St 411/511—Methods of Data Analysis I  
Course Information, Winter 2003  
Class meets: Peavy 130, MWF 1:00-1:50

Instructor:  
Dan Schafer; Kidder 58, 737-1990; schafer@stat.orst.edu  
Office hours: Mon 2-3, Wed 3-4, Thurs 3-4

Web page:  
http://osu.orst.edu/instruct/st511/schafer. Includes: copies of lecture overheads,  
assignments, data sets, link to textbook errata, sample exams

Prerequisites:  
Equivalent of St 351, or St 202 and 209.

Text book:  

Grading:  
St 511: Homework 25%, 1 Midterm 30%, Project 10%, Final exam: 35%  
St 411: Homework 25%, 1 Midterm 30%, Final exam 35% (10% free)

Lectures:  
These will follow the book closely. Copies of overhead transparencies will be  
made available. Students are responsible for all information given in class.

Computer labs:  
Labs are held in Milne Computer Center, 201. The teaching assistant (TA) will  
give demonstrations and guidance in the one hour assigned lab time. You must  
have an ONID account, which can be obtained at onid.orst.edu. If you  
don’t yet have an account, please get one prior to the first lab meeting. The lab  
room will be publicly available at other times (posted outside room 201).

Stat. Software:  
Instructions will be provided for S-PLUS by TAs and on handouts. The manuals  
are available electronically by clicking on help in the S-PLUS menu. (You may use  
SAS or another statistics package if you wish, but without guidance.)

Student Copies:  
For those who would like to use S-PLUS at home, copies for student-owned  
computers may be purchased for $5, while they last. Students in some departments  
may purchase an S-PLUS license directly from their department (Forest Science,  
Fisheries and Wildlife, Rangeland Resources, and Computer Science). All others  
may purchase licenses from the Statistics Department. See Connie in Kidder, room 44.

Homework:  
There will be weekly computational exercises and “data problems” from the  
book (files available on web). The latter require that you analyze a data set  
(with statistical software) to answer questions of interest, and to write a summary of findings (using those for case studies in the text book as a guide) in  
a neat report. Homeworks will be handed in to the TA at the start of lab.

St 511 Project:  
Due in lab, 3/12 or 3/13. Select a research article in a journal from your field,  
which makes some kind of statistical group comparisons. Evaluate whether the  
authors’ conclusions are justified by their study design. (Where did sampling  
or experimental units come from? How were their group memberships deter-
mined?) Write short descriptions of the objectives, the study design, and the conclusions. Provide your assessment of the scope and validity of conclusions. The report should be one or two pages, double spaced. (Do not search for an article that makes the wrong conclusions. Do not evaluate the statistical methodologies used in the paper.)

**Policies:**
Exams: “open book and notes.” No late exams (different grade formula if exam is missed). Missing homeworks will receive a score of 0. Late homeworks will not be graded, but will receive a score equal to the average of non-missing homeworks minus a penalty for late homeworks 2, 3,... . Bring calculator to exams (but built-in statistics functions won’t be necessary or useful). Please: no newspaper reading during class.

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<td>1</td>
<td>1/6: Introduction</td>
<td>1/8: Causal Inference (Sleuth: 1.1-1.2)</td>
<td>1/10: Randomization Test (1.3-1.5)</td>
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<td>2</td>
<td>1/13: T-tests (2.1-2.2)</td>
<td>1/15: Paired t-test and confidence interval (2.3)</td>
<td>1/17: 2-sample t-test and confidence interval (2.4)</td>
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<td>1/20: MLK day NO CLASS</td>
<td>1/22: P-values (2.5-2.6)</td>
<td>1/24: Robustness (3.1-3.2)</td>
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<td>1/27: Resistance (3.3-3.4)</td>
<td>1/29: Log transformation (3.5-3.7)</td>
<td>1/31: Rank-Sum test (4.1-4.2)</td>
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<td>5</td>
<td>2/3: Permutation Test (4.3)</td>
<td>2/5: Other alternatives (4.4-4.6)</td>
<td>2/7: Review</td>
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<td>6</td>
<td>2/10: Comparing two of several groups (5.1-5.2)</td>
<td>2/12: Extra sum of squares F-test (5.3)</td>
<td>2/14: One-way ANOVA F-test (5.4-5.5, 5.7)</td>
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<td>2/17: Review</td>
<td>2/19: EXAM (on material thru 2/12)</td>
<td>2/21: Linear combinations (6.1-6.2, but not p. 157-8)</td>
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<td>2/24: Simultaneous infer- ences (6.3)</td>
<td>2/26: Multiple comparison procedures (6.4, 6.6)</td>
<td>2/28: Simple linear regression (7.1-7.2)</td>
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<td>3/3: Tests and CIs for regression coefficients (7.3)</td>
<td>3/5: Prediction intervals (7.4-7.6)</td>
<td>3/7: Robustness and model checking (8.1-8.3,)</td>
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<td>10</td>
<td>3/10: Log transformation (8.3-8.4)</td>
<td>3/12: Analysis of variance (8.5.1-8.5.3, 8.6.1-8.6.2)</td>
<td>3/14: Slack and Review</td>
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**FINAL EXAM:** Monday, March 17, 2:00 pm