

Psychology 2030 - Methods and Statistics

Psychology 2030 is intended as a gentle introduction to the scientific methods and statistical techniques commonly used in psychological research. Emphasis is on these methods and statistics as ways of thinking about observations and phenomena, rather than on the blind application of research designs and mechanical aspects of calculation. An ability to read and to understand the original scientific literature is the ultimate goal; comprehension of research designs and statistical methods as tools (as opposed to virtuosity with a hand calculator and mystical equations) is the proximate goal. To that end, lectures and discussion will critically examine induction and statistical thinking in the context of everyday claims in medicine (e.g., the benefits of “screening”, interpreting test results, claims for the efficacy of “alternative” medicine, etc.), epidemiology, law (e.g., the reliability of fingerprint identification, DNA “fingerprinting”, etc.), and so on. Many will find that these discussions may challenge one or another of their core or long-held beliefs. Good. How to mount these challenges and to engage in critical thinking about everyday claims represent the fundamental “take-home” messages of the course.

Lecture Notes

The other critical aspect of the course is the introduction to statistics as used by experimental psychologists. As such, the emphasis is on the use of statistical techniques as actually occurs in experimental psychology, rather than on an introduction to statistics as a mathematical discipline. All of the materials for this aspect of the course, and some others (e.g., writing in APA style), have been collected into a book of the class lecture notes by John R. Vokey and Scott W. Allen, entitled *Thinking with Data (5th Edition)*. These lecture notes are available at the cost of printing and distribution from the bookstore. The latest version is always available in portable document format (pdf) on the course web site at:

<<http://classes.uleth.ca/201001/psyc2030a/>>

Textbooks

Vokey, J.R. & Allen, S.W. (2009). *Thinking with Data (Fifth Edition)*. Lethbridge, AB: Psyence Ink.

Huff, D. (1959). *How to lie with statistics*. New York: W.W. Norton.

Evaluation

Evaluation will consist of two take-home midterms and a final exam, each worth 1/3 of your final grade. The final exam will be in-class and scheduled by the registrar in the final examination period (tentatively scheduled for Thursday April 22 from 9 am until noon). Each test will examine both methodological and statistical issues and will consist of short-answer questions. The exams will be cumulative only in the

sense that life is cumulative. That is, although material presented later in the course will build on material learned earlier in the course, the exams will not explicitly address material from before a previous exam.

Make-up exams are not normally given and will not be considered without a valid medical excuse.

Important Dates

February 12	Midterm 1 due
March 22	Midterm 2 due
April 22	Final Exam (tentative)

Calculator and Computer Spreadsheet

A good hand-calculator will prove useful for the course. At a minimum (beyond the standard arithmetical functions), the calculator must have a square-root function. More sophisticated functions, such as summation, factorial, permutations and combinations, standard deviation, correlation, etc., may prove useful, but are not essential. As virtually all of the statistical methods covered in the course can be programmed in a spreadsheet, access to a computer spreadsheet program is probably even more useful, but, again, is not required.

Questions and Discussion

All questions and discussion about the course material should occur during class time, including questions and discussion about the exams, so that all students benefit from the discussion. Failing that, students are encouraged to post their questions and commentary to the class email list: psyc2030a@uleth.ca both to invoke discussion, and to receive clarification (if

needed) from the instructor or teaching assistants; doing so will most often result in a prompt and considered response.

Although the instructor is more than happy to discuss research methods, statistics, and recent research results with students individually, under no circumstances will the instructor discuss grades or exam performance with the individual student.

Course Web Site

The course web site is located at:

<<http://classes.uleth.ca/201001/psyc2030a/>>

and is where various supplementary materials and exercises for the course may be found.

Letter Grades

The values in the table below will be used as a guideline to convert scores out of 100% to minimum letter-grades, although the instructor reserves the right to adjust individual grades upward to reflect such aspects of performance as a marked improvement over the semester.

Experimental Participation Credit

This course is designed to provide students with an opportunity to participate in active research programs of faculty members. Calls for volunteers to assist in these projects will be made during the semester, in class or via e-mail. If you are asked to volunteer, and you accept, each project usually requires one hour or less of your time, but this will depend on the individual research project. In recognition for your time, and in recognition that you are learning something about the discipline of psychology, beyond what you would in the normal classroom environment, an extra credit of 1 to 2% for each study in which you participate will be added to your total grade to a maximum of 5%.

Note that there is no guarantee that all students will be

able to achieve the maximum extra credit. These extra credits are added only after all grade cutoffs have been established such that students who choose not to participate are not disadvantaged. Please check with the Research Assistant for the Experiment to ensure that you have not completed a study previously or have done a similar study. *Please note that you will only receive this credit if you participate in experiments that are listed on the WebCT site for this class.*

A Note on Course Orientation

It is a fundamental belief in this course that university students are responsible adults and competent learners, capable of organising their time and study habits to accommodate the rigours of university courses. There are at least two consequences of this belief. First, the exams are to be taken outside of class or in crowded conditions in which there may be a temptation, and occasional opportunity to view the work of other students. Responsible adults will not commit such violations of academic integrity (students should be aware of the student discipline policy starting on page 80 of the 2009-2010 calendar). Second, by the nature of its content, this course is among the more challenging courses that the Department of Psychology offers at the 2000 level; it deliberately is *not* an “easy” science credit. Rather, to do well in the course *requires* that as a responsible, capable adult, you will keep up with and come to understand the course material by *reading* and *thinking* seriously about the course material (which includes asking questions of the material, analysing the author's intentions, etc.) *before* the class discussions, by actively participating in class demonstrations, by using the demonstrations and supplementary materials provided on the class web-site, by raising questions in class, and by engaging in debate and discussion with the instructor and fellow students on the class email list. This is not a course for

the dilettante (i.e., one who hopes to skate through by a last minute reading of the material or a friend's lecture notes).

That being said, there is much in this course that is fascinating, fun, and intellectually rewarding, and I sincerely welcome you to it.

– S. Allen

Your final letter grade will be calculated as follows (of course, if you're precisely on the border you will receive the higher grade):

%	Grade	%	Grade	%	Grade	%	Grade
90 - 100	A+	77 - 80	B+	67 - 70	C+	55 - 60	D+
85 - 90	A	73 - 77	B	63 - 67	C	50 - 55	D
80 - 85	A-	70 - 73	B-	60 - 63	C-	0 - 50	F