

Mathematics MAT 112 : Basic Statistics
Spring 2015
MWF 8:30 a.m. - 9:20 a.m., Hubbard 210
MWF 9:30 a.m. - 10:20 a.m., Hubbard 210
MWF 10:30 a.m. - 11:20 a.m., Hubbard 210

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Course Materials

Introductory Statistics, Eighth 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. Therefore, it is a goal of this class to make you more familiar with how statistical reasoning plays a roll in our lives. We will begin this course by discussing descriptive statistics. That is, what is the mean and standard deviation, and what does they tell us about a collection of numbers? We will focus on both computation and interpretation of these concepts.

After this, we will take a tour of probability theory. Here, we will able answer such questions as "If I toss a coin 100 times, what is the probability that it lands heads exactly 50 times?" This will lead us naturally to discuss such things as probability distribution functions, and eventually the normal distribution, which will be a big player in the last part of our course, inferential statistics.

During this last part of the course we will introduce confidence intervals, tests of hypothesis, and various ways in which a test of hypothesis can be performed. These methods are employed in almost every branch of empirical research, including medicine, economics, education, and criminal justice. We will employ examples from all such areas to make these concepts relevant.

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, February 20, the second exam is scheduled for Friday, April 3. The final exam will be held on Friday, May 8 from 9:00 - 12:00 for section A, Monday, May 11 from 9:00 - 12:00 for section B, and Wednesday, May 13 from 9:00 - 12:00 for section C. All exams will count for 20 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 collecting homework problems every day. 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! Homework will count for 20% of your final grade.

Quizzes

Every other Friday, starting with January 30, 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 2 weeks 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 20% 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.

Grading

Your grade in this course will be based on three main factors: homework, quizzes and exams. The homework will be worth 20% of your final grade, the quizzes will be worth 20%, and the exams 60%. In addition to these factors, minor ethereal factors such 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, January 30 – Quiz I
Friday, February 13 – Quiz II
Friday, February 20 – Exam I
Friday, March 6 – Quiz III
Monday, March 16 - Friday, March 20 – Spring Break
Friday, March 27 – Quiz IV
Friday, April 3 – Exam II
Friday, April 17 – Quiz V
Friday, May 1 – Quiz VI
Wednesday, May 6 – Last Day of Classes
Friday, May 8, 9:00 - 12:00 – Final Exam, Section A
Monday, May 11, 9:00 - 12:00 – Final Exam, Section B
Wednesday, May 13, 9:00 - 12:00 – Final Exam, Section C

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

Spring 2015

Week 1	January 23	Course Policies, Syllabus, Basic Terms
Week 2	January 26	Section 1.7 – Summation Notation
	January 28	Section 2.1 – Qualitative Data
	January 30	Section 2.2, 2.3 – Quantitative Data, Quiz I
Week 3	February 2	Section 3.1 – Measures of Central Tendency
	February 4	Section 3.2 – Measures of Dispersion
	February 6	Section 3.3 – Mean, Variance for Grouped Data
Week 4	February 9	Section 3.4 – Standard Deviation
	February 11	Section 4.1 – Experiments, Outcomes, and Sample Space
	February 13	Section 4.2 – Calculating Probability, Quiz II
Week 5	February 16	Section 4.3 – Marginal and Conditional Probability
	February 18	Sections 4.4 – Intersections of Events
	February 20	Exam I
Week 6	February 23	Section 4.5 – Unions of Events
	February 25	Section 4.6 – Factorials, Permutations, and Combinations
	February 27	Sections 5.2 – Probability Distribution of a DRV
Week 7	March 2	Sections 5.3, 5.4 – Mean and Standard Deviation of a DRV
	March 4	Section 5.4 – Binomial Distribution
	March 6	Section 5.5 – Hypergeometric Distribution, Quiz III
Week 8	March 9	Section 5.5 – Hypergeometric Distribution
	March 11	Sections 6.1 – The Normal Distribution
	March 13	Section 6.2 – Standardizing a Normal Distribution
Week 9	March 16	NO CLASS
	March 18	NO CLASS
	March 20	NO CLASS
Week 10	March 23	Section 6.3 – Applications of Normal Distribution
	March 25	Section 6.4 – Determining z and x Values
	March 27	Sections 7.1 – Sampling Distributions, Quiz IV
Week 11	March 30	Sections 7.2, 7.3 – The Sampling Distribution of \bar{x}
	April 1	Section 7.4 – Applications of the Sampling Distribution of \bar{x}
	April 3	Exam II
Week 12	April 6	Sections 7.5 – The Sampling Distribution of \hat{p}
	April 8	Section 7.6 – Applications of the Sampling Distribution of \hat{p}
	April 10	Section 8.2 – Est. of μ : σ known
Week 13	April 13	Section 8.4 – Est. of p : Large Samples
	April 15	Section 8.4 – Est. of p : Large Samples
	April 17	Section 9.1 – Hypothesis Testing : Introduction, Quiz V
Week 14	April 20	Section 9.2 – Hyp. Tests about μ : σ known
	April 22	Section 9.4 – Hyp. Tests About p : Large Samples
	April 24	Section 9.4 – Hyp. Tests About p : Large Samples
Week 15	April 27	Section 10.1 – Inferences about the Difference Between Two Means
	April 29	Section 12.1 – The F Distribution
	May 1	Section 12.2 – One-Way Analysis of Variance, Quiz VI
Week 16	May 4	Section 12.2 – One-Way Analysis of Variance
	May 6	Review