Math 230 Elements of Statistics
Spring, 2009
MWF 10-10:50 MC 304
Instructor: Mark Saegrove, MC 523, Office ph. 796-3657; Home ph.: 1-608-735-4789

Catalog Course Description: Probability, random variables, mathematical expectation, estimation of parameters, tests of hypothesis, regression, correlation, and analysis of variance are some of the topics covered. Computers are heavily used for problem-solving and data analysis. Prerequisite: acceptable placement score or grade of C or higher in Math 110.

Course Objectives:

This course is a "producer-oriented" course where students will learn the basic principles of descriptive and inferential statistics and probability, and apply those principles to solve statistics problems using calculators and computers. Students will provide solutions to problems using accepted statistical terminology and format.

Desired Student Outcomes Assessed:

Problem Solving: [3.1] Students shall demonstrate the ability to perform computational and algebraic procedures using a calculator or computer. Assessment will be based on appropriate quiz and exam questions.

Communication: [4.1] Students will use the language of mathematics accurately and appropriately. Assessment will be based on appropriate quiz and exam questions.

Core Abilities Addressed

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.

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, and exams in appropriate statistical format.

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

Text: Introduction to the Practice of Statistics, 6th ed., Moore, McCabe, and Craig; Freeman, 2009.

Content: What is Statistics?
Looking at Data.
Ethics in Descriptive Statistics.
Data Relationships.
Producing Data.
Probability.
Sampling Distributions.
Introduction to Inference.
Ethics in Inferential Statistics.
Inference for Distributions
Inference for Proportions.
Inference for Two-Way Tables
Inference for Regression
Multiple Regression
One-Way Analysis of Variance
Two-Way Analysis of Variance

Grading:	4 exams	400 pts.
	quizzes/homework	100 pts.
	cumulative final exam	100 pts. (minimum)
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	total points	600 pts.

Reading and problem assignments will be given at each class meeting. Short (5-10 min.) quizzes covering the assigned work will be given at the beginning of most class meetings. Quizzes are open book, open notes. Exams are closed book with 1 page of notes allowed. Homework may be collected in lieu of a quiz on occasion.

Note: Grades will be based on the 600 points listed above; there is no "extra credit".

Attendance: Class attendance is required. See Viterbo University catalog for guidelines followed.

You are responsible for all assigned reading, even if not discussed in class. You are responsible for topics discussed in class, even if not found in the text.

A valid, verifiable excuse is needed to make up a missed exam or quiz. Exams and quizzes must be made up in a timely manner, usually within one week of return.

The final exam must be taken at the regularly scheduled time, unless change is approved in writing by the Dean.

ADA Statement: If you are a person with a disability and require any auxiliary aids, services, or other accommodations for this class, please see me and Jane Eddy, the Americans with Disabilities

Act coordinator (MC332, 796-3194) within the 10 days to discuss your accommodation needs.

Calculating Equipment: We use SPSS on the computers in MC 304 for much of the calculating in this course, but it is recommended that you have a hand-held calculator or portable computer with appropriate calculating capabilities for home use. Many other computers on campus also have SPSS.

Cheating: Zero credit on pertinent work for first offense. Failure in the course for second offense.

References: Rossman and Chance, Workshop Statistics, Springer.
Kimble, How to Use and Misuse Statistics, Prentice-Hall.
Reichman, Use and Abuse of Statistics, Penguin.
Phillips, How to Think About Statistics, Freeman.
Triola, Elementary Statistics, 9th ed., Addison-Wesley (or 10th edition)

Schedule: Weeks 1-4: Chapters 1 and 2; exam 1.
Weeks 5-8: Chapters 3,4, and 5; exam 2.
Weeks 9-11: Chapters 6,7 and 8; exam 3.
Weeks 12-14: Chapters 9,10, and 11;exam 4.
Week 15: Chapters 12 and 13.
Final Exam Week: Comprehensive final exam.