September 26 Sections 4.5 - 4.7 – Types of Events
September 28 Review
September 30 Exam I

Week 6 October 3 Sections 4.8, 4.9 – Intersections and Unions
October 5 Sections 5.2 – Probability Distribution of a DRV
October 7 Sections 5.3, 5.4 – Mean and Standard Deviation of a DRV

Week 7 October 10 NO CLASS
October 12 Section 5.5 – Factorials and Combinations
October 14 Section 5.6 – Binomial Distribution, Quiz III

Week 8 October 17 Section 5.7 – Hypergeometric Distribution
October 19 Section 5.7 – Hypergeometric Distribution
October 21 Sections 6.1 - 6.3 – The Normal Distribution

Week 9 October 24 Section 6.4 – Standardizing a Normal Distribution
October 26 Section 6.4 – Standardizing a Normal Distribution
October 28 Section 6.6 – Determining z and x Values, Quiz IV

Week 10 October 31 Sections 7.1, 7.2 – Population and Sampling Distributions
November 2 Review
November 4 Exam II

Week 11 November 7 Sections 7.3, 7.4 – The Sampling Distribution of \( \bar{\sigma} \)
November 9 Section 7.5 – Applications of the Sampling Distribution of \( \bar{\sigma} \)
November 11 Sections 7.6, 7.7 – The Sampling Distribution of \( \hat{\sigma} \)

Week 12 November 14 Section 7.8 – Applications of the Sampling Distribution of \( \hat{\sigma} \)
November 16 Section 8.3 – Est. of \( \mu : \sigma \) known
November 18 Section 8.3 – Est. of \( \mu : \sigma \) known, Quiz V

Week 13 November 21 Section 8.5 – Est. of \( p \) : Large Samples
November 23 NO CLASS
November 25 NO CLASS

Week 14 November 28 Sections 8.6 - 8.7 – Determining Sample Size for Estimation of Proportion
November 30 Section 9.1 – Hypothesis Testing : Introduction
December 2 Section 9.2 – Hyp. Tests about \( \mu : \sigma \) known

Week 15 December 5 Section 9.3 – Hyp. Tests about \( \mu : \sigma \) unknown
December 7 Section 9.4 – Hyp. Tests About \( p \) : Large Samples
December 9 Review, Quiz VI

Week 16 December 12 Review