Applied Statistics (MATH 206)
Spring Quarter, 2005

Time/Place: MWRF 12:00-12:50 p.m. KRH 107
Instructor: Jonathan Duncan (duncjo@wwc.edu)
Office: Kretchmar Hall 330, phone: 527-2097
Office Hours: 9:00 T, 10:00 MWRF, 13:00 MR, or by appointment

Calculator: You will need a simple scientific calculator.
Webpage: http://math.wwc.edu/courses/206/

This course provides a study of applied statistics, including methods of describing data, distributions, sampling, confidence intervals, hypothesis testing including analysis of variance, correlation and regression. We will cover selected sections from chapters 1-11 in your text. The deadline for withdrawing is Tuesday, 17 May and the final will be given on Monday, 6 June.

Topics

1. Describing, Exploring and Comparing Data (Chapters 1 and 2):
types of data, critical thinking, design of experiments, frequency distributions, visualizing data, measures of center, measures of variation, measures of relative standing, exploratory data analysis
2. Probability and Probability Distributions (Chapters 3 and 4):
fundamentals of probability, addition rule, multiplication rules, counting, random variables, binomial probability distributions, mean and variance of the binomial distribution
3. Normal Probability Distributions (Chapter 5):
standard normal distribution, applications of the normal distribution, sampling distribution, central limit theorem, normal approximation to the binomial distribution
4. Estimates and Hypothesis Testing (Chapters 6, 7, and 8):
estimating a population proportion, estimating a mean with known $\sigma$, estimating a mean with unknown $\sigma$, basic hypothesis testing, testing a proportion, testing a mean with known $\sigma$, testing a mean with unknown $\sigma$, inferences about two means
5. Correlation, Regression, Goodness-of-Fit and ANOVA (Chapters 9, 10, and 11)
correlation, regression, multinomial experiments: goodness-of-fit, one-way analysis of variance

Objectives

Upon completion of this course, students will have

1. developed demonstrable understanding of the topics outlined above;
2. successfully engaged in mathematical thinking, reasoning, problem solving, and expression;
3. become proficient in expressing clear and accurate solutions to mathematical problems in written form.

The following requirements encourage and measure the successful completion of these objectives.

Online Quizzes and Homework Forum Participation (O1,O2)

Online quizzes will be given after class on Mondays and Thursdays, excluding those days which fall directly on or after a scheduled exam. Fifteen five point quizzes will be given totaling 75 points. In addition, regular participation in the online homework forum is worth up to 40 points. You may earn a combined total of no more than 100 points out of 100 possible in this category.
Homework (O2,O3)

Mathematics is not a spectator sport. Daily assignments will be give, each due by 5:00 p.m. on the day of the next class period. These assignments should be considered the minimal amount of homework required to pass the course, and will take approximately 2 hours of work for each hour of lecture. Assignments which are more than one class day late will not be accepted. Your lowest two homework scores will be dropped at the end of the quarter. If you miss more than two assignments due to appropriate and verifiable reasons, additional homework scores may, at the discretion of your instructor, be dropped.

Please observe the following guidelines when preparing your homework. Papers which do not meet these criteria may be discounted.

1. Use letter (8.5 \times 11) sized paper with clean edges (not torn out of a notebook).
2. Multi-page assignments must be stapled or paper-clipped together.
3. Fold the assignment lengthwise like a book and write your name, the course number, and assignment number(s) on the front cover.
4. Use a pencil, write legibly, and organize your problems and solutions in a logical manner.
5. Show all steps in solving the problem. Include figures, and notes if appropriate. A reader must be able to verify that you not only have the correct answer, but have also expressed a correct solution.

Exams (O1,O2)

There will be four exams during the quarter, including the two-hour comprehensive final. The first three exam dates are subject to in-class change, to be announced at least one week in advance. You may request alternative exam dates in advance for appropriate and verifiable reasons. The final exam may only be taken out of schedule after consultation with the Associate Academic Dean.

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<thead>
<tr>
<th>Exam</th>
<th>Chapters</th>
<th>Date</th>
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<tbody>
<tr>
<td>I</td>
<td>1 through 3</td>
<td>18 April</td>
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<tr>
<td>II</td>
<td>3 through 5</td>
<td>4 May</td>
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<tr>
<td>III</td>
<td>6 through 9</td>
<td>25 May</td>
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<tr>
<td>Final</td>
<td>Cumulative, emphasis on chapters 10 and 11</td>
<td>Mon, 6 June 10:00 a.m.</td>
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Grades

Your final letter grade is based on your quarter average, made up of six scores: your online activity score, your homework average, and your four exam scores. Weights are given below. Appropriate (to your instructor) modifications of the final grade may be made in individual cases for progress, unusual circumstances, etc.

<table>
<thead>
<tr>
<th>Score Weights</th>
<th>Letter Grades (lowest percent)</th>
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<tbody>
<tr>
<td>Final 25%</td>
<td>B+ 89% C+ 78% D+ 64%</td>
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<tr>
<td>Exams I-III 3×17%</td>
<td>A 93% B 82% C 68% D 57% F 0%</td>
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<tr>
<td>Homework 16%</td>
<td>A- 91% B- 80% C- 66% D- 55%</td>
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<td>Online 8%</td>
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All acts of dishonesty are unacceptable, including cheating, plagiarism, forgery, misrepresentation, falsification, and prohibited collaboration. Violation of academic integrity codes will result in disciplinary action. Collaboration on homework is encouraged, but be certain that the work you hand in is your own.

Disabilities

Students with a physical and/or learning disability who require accommodations should contact the instructor or Disability Support Services at 527-2366. This syllabus is available in alternative formats upon request.