

MATH 130 Introductory Statistics
Spring 2011
Syllabus and Course Information

Instructor: Dr. Sheldon Lee

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Office: RC 213

Office Hours: Mon 1 - 2, Tues 11 - 12, 1 - 2, Wed 1 - 2, Thurs 9 - 10, 2 - 3, Fri 1 - 2

Meeting Times: MWF 9:00 - 9:50 AM, MRC 314, Final Exam: Thursday 5/12, 7:40 - 9:40 AM.

Catalog Course Description: An introductory course which deals with the organization and processing of various types of data, normal and binomial distributions, estimation theory, hypothesis testing, correlation and regression, and some nonparametric tests. Prerequisite: acceptable placement score or grade of C or higher in Math 091.

Workload: Introductory Statistics can be a demanding course, requiring a lot of time and effort. You must have enough time to read, study, and do homework. Most students need to spend about 2 to 3 hours outside of class for every one hour in class in order to do well.

Text: Elementary Statistics, 11th ed., Mario F. Triola

Course Content: We will cover the following material from the text:

Chapter 1: Introduction to Statistics

Chapter 2: Summarizing and Graphing Data

Chapter 3: Statistics for Describing, Exploring, and Comparing Data

Chapter 4: Probability

Chapter 5: Discrete Probability Distributions

Chapter 6: Normal Probability Distributions

Chapter 7: Estimates and Sample Sizes

Chapter 8: Hypothesis Testing

Chapter 9: Inferences from Two Samples

Chapter 10: Correlation and Regression

Chapter 11: Goodness-of-Fit and Contingency Tables

Chapter 12: Analysis of Variance

General Course Objectives:

This course is designed to help students learn basic concepts in descriptive and inferential statistics, and introductory probability. Students demonstrate knowledge of these concepts by solving numerous assigned homework problems, and by providing written solutions to exam problems in accepted statistical format.

Introductory Statistics is a support course for a number of disciplines in the health and social science fields. We will look at how to organize and represent data (descriptive statistics) and how to test hypotheses and draw conclusions based on the data (inferential statistics). We will also focus on the theory behind the procedures, at an introductory level.

We will be using both Excel and SPSS in this class. Viterbo University has a site license for the statistical package SPSS. We will learn how to use this software in class in order to solve the statistical problems within this course. It is not a requirement to use or learn this software. However, when exam time arrives, students will be allowed to use SPSS and/or any calculator of the students choosing; thus, getting to know SPSS could be a fairly valuable tool. (Students who are majoring in the social sciences – psychology, sociology, social work – will find it useful to learn how to use SPSS because it is the tool of choice in those fields for doing statistical research. If you envision going to graduate school you might want to try to get comfortable with SPSS.)

Graded item

Participation and attendance	10%
Assignments and quizzes	30%
3 Midterm Exams	40%
Comprehensive Final Exam	20%

Grading

90% and above	A
80 – 89.9%	B
70 – 79.9%	C
60 – 69.9%	D

Assignments and quizzes (30%)

Assignments consist of homework, group assignments, quizzes, labs, writing assignments, and projects. Homework will be collected on a regular basis. I will assign, collect, and grade a small set of required homework problems for each section covered, and will also assign a larger set of recommended problems. If you have access to MyMathLab (or want to purchase access) I will post optional practice problems for you. Late assignments will be penalized 20% of the possible points for each class period late, up to a maximum of three periods. If you cannot be in class, you can place your solutions under my door before the time they are due. Of all the homework, quiz, and group assignment scores, the lowest three will be dropped. For this reason, no make-up quizzes or group assignments will be allowed even if you have a valid reason or let me know ahead of time. Labs, writing assignments, and other projects will also be given throughout the semester. For these, you will typically be given one or two weeks to complete the assignment, and you will be able to work with one or two other people. These assignments are worth more than the regular homework assignments and quizzes, and the grades cannot be dropped.

Exams (60%)

There are three midterm exams and one cumulative final exam. You may use any calculator or approved technology (Excel, SPSS). On each test, you may use one side of a 8.5×11 " sheet of notes *without worked out examples*, to be turned in with the test. All tests must be taken in the regular classroom at the scheduled times. I will replace your lowest test score with your final exam score if it is better. If your final exam score is lower than all three regular tests, then no adjustments will be made. The cumulative final exam will be held on Thursday, May 12, from 7:40 – 9:40 a.m. This exam must be taken at this time unless approved in writing by the Dean.

Participation, attendance, in-class activities, and board work (10%)

You are expected to attend class on a regular basis, and keep me informed if you cannot attend. Once you have had 4 unexcused absences, every unexcused absence from that point onward will incur a penalty of 5% from the participation grade. You are also expected to work problems in groups when asked, and periodically present solutions on the board to the other groups.

Cheating: The first occurrence will result in a zero being recorded; the second will earn the student an F in the course.

Where to get help

Since this is mathematics, you will probably get stuck often. Don't panic, this is all part of the learning process. You will likely need a support group which may include other students or tutors. The Learning Center has tutors available and is located in MRC 332. I have a flexible schedule and am available for office visits.

Course Goals and Objectives

1. Thinking: Students engage in the process of inquiry and problem solving.
 - Reason deductively by learning general principles which are then applied to specific problems.
 - Reason inductively by studying examples, seeing the common characteristics, and broadening the solution to the generic case.
 - Learn to use the statistical process as one of the means of answering a question or supporting a position.
2. Life Value Skills: Students respond to ethical issues, using informed value systems.
 - Learn of some classic examples of the misuse of statistics and its consequences.
 - Acquire an appreciation for the importance of honesty in the presentation of all (not just favorable) outcomes of statistical research
3. Communication: Students speak and write to suit varied purposes, audiences, disciplines, and contexts.
 - Read text and reference materials outside of class.
 - Observe examples and discusses questions and solutions in class.
 - Communicate solutions to statistical problems in writing on assignments, quizzes, and exams in appropriate statistical format.

Americans with Disabilities Act (ADA)

If you have a diagnosed disability and require services or accommodations for this class, please inform me and Jane Eddy, the disabilities (ADA) coordinator (MRC 332; 796-3194) within 10 days to discuss your needs.

Tentative Schedule

Week	Date	Topic Covered	Assignment due
1	17-Jan	1.2/1.3 Introduction to Statistics	
	19-Jan	1.4/1.5 Critical thinking and sampling	
	21-Jan		
2	24-Jan	2.2/2.3 Frequency distributions	1.2 – 1.5
	26-Jan	2.4/3.2 Graphs and Measures of center	Quiz 1
	28-Jan		
3	31-Jan	3.3 Measures of variation	2.2 – 2.4
	2-Feb	3.4 Measures of relative standing and boxplots	Quiz 2
	4-Feb		
4	7-Feb	4.2/4.3/4.4 Basic Probability concepts	3.2 – 3.4
	9-Feb		Quiz 3
	11-Feb		Project 1: Describing Data
5	14-Feb	Test 1	
	16-Feb	5.2/5.3 Random variables, binomial distribution	
	18-Feb	5.4 Binomial distribution	
6	21-Feb	6.2 The Normal distribution	5.2 – 5.3
	23-Feb	6.3 Applications of the normal distribution	Quiz 4
	25-Feb	6.4 Sampling distributions and estimators	
7	28-Feb	6.5 The Central Limit Theorem	6.2 – 6.3
	2-Mar		Quiz 5
	4-Mar	7.2 Estimating a proportion	
7-Mar - 11-Mar		SPRING BREAK	
8	14-Mar	7.3/7.4 Estimating a Population Mean	
	16-Mar	7.5 Estimating a Population Variance	6.4 – 6.5, 7.2, Quiz 6
	18-Mar		
9	21-Mar	Test 2	
	23-Mar	8.2 Basics of Hypothesis Testing	
	25-Mar		
10	28-Mar	8.3 Testing a Proportion	8.2
	30-Mar	8.4/8.5 Testing a Mean	Quiz 7
	1-Apr		
11	4-Apr	9.2 Inferences about Two Proportions	8.3 – 8.5
	6-Apr	9.3 Inferences about Two Means (Independent samples)	Quiz 8
	8-Apr	9.4 Inferences about Two Means (Dependent samples)	
12	11-Apr		9.2 – 9.4
	13-Apr		
	15-Apr	Test 3	
13	18-Apr	10.2 Correlation	
	20-Apr	10.3 Regression	Project 2: Inference
	22-Apr	EASTER BREAK	
14	25-Apr		
	27-Apr		
	29-Apr	11.2 Multinomial Experiments: Goodness-of-fit	10.2 – 10.3
15	2-May	11.3 Contingency Tables	
	4-May		Quiz 9
	6-May		
16	10-May	FINAL EXAM	