Applied Statistics (MATH 206)
Spring Quarter, 2009

Time/Place: MWF 12:00-12:50 p.m. KRH 347
R 2:00-4:50 p.m. KRH 215

Instructor: Jonathan Duncan (jonathan.duncan@wallawalla.edu)
Office: Kretchmar Hall 330, phone: 527-2097
Office Hours: 10:00 MTWF, 1:00 MWF, or by appointment

by Mendenhall, Beaver, and Beaver; Brooks/Cole, 2009. (ISBN 0-495-38953-6)
Webpage: http://math.wallawalla.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 and 14 in your text. The deadline for withdrawing is Tuesday, 19 May and the final will be given on Tuesday, 9 June 2009.

Topics

1. Describing Data:
   types of variables, graphs for categorical data, graphs for quantitative data, relative frequency histograms, measures of center, measures of variability, measures of relative standing, five-number summaries and box plots, bivariate data, scatter-plots

2. Probability and Probability Distributions:
   events, sample spaces, probability using simple events, counting rules, event relations, probability rules, independence, conditional probability, multiplication rule, discrete random variables, binomial distribution, normal distribution, areas in the normal distribution, approximating the binomial distribution, sampling distributions, central limit theorem

3. Inferential Statistics:
   point estimation, interval estimation, estimating differences, one-sided confidence bounds, choosing the sample size, hypothesis testing, testing for differences, student’s t distribution, small-sample inferences, analysis of variance, the $\chi^2$ distribution, goodness-of-fit tests, tests of independence

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 Participation (O1,O2)

Several aspects of this course will take place in an online learning environment found at http://moodle.wallawalla.edu/. To take full advantage of these tools, you will need to participate regularly in the homework forum discussions and review forums. Participation means posting questions, suggestions, solutions, or other relevant comments in these forums. You are expected to make a minimum of one posting every two weeks.
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 lecture 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 homework score 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 a group lab report by 5:00 p.m. on the Tuesday following each lab session. A lab exam, worth twice 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>Exam I</td>
<td>1-4</td>
<td>23 April</td>
</tr>
<tr>
<td>Exam II</td>
<td>5-9</td>
<td>22 May</td>
</tr>
<tr>
<td>Final</td>
<td>Cumulative, emphasis on untested chapters</td>
<td>Tue, 9 June 2:00 p.m.</td>
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Grades

Your final letter grade is based on six scores: your online participation 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</th>
<th>Weight</th>
<th>Letter Grades (lowest percent)</th>
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<tbody>
<tr>
<td>Final</td>
<td>30%</td>
<td>B+ 89% C+ 78% D+ 64%</td>
</tr>
<tr>
<td>Exams I,II</td>
<td>2×20%</td>
<td>A 93% B 82% C 68% D 57% F 0%</td>
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<tr>
<td>Labs</td>
<td>15%</td>
<td>A- 91% B- 80% C- 66% D- 55%</td>
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<tr>
<td>Homework</td>
<td>12%</td>
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<tr>
<td>Online</td>
<td>3%</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.