



The University of British Columbia

Department of Psychology

Psychology 218 "Analysis of Behavioural Data"

Section 4 Tue/Thur 9:30-11:00 Buch A205

Instructor:

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Content

There are two main themes in the course: 1) summarizing and displaying data, and 2) mathematically-based decision making in the context of psychological research. Emphasis will be on learning of concepts and principles and upon problem solving and critical thinking.

Format

Material will be covered primarily in **lecture** format. In addition, however, there will be one **computer demonstration** of the use of SPSS for data analysis. And, there will be **two data analysis assignments** to be completed by students working alone or in small groups. In several classes we will use Java applets developed at Rice University to illustrate various concepts:

www.ruf.rice.edu/~lane/rvls.html

Text , Calculator, and Optional Computer Software

Robert Pagano's *Understanding statistics in the behavioral sciences* (Seventh Edition, or earlier editions) is the required text. A calculator will be needed for studying and especially for exams. The Texas-Instruments TI-30 Stat is adequate and inexpensive. Calculators with advanced statistical functions (e.g., automatic calculation of regression lines) are not permitted in exams. The SPSS statistical package is recommended for students who have computers. A free copy of SPSS can be downloaded for temporary use.

Evaluation

There will be two midterms, plus a final. The midterms may occupy two consecutive classes. Both midterms will be "open book". The midterms will be equally weighted and will be non-cumulative (2 x 26%). The final will have a cumulative component and will be weighted slightly more than the midterms (33%). 15% of the total mark will be based on the data analysis projects.

If necessary, the grades may be scaled so that the class average is approximately 64% and the standard deviation is approximately 14%. An announcement will be made in class if scaling is to be used.

There are strict rules concerning time limits on exams, missed exams, and cheating. Students must inform the instructor if an exam is to be missed (there is a 24-hour answering machine at 604-822-4650) and produce a medical certificate upon returning to class otherwise, a grade of 0% will be assigned for a missed exam. Suspected cases of cheating are automatically forwarded to the Dean's Office. Penalties for cheating are severe (see below). Students should be able to produce identification during exams, or when handing in assignments

Midterm exams will span two consecutive classes. The first exam will be "open-book" and will focus on assessment of students' ability to analyze and interpret realistic data sets. In the second exam, which is closed book, students will be asked to write an essay in which they demonstrate an understanding of key concepts and principles of data analysis that were performed in the open-book exam.

Human Subject Pool Participation

Up to 3% of the final mark can be obtained by participating in experiments conducted in the Psychology Department. See <http://hsp.psych.ubc.ca>. These marks are added on to the final grade obtained for exams and assignments.

Psychology Department's Position on Academic Misconduct

Cheating, plagiarism, and other forms of academic misconduct are very serious concerns of the University, and the Department of Psychology has taken steps to alleviate them. In the first place, the Department has implemented software that can reliably detect cheating on multiple-choice exams by analyzing the patterns of students' responses. In addition, the Department subscribes to *TurnItIn*--a service designed to detect and deter plagiarism. All materials (term papers, lab reports, etc.) that students submit for grading will be scanned and compared to over 4.5 billion pages of content located on the Internet or in TurnItIn's own proprietary databases. The results of these comparisons are compiled into customized "Originality Reports" containing several, sensitive measures of plagiarism; instructors receive copies of these reports for every student in their class.

In all cases of suspected academic misconduct, the parties involved will be pursued to the fullest extent dictated by the guidelines of the University. Strong evidence of cheating or plagiarism may result in a zero credit for the work in question. According to the University Act (section 61), the President of UBC has the right to impose harsher penalties including (but not limited to) a failing grade for the course, suspension from the University, cancellation of scholarships, or a notation added to a student's transcript.

All graded work in this course, unless otherwise specified, is to be original work done independently by individuals. If you have any questions as to whether or not what you are doing is even a borderline case of academic misconduct, please consult your instructor. For details on pertinent University policies and procedures, please see Chapter 5 in the UBC Calendar (<http://students.ubc.ca/calendar>) and read the University's Policy 69 (available at <http://www.universitycounsel.ubc.ca/policies/policy69.html>).

Course Outline

1. Summarizing and Displaying Data.

Visualization techniques. Summary statistics. Standard scores. The normal curve. Correlation and regression. Text - Chapters 1-7.

Probable exam date is week of February 4 2008.

2. Introduction to Hypothesis Testing.

Probability. Random samples. Sampling distributions. Binomial distribution. The sign test. Type I and II errors and power. Text - Chapters 8-11.

Probable exam date is week of March 10, 2008.

3. Survey of Common Statistical Tests.

Mann-Whitney U-test. t-tests. Effect size statistics. The analysis of variance. The concept of interaction of variables. Planned and unplanned multiple comparisons. Text - parts of Chapters 13-18. Alternatives to Null Hypothesis Testing will also be discussed.

Exam date will be in Final Exam Period in April, 2008. This exam will have a cumulative component and will have both a closed book and open book component.



Data Analysis Projects

There will be two projects involving data analysis. The first one is due just before the first midterm the second by the end of classes. Students may work alone or in small groups (4 maximum). For both projects a written report, with graphs, (3-4 pages) is required.

Project 1. Find some interesting data in the Library or on the Internet and demonstrate that you understand the material in Chapters 1-7. Here is a starting place -

<http://lib.stat.cmu.edu/datasets>

Project 2. You will be given data from a psychology experiment and will be asked to write the Results section for a journal article.

What are the objectives of these assignments? There are several. The most important is to facilitate the learning of data analysis the most effective learning seems to occur when we have "hands on practice" and when we have to communicate to someone else what we have done and learned. A second objective is to move away from rote memorization/textbook learning the realism of analyzing actual data rather than fabricated numbers in the questions at the end of chapters should also facilitate learning. Lastly, they are excellent practice for writing exams.



Some Interesting Links to Statistics Pages (Really!)

["Data and Story Library"](#)

["Gallery of Data Visualization"](#)



The URL for this document is www.psych.ubc.ca/~dwilkie/218man.htm

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