Applied Statistics (MATH 206)
Spring Quarter, 2006

Time/Place:  Section A: MWF 11:00-11:50 p.m. in KRH 345  Lab: H 2:00-4:50 p.m. in RGH Lab
Section B: MWF 12:00-12:50 p.m. in KRH 345  Lab: W 2:00-4:50 p.m. in RGH Lab

Instructor:  Jonathan Duncan (duncjo@wwc.edu)
Office:  Kretchmar Hall 330, phone: 527-2097
Office Hours: 10:00 MTWF, 11:00 R, 12:00 R, 13:00 M, or by appointment

Webpage:  [http://math.wwc.edu/courses/206/](http://math.wwc.edu/courses/206/)
Calculator:  You will need a **simple** scientific calculator.

This course includes a study of applied statistics, including methods of describing data, distributions, sampling, confidence intervals, hypothesis testing including analysis of variance, correlation and regression. We cover selected sections from chapters 1-11 in your text. The deadline for withdrawing is **Tuesday, 16 May** and the final will be given on **Tuesday, 6 June** for section A and **Wednesday, 7 June** for section B.

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. developed the ability to perform statistical tasks using modern computer applications.

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

Online Quizzes and Forum Participation (O1,O2)

Online quizzes will be given weekly, excluding those weeks in which an exam is scheduled. Seven quizzes will be given totaling 70 points. In addition, regular participation in the online forums is worth up to 40 points. You may earn a combined total of no more than 90 points in this category.
Homework (O2)

**Mathematics is not a spectator sport.** Daily assignments will be given, 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. 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.

Homework which does not follow these guidelines may be returned or discounted.

1. Use letter (8.5 × 11) sized paper with clean edges (not torn out of a notebook).
2. Assignments must be stapled or paper-clipped and folded lengthwise like a book. Write your name, the course section and number, and assignment number(s) on the front cover.
3. Use a pencil, write legibly, and organize your problems and solutions in a logical manner. Show all steps in solving the problem, including figures and notes if appropriate.

Lab Activities (O3)

Attendance is required at the weekly labs which will focus on statistics applications using technology. You will work in pairs to complete the lab activities and submit individual lab reports by 5:00 p.m. on the Tuesday following each lab session. A lab exam worth approximately twice the points of a standard lab activity will be given during the final week of the quarter.

Exams (O1,O2)

There will be three written exams during the quarter, including the two-hour comprehensive final. The first two 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.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Chapters</th>
<th>Date</th>
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<tbody>
<tr>
<td>I</td>
<td>1 through 4</td>
<td>21 April</td>
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<tr>
<td>II</td>
<td>5 through 7</td>
<td>19 May</td>
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<tr>
<td>Final</td>
<td>Cumulative, emphasis on chapters 8-10</td>
<td>Tue, 6 June 2:00 p.m. (A)</td>
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</tbody>
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Grades

Your final letter grade is based on six scores: your online activity score, your homework average, your lab average, and your three 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 1,2 2×20%</td>
<td>A 93% B 82% C 68% D 57% F 0%</td>
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<tr>
<td>Labs 15%</td>
<td>A- 91% B- 80% C- 66% D- 55%</td>
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<tr>
<td>Homework 12%</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.