University of Oregon, Spring 2005

Psychology 302: STATISTICS

208 Deady Hall, MW 14:00-15:20

Professor: Gerard Saucier, Ph.D.

Office: 312 Straub

E-mail: gsaucier@darkwing.uoregon.edu Phone: 346-4927 with voice mail

Office Hours: Mondays and Wednesdays 10:30 am till noon, or by appointment

Teaching Assistants: Jessica Kieras, 413 Straub, 346-4852, jkieras@darkwing.uoregon.edu; Seraphine Shen, 320 Straub, 346-4990, cshen@darkwing.uoregon.edu

Office Hours: Mondays 12-2 (Seraphine), Tuesdays 12-2 (Jessica), or by appointment

Text: Gravetter, F. J., & Wallnau, L. B. (2005). Essentials of statistics for the behavioral sciences. Belmont, CA: Thomson/Wadsworth.

Course web page: http://darkwing.uoregon.edu/~gsaucier/Psych_302_2005.htm

Course Objectives (or, what's the purpose of this course?)

Welcome to Psychology 302. Statistical analyses are a crucial part of research in many sciences, including psychology. Statistical analyses help scientists discern patterns in phenomena, and determine the relative generalizability of these patterns. Everyday people increasingly use statistics for the same ends. In other words, statistics does much to help people make sense of the world. Being able to understand and use statistics is, then, an important skill. This course is designed to help you gain the following:

1. The ability to understand and explain to others the statistical analyses in reports of social and behavioral science research.

2. Preparation for learning about research methods, and about more advanced statistical methods.

3. The ability to identify the appropriate statistical procedure for many basic research situations and to carry out the necessary computations, by hand (for simple computations) or by computer (for more complex ones).

4. Further development of your quantitative and analytic thinking skills.

The ability to reason in a logical manner is more important to successful understanding of psychological statistics than the ability to manipulate complex equations. Inescapably (!), the course

involves numbers, but if you have basic arithmetic and algebra skills, the mathematical part of the course is straightforward.

What Methods Are Used for Learning?

1. Reading the assigned material. That includes following the numeric examples closely and writing down questions about anything not entirely clear. You are expected to read the text, in full. In this course, the first reading assignments are long, but their pace slows down especially in the last part of the course when the material becomes more advanced.

2. Completing the assigned homework practice problems (and turning them in on time). Statistics is a SKILL, so it necessary to do statistics, not just read and understand.

3. Attending the class sessions, listening closely, asking questions -- be sure to have done the reading first. Do not fall behind!

4. Studying for, taking, and reviewing answers for quizzes and EFOs.

5. Attending your lab section. Be sure to bring questions from the reading with you. This is a great chance to get real help with what is not completely clear and to pursue deeply whatever has excited you (yes, there can be exciting things in statistics!). Lab sections will also be the place to develop some computer data-analysis experience.

The class format is primarily prepared presentations (i.e., lecture) with response to questions, but there will be some in-class exercises and student participation in work teams.

Summary of Basis for Evaluation

Your final course grade is based on the following components:

30% Score on the homework assignments (problem sets)

Note: to pass the course, you must turn in all homework assignments by the final quiz (exam)

20% The higher of your two midterm-quiz scores

15% The lower of your two midterm-quiz scores

25% Score on the final quiz (exam)

2% Sufficient participation in groups that convene during class sessions

4% Participation with sufficient effort in a minimum number (4) of EFOs (described below)

4% Responses to reading (you need to turn in two, on assigned dates, see end of syllabus)

This final percentage is then converted into a grade. A range is 90% to 100%, B range is 80% to 90%,

C range 70% to 80%, D range 60% to 70%, with '+' and '-' being assigned if the percentage is within the top or bottom 1/3, respectively, of each of these ranges. F is 59.99% or lower (there is, of course, no F+ or F-). Note that there is no grade for class attendance per se, but if you miss most of the class sessions that obstructs your group-participation and EFO credit.

Lectures and Laboratories

At the end of the syllabus is a list of lecture topics and reading assignments. Please read the relevant section of the text before the lecture to which it corresponds. Note also that lecture notes will be available on the Blackboard web site (see below) by 10 am, 4 hours prior to each class. To avoid copying down class overheads, you can bring these notes to class. In addition to attending lectures, you must also enroll in and attend one of the 4 weekly statistical laboratories run by the class TAs. The labs will be held in 180 Straub, the Psychology Department"s computer lab (open 8am-9pm Monday through Thursday, and 8-5 Friday). The labs will provide an opportunity to gain hands-on computing experience relevant to concepts discussed in lectures. The statistical software for this course is SPSS for Windows Version 12. It is installed on the computers in 180 Straub. The labs will also involve discussion of the weekly problem sets, going over quizzes, as well as allowing you the chance to raise any questions you have concerning lectures or the textbook. Labs begin in Week 1 with an introduction to the SPSS computer package. The follow-up course to 302 is 303 (Research Methods in Psychology), and computer stats are usually a major part of 303. They are also, of course, useful in the world of work beyond the University.

Components of Your Performance in Psychology 302

In order to give ongoing performance feedback, and help students keep focus on the important subject matter of this course (a prerequisite to upper division courses in psychology), the course does have both quizzes and very unintimidating little practice tests called EFOs (early feedback opportunities). The quizzes include two midterm quizzes and a final quiz (i.e., exam). These quizzes consist of a combination of "problem" items, multiple-choice, fill-in-the-blank, and mini-essay items. The midterms will begin approximately 15 minutes into the class session (i.e., at 2:15 pm) on the day scheduled for each quiz; the first 15 minutes of these midterm class-sessions will be devoted to presentation or review of material that will make up part of the quiz, so it makes sense to come to class on time that day (like every day). If you must miss a quiz, talk to the instructor, as it may be possible (e.g., with a signed medical excuse) to arrange a make-up quiz (different version than the one given earlier in class) on the first day of the final exam period; there will be no make-up quizzes prior to the final-exam period.

All quizzes are cumulative, with an emphasis on more recent material, and are closed-book. Questions will mostly be conceptual but some will involve calculation. Because comprehension rather than memorization is the goal, we will provide a list of mathematical formulas; your job will be to know what formula is relevant to a particular problem and how to use it correctly. It will be helpful to have a calculator for the quizzes but to receive credit for calculation problems you will need to show each step of your calculations; do not rely on advanced calculators that directly compute complex formulas. Individuals may submit written challenges to their quiz grade immediately after quizzes are administered. Grades will be adjusted only if the challenge is successful and ONLY for the individual that submitted the challenge.

EFO exercises are designed not so much to evaluate your performance as to enable you to check how

well you understand key course material, providing valuable performance feedback. The EFOs are like tests but are short and the only grading is done by you, although you do turn in an answer to get EFO credit (based not at all on whether you got the right answer, but only on whether you put in effort to see how well you could do). About half the class sessions will include a short EFO exercise.

Two responses to readings are due overall. One is on an assigned date (see end of syllabus for your assigned date), the other is for any class session of your choosing (except quiz days): In either case, you are assigned to send by e-mail to the instructor by 10 am (four hours before class) a response to the assigned chapter(s) for that day. Responses must (1) identify the three most important points in the reading and also (2) state one specific question or confusion you would like clarified. Refer to specific page numbers. Keep responses short, no longer than 1 page if it were printed. To get credit, an RTR cannot be late (after 10 am on day of assignment)!

You will be assigned to one or more in-class discussion groups. These groups will carry out learning-focused exercises during class sessions, sometimes near the midpoint of the class session, sometimes near the end of the class session. These groups will often be responsible for producing a written product/report when they meet, and your credit for "sufficient participation" will be based on how often you are around to sign these products/reports, and on your being reasonably cooperative with other group members.

Statistics is a skill and not a spectator sport -- you must do it to learn it, you must get in the pool to learn to swim. To help you get yourself into the pool, homework assignments - take-home problem sets -- will be assigned most weeks. Assignments will normally be due at the very beginning of class on the Monday after they are handed out. Late problem sets will not be graded unless prior arrangements have been made. The problem sets will be graded on a 10 point scale (0-10). You are required to turn in all homework assignments in order to pass the course.

If you have difficulties with the problems, please consult with the TAs or with the instructor. Collaborative learning is encouraged: If you want to discuss the problems with other students, feel free to do so. Homework helps you learn skills by practicing. Talking over the problems and reworking them when you discover that others got different answers promotes deeper understanding of concepts and gives you more practice in applying skills. However, each student must submit separate homework, and you must show your work (no photocopies or word-for-word copying). In other words, the answers you turn in should be written independently. And again, all homework assignments must be turned in by the start of the final quiz (exam) to pass the course.

You are strongly encouraged to use a calculator for doing your assignments. You are permitted to use a calculator during tests, though one is not required. A simple calculator that adds, subtracts, divides, multiplies, and takes square roots should be of great help. Since you must show your work on all assignments and quizzes (and too fancy a calculator might prevent your doing this), calculators that also do statistical calculations are not of real help. No pressure to spend a lot of money: less than $10 should do. Solar calculators are environmentally friendly.

Academic Integrity

This instructor takes academic integrity seriously. Insuring the "validity" of grades requires seeing that they reflect honest work and learning rather than cheating. Cheating is defined as providing or accepting information on an quiz or exam, plagiarism or copying anyone's written work. Students caught cheating will be given an "F" for the course, and UO's student conduct coordinator will be informed. This

instructor does have a record of failing students for cheating. The instructor retains the right to assign seats for tests, to change individual's seating for test security purposes, to require and check ID for admission to tests.

Top Five Suggestions for Doing Well in This Course

1. Be an active learner, keep a pen/pencil moving, don't become passive, keep trying things...

2. Don't rely on cramming in a stats course, where gradually developed skills are so important

3. Ask for help if you get stuck (as everyone does at some point)

4. Work hard even in the early part of the course - that material is a necessary foundation...

5. Endeavor to find something interesting or fun in statistics (find a bit of intrinsic motivation)

PSYCHOLOGY 302 SCHEDULE: What's Happening When

(Note: the dates on this course outline are subject to change)

Date...Topic...Text Reading...RTR

March 28 Introduction to course

March 30 Populations and samples; frequency distributions ch. 1 and ch. 2 E, Q

April 4* Central tendency and variability ch. 3 and ch. 4 K, P

April 6 Standardized distributions and z-scores ch. 5 S, U

April 11* Probability ch. 6 T, X

April 13 The distribution of sample means ch. 7 D, V

April 18 Midterm 1

April 20 Hypothesis testing, error, effect size, and power ch. 8 W

April 25* The t statistic (as compared to z statistic) ch. 9 C, Y

April 27 The t test for two independent samples ch. 10 M, N

May 2* The t test for two related (paired) samples ch. 11 G, O

May 4 Estimation and confidence intervals ch. 12 F, L

May 9 Midterm 2

May 11 Analysis of variance (ANOVA): simple or 'one-way' ch. 13 H-J

May 16* ANOVA: two-factor (univariate), repeated measures ch. 14 B, Z

May 18 Correlation and regression; correlation as effect size ch. 15 A, R

May 23* Correlation and regression; correlation as effect size

May 25 Chi-square tests; phi coefficient as correlation ch. 16 makeup

June 1** Chi-square tests; phi coefficient as correlation

June 7 Final quiz (exam) 3:15-5:15 pm (finals week: Tues.)

* - Problem set (homework assignment) due at beginning of class session on this day

** - Problem set (homework assignment) normally due on this date will be due 4 pm, Friday May 27 (before Memorial Day Holiday) to enable it to be reviewed/evaluated before this week's lab meetings.

RTR - Responses to reading due from individuals whose last names start with the specified letters (which were randomly assigned to dates); makeup - make-up date for these assigned-date responses to reading is May 25, this is for those who failed to turn responses in on-time on earlier assigned dates. Example of a good specific question: "On page 357, it says that the Scheffe test is extremely cautious and safe. Does this mean it is better than the Tukey test on page 356? If not, how do we choose?" Example of a vague non-question "I don't understand chapter 13." Always specify WHAT you don't understand. Note: Questions about reading material are welcome any time, by any communication medium, not just via the RTR assignment for credit.