Applied Statistics (MATH 206)
Winter Quarter, 2003

Time/Place: MWF 11:00-11:50 a.m. KRH 205

Instructor: Jonathan Duncan (duncjo@wwc.edu)
Office: Kretchmar Hall 330, phone: 527-2097
Office Hours: 10:00 MWF, 4:00 MTT, or by appointment

Webpage: http://math.wwc.edu/courses/206/

Calculators: You will need a scientific calculator for this class.

This course examines applied statistics, including methods of describing data, distributions, sampling, confidence intervals, hypothesis testing including analysis of variance, correlation and regression. The course will cover chapters 1 through 10 in your text, in order, omitting sections 7.3, and 10.2. The deadline for withdrawing from the course is **Tuesday, 18 February** and the final will be given on **Tuesday, 18 March**.

Topics

1. Understanding Data (chapters 1-3):
   - Displaying distributions, describing distributions, normal distributions, scatterplots, correlation, least-squares regression, cautions about regression, relations in categorical data, designing samples, and designing experiments.
2. Understanding Inference (chapters 4-8):
   - Randomness, probability models, sampling distributions, general probability, binomial distributions, conditional probability, estimating with confidence, tests of significance, statistical significance, error probabilities and power, inference for the mean of a population, comparing two means, inference for a population proportion, and comparing two proportions.
3. Topics in Inference (chapters 9,10):
   - Two-way tables, the chi-squared test, the analysis of variance $F$ test.

Objectives

Upon completion of this course, students will be able to

1. Organize and describe data using various data displays, including histograms and scatterplots.
2. Work with basic probability concepts and distributions, numerical variables, sampling distributions, estimation techniques, and hypothesis testing techniques.
3. Perform simple linear regression and correlation analysis, and chi-square tests.
4. Use the computer as a tool in basic statistical computation and data presentation.

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

Homework

Daily 10 point assignments will be give, each due at the beginning of the next class period. Homework which is more than one class period overdue will be discounted at a rate of 2 points per day late. Please see your instructor about homework which is late due to illness or other appropriate and verifiable reasons. Your lowest two homework scores will be dropped at the end of the quarter.
Please observe the following guidelines when preparing your homework. You may be asked to redo assignments which do not meet these criteria. In such cases, normal late homework discounts will apply.

1. Use letter (8.5 × 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. Handwritten assignments should be done in pencil and written legibly. All assignments must be organized and present solutions in a logical manner.
5. Show all essential steps in solving the problem, include figures, and notes when appropriate. A reader must be able to easily verify that you not only have the correct answer, but have also expressed the correct solution to the problem.

Exams

There will be four exams during the course of the quarter, including the two-hour comprehensive final. You must attend the final exam at the scheduled time. The first three exams will be taken at the normal class meeting time. Make-ups will only be given for written, verifiable excuses, with notification given to your instructor in advance.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Chapters</th>
<th>Date</th>
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<tbody>
<tr>
<td>Exam I</td>
<td>1, 2 and 3</td>
<td>24 January</td>
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<tr>
<td>Exam II</td>
<td>4 and 5</td>
<td>12 February</td>
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<tr>
<td>Exam III</td>
<td>6, 7 and 8</td>
<td>7 March</td>
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<tr>
<td>Final</td>
<td>1-10, emphasis on 9 and 10</td>
<td>Tue, 18 Mar 12:00 p.m.</td>
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Grades

Your final letter grade will be assigned as shown below based on your quarter average. Your quarter average is made up of three averages: your homework average, hour-exam average, and your final exam score. Weights for each of these are shown below. Appropriate (to your instructor) modifications of the final letter grades may be made in individual cases for progress, unusual circumstances, etc.

<table>
<thead>
<tr>
<th>Average</th>
<th>Letter Grades (lowest percent)</th>
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<tbody>
<tr>
<td>Final 25%</td>
<td>A+ 98% B+ 88% C+ 76% D+ 63%</td>
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<tr>
<td>Exams I-III  50%</td>
<td>A 92% B 82% C 67% D 57% F 0%</td>
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<tr>
<td>Homework 25%</td>
<td>A- 90% B- 80% C- 65% D- 55%</td>
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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 print formats upon request.