

MATH 130 Online: Introductory Statistics
Fall 2010
Syllabus and Course Information

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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 001.

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. For a normal 3 credit hour 15-week statistics course, most students need to spend about 8 - 12 hours per week on the course in order to do well.

Academic Integrity: Students are expected to adhere to the University policy regarding academic honesty for all assignments and testing. This can be found in the general student handbook on page 131. *Failure to adhere to standards for academic honesty will result in failure of the course.*

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

- Introduction to Statistics (sampling, bias, designing experiments, ethical issues)
- Descriptive Statistics (plots, measures of center and spread, skewness)
- Probability
- The Binomial Distribution
- The Normal Distribution
- Sampling Distributions
- Interval Estimation/Hypothesis Testing
- Linear Correlation and Regression
- Multinomial Experiments and Contingency Tables

Technology: A scientific calculator will be useful for this course. (Example: TI-30XIIS, sells for about \$15) You should have access to a computer in which you can load software and applications. We will be using Blackboard, MyMathLab/Course Compass, TestGen, and StatCrunch, for the course.

Graded item		Grading	
Homework	20%	90% and above	A
Quizzes	25%	80 – 89.9%	B
Discussion board	10%	70 – 79.9%	C
Midterm	20%	60 – 69.9%	D
Final Exam	25%		

Homework (20%)

The MyStatLab software includes homework problems that are done using the MathXL player. There are suggested due dates for the assignments which you should follow in order to prepare you for the quizzes, which have strictly enforced due dates. However, you may work at your own pace if you choose, and you may also redo problems until they are correct. I encourage you to try to get 100% on these problems, by doing them until you get them correct. The problems are set up so that you may get online help such as example problems and video lectures.

Online Quizzes (25%)

You will be asked to do two online quizzes per week, typically due on Monday and Thursday nights at midnight. The quizzes may have multiple choice questions, short answer questions, and essay type questions. You may use notes and reference materials, and there will be a reasonable time limit. Some of the quizzes will be done using the TestGen plug-in, which you need administrative rights to install. I use the TestGen tests to generate open-ended test questions, that more match the format of the written exams. One technical flaw of TestGen that I have not overcome is that the problem is automatically marked as incorrect, until I grade them. The dates that each of these are due will be posted on the master calendar, at least one week before the due date. The quizzes will be available two or three days before the due date, and you must take the quiz by midnight (11:59 pm) of the due date. I will drop the lowest three quizzes, which includes missed quizzes.

Discussion Board (10%)

At the beginning of each week, I will post discussion board questions on Blackboard for you to answer online. You are given until the end of the week (Sunday 11:59 p.m.) to engage in the discussion. You are responsible for making an initial response, as well as offering feedback to your classmate's postings. The points will be awarded based on the quantity and quality of the posts, considering such factors as the quantity and quality of the posts. A more detailed rubric is posted on the Blackboard site.

Proctored Exams (45% total)

We will have two proctored exams in this class - a midterm to take place on October 15, and a cumulative final exam to take place on December 15. I am flexible with the exact time that you take each test. I would be willing to allow students to take the test within one or two weekdays from the given dates. If you absolutely cannot get to the Viterbo campus in La Crosse on these days, then you will need to find a proctor. If you use a proctor, the test should be done within two weekdays of the test date (before or after). Ideally, a proctor should be a librarian or associated with some testing center. You need to give me contact details of the proctor at least two weeks before each test. In case of emergency, if the proctor is unavailable at the specified time, you will have to notify me before the test is due and the test will be rescheduled. Let me know if you have concerns or problems with taking two proctored exams. One sheet of notes for the midterm and two sheets of notes for the final exam are allowed. A calculator is allowed for the exams as well.

Online Software

There is a rather large array of online software we will use for this course, many of which will seem complicated at first. Be patient, and let me know if you have questions at any time about these tools.

Blackboard: We can use this for accessing announcements, the discussion board, and grades.

MyStatLab/MyMathLab/Course Compass/MathXL

MyStatLab refers to the combination of both Course Compass and MathXL. The Course Compass page is a front-end for MathXL, and looks almost identical to the Blackboard page. You access the course at www.coursecompass.com, using course id: lee34836. See the Blackboard announcement for specific instructions. The MathXL tool is used to do the assignments, and some of the quizzes. You link to these pages from the Course Compass page.

Course Web Page This site, at <http://www.sheldonthlee.net/M130>, is used for accessing class notes, announcements, assignments, and due dates. In addition, I will often post solutions to homework and quiz problems, review material for the test, and other important files. My rationale for using a web page is to make it easy to find course material, in order to avoid navigating through the Blackboard menus.

StatCrunch We will be using StatCrunch, a web-based tool used to perform computations. It is a similar tool to SPSS, but with more of an educational slant. It will cost \$12.00 for the semester, which you can access at <http://www.statcrunch.com>. It also comes with MyStatLab in the following way. On certain homework and quiz questions, there is a StatCrunch button that allows you to launch the application.

In summary, *bookmark these pages*:

Blackboard	blackboard.viterbo.edu
Course Compass	www.coursecompass.com
Stat Crunch	www.statcrunch.com
Course page	www.sheldonhlee.net/M130

Internet outages

From time to time, some of the software may be temporarily unavailable. In particular, we experienced several problems with the Course Compass and MyMathLab software over the summer. If this happens, don't panic! Simply send me an email, and I will respond by extending the appropriate quiz, if applicable.

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, phone calls, and video conferencing (skype id: sheldon.lee). I am generally available in the late morning and late afternoon, and some evenings.

Core Abilities

1. **Thinking:** Students engage in the process of inquiry and problem solving that involves both critical and creative thinking.
 - A. Reason deductively by learning general principles which are then applied to specific problems.
 - B. Reason inductively by studying examples, seeing the common characteristics, and broadening the solution to the generic case.
 - C. Learn to use the statistical process as one of the means of answering a question or supporting a position.

This ability is assessed by evaluating performance on exams and quizzes where students use skills acquired to solve problems.
2. **Life Value Skills:** Students analyze, evaluate and respond to ethical issues from an informed personal value system.
 - A. Learn of some classic examples of the misuse of statistics and its consequences.
 - B. Acquire an appreciation for the importance of honesty in the presentation of all (not just favorable) outcomes of statistical research.

This ability is assessed by evaluating performance on pertinent exam and quiz questions relating to the chapter covering misuse of statistics, and on the course project where the students will report the outcome of their project, regardless of the favorability of the results based on the data collected.
3. **Communication Skills:** Students communicate orally and in writing in an appropriate manner both personally and professionally.
 - A. Read text and reference materials outside of class.
 - B. Observe examples and discusses questions and solutions in class.
 - C. Communicate solutions to statistical problems in writing on assignments, quizzes, exams, and course project in appropriate statistical format.

This ability will be assessed using a combination of evaluation of performance on exams, quizzes, oral in-class contributions, and the course project write-up.

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	Dates	Sections covered
1	8/30 – 9/3	1.2/1.3 Introduction to Statistics 1.4/1.5 Critical thinking and sampling
2	9/6 – 9/10	2.2/2.3 Frequency distributions 2.4/3.2 Graphs and Measures of center
3	9/13 – 9/17	3.3 Measures of variation 3.4 Measures of relative standing and boxplots
4	9/20 – 9/24	4.2/4.3/4.4 Basic Probability concepts 5.2/5.3 Random variables, binomial distribution
5	9/27 – 10/1	5.4 Binomial distribution 6.2 The Normal distribution
6	10/4 – 10/8	6.3 Applications of the normal distribution 6.4 Sampling distributions and estimators
7	10/11 – 10/15	6.5 The Central Limit Theorem MIDTERM – covers up to 6.5
8	10/18 – 10/22	7.2 Estimating a proportion 7.3/7.4 Estimating a Population Mean
9	10/25 – 10/29	7.5 Estimating a Population Variance 8.2 Basics of Hypothesis Testing
10	11/1 – 11/5	8.3 Testing a Proportion 8.4 Testing a Mean (σ known)
11	11/8 – 11/12	8.5 Testing a Mean (σ unknown) 9.2 Inferences about Two Proportions
12	11/15 – 11/19	9.3 Inferences about Two Means (Independent samples) 9.4 Inferences about Two Means (Dependent samples)
13	11/22 – 11/26	Review Thanksgiving
14	11/29 – 12/3	10.2 Correlation 10.3 Regression
15	12/6 – 12/10	11.2 Multinomial Experiments: Goodness-of-fit 11.3 Contingency Tables
	12/15	Final Exam