PSYCHOLOGY 292: BASIC DATA ANALYSIS
Winter 2007

In this course you will learn the basics of using descriptive and inferential statistics in the analysis of psychological data. The course emphasizes understanding of fundamental statistical principles rather than "cookbook" application of statistical formulas. These principles provide a foundation for more advanced statistical techniques that you may study in later courses. An appreciation of basic statistical principles, furthermore, can help you to be a more critical "consumer" of reported research findings.

Instructor:
Dr. Derek Koehler (PAS 4050; dkoehler@watarts.uwaterloo.ca)

TAs: To be announced on UW ACE, along with their tutorial sections and office hours.

Course website: For announcements, lecture slides and other course material, course marks, etc., please click on the Psych 292 course entry on UW ACE (http://uwace.uwaterloo.ca).

Text: Howell, *Fundamental Statistics for the Behavioral Sciences (5th Edition)*. Brooks/Cole.

Lectures: Tuesdays/Thursdays 10:30 a.m. - 12:20 p.m. in AL 116. No class on March 13 (Campus Day).

Tutorials

Section 101:	Tuesdays	4:30 p.m. - 5:50 p.m.	ES1 350
Section 102:	Wednesdays	4:30 p.m. - 5:50 p.m.	PAS 1241
Section 103:	Tuesdays	1:00 p.m. - 2:20 p.m.	PAS 1229
Section 104:	Wednesdays	6:00 p.m. - 7:20 p.m.	PAS 1241
Section 105:	Tuesdays	4:30 p.m. - 5:50 p.m.	PAS 1229
Section 106:	Wednesdays	8:30 a.m. - 9:50 a.m.	PAS 2083

Note: Tutorials will not be held the first week of class.

Evaluation

Assignments	10%	(1% each for 10 of the 11 sets of weekly target exercises)
Quizzes	60%	(4 in-class quizzes, collectively worth 60% of final mark)
Final exam	30%	(held during final exam period as scheduled by registrar)

Quizzes and Final Exam
The course is divided into four parts:

Part A (Weeks 1-3):   Descriptive statistics (characterizing a sample of data)
Part B (Weeks 4-6):   Probability and statistical inference (generalizing from sample to population)
Part C (Weeks 7-9):   Hypothesis testing (how likely is sample given a hypothesis about the population?)
Part D (Weeks 10-12): Correlation and regression (examining association between variables)

An in-class quiz is scheduled at the end of each part, covering the material from that part. In this sense, the quizzes are non-cumulative, but topics covered in this course naturally build on one another. For example, to carry out a t-test (covered in Part C), you need to know how to calculate a standard deviation (covered in Part A). All quizzes are closed-book, but a sheet with relevant statistical formulas will be provided so you won't have to memorize them. For the final exam, which is cumulative, you can use your textbook and notes. Quiz dates are listed in the schedule below; final exam is scheduled by the registrar.

The four quizzes, taken together, will account for 60% of your final mark. Your highest quiz score will count for 20% and your lowest for only 10%, with the two intermediate scores counting 15% each. This should help to offset, at least somewhat, the effects of a having "bad day" on one of the quizzes. Out of fairness to other students, please note that the instructor cannot offer any further changes in the weighting of the quizzes and final exam, or additional work for extra credit.

If you have a concern about how an item on a quiz was marked, please first have a look at the answer key (posted on UW ACE). If the answer key does not address your concern, please arrange to discuss

the matter further with the TA who marked the item. (The answer key will indicate who marked each item.) If you still feel that your concern has not been addressed, please put it in writing and submit it to the instructor, who will then discuss it with the TA and make a final decision.

Rescheduling Quizzes and Exams
Quizzes or exams can only be rescheduled in the case of an illness (or other medical problem) or circumstances of serious distress due to a family emergency or personal crisis. Documentation of some form is generally required in order to reschedule a quiz or exam. It is important to be aware that, in such cases, the only accommodation that can be offered is rescheduling the quiz or exam. Once the quiz or exam has been completed, poor performance due to circumstances such as those outlined above cannot be used as a basis for requesting re-weighting the contribution of the quiz or exam to the student's final course mark.

Students should contact their tutorial TA as soon as possible if they need to reschedule a quiz or exam, ideally by e-mail with a copy sent to the instructor. Documentation of the circumstances leading to the rescheduling should be provided either to the TA or to the instructor, in most cases at or before the time the rescheduled quiz or exam is administered. It is the *student's responsibility* to arrange to take the rescheduled quiz or exam as soon as possible after the originally scheduled date. (If you e-mail your TA and don't receive a reply within 24 hours, please send another message and copy it to the instructor.) In the case of an illness, for example, the quiz or exam can only be postponed for the period covered by the documentation of the illness. Any delays in taking the quiz or exam beyond that period must be justified to the instructor's satisfaction, subject to the availability of a TA to administer the rescheduled quiz or exam.

Once the marked quiz has been returned to students, typically two weeks after it is administered, it is no longer possible to reschedule its adminstration. Any student who has not taken the quiz at that point will receive a zero, except in the unusual circumstance in which documentation can be provided covering the entire period since the originally scheduled quiz date.

Exercises and Tutorials
A set of "target exercises" (drawn mainly from the Howell text) will be covered in tutorial each week. The assigned exercises and due dates are listed in the course schedule below. There will be a total of 11 such assignments, of which you may miss one. The remaining 10 will count 1% each toward your final mark; the assignments will not be graded but simply checked for completion. No credit will be given for late assignments. Assignments may be submitted in class or in the Psychology mailroom (PAS 3021A). Note that the set of exercises for the final week of lectures is suggested for practice but will not be handed in as an assignment. The TAs will answer questions and work through the "target exercises" in the tutorials each week. You will find the tutorials to be much more helpful if you have attempted to solve the problems for yourself prior to each meeting. Although attending tutorials is optional, many students find the tutorials to be the most valuable feature of the course.

How to Do Well in the Course
The key to learning statistics is practice. There is a set of exercises at the end of each chapter of the Howell text. Answers to the odd-numbered problems can be found at the back of the book; solutions to all problems are available through our course entry on UW ACE. You should try to solve all these problems—it's the best way to test whether you've completely understood the material covered in each chapter. As an incentive to try all the exercises, not just those that will be handed in each week, one exercise drawn from the textbook will appear on each quiz. Additional exercises (which can be downloaded through UW ACE) are provided for Part B of the course, where the lectures will depart somewhat from the textbook.

Here are some additional things you can do to more effectively learn the material and enjoy the course:
- carefully read the assigned chapters from the Howell text each week *before* the lecture
- take the publisher's web quiz to test your understanding of the material covered in each chapter (linked from the CD included in the text, or from the course UW ACE entry)
- ask questions, in lectures and tutorials, if you don't understand something
- see your TA during office hours if you need additional help

If you find that you are having trouble with the material and need more help than a TA can provide during tutorial and office hours, you might consider getting help from a tutor. A list of students who recently took the class, did well, and have expressed a willingness to offer tutoring services (either for pay or on a voluntary basis) is available from the course website on UW ACE. It is left to the student to contact and make arrangements directly with a tutor, and obviously it cannot be guaranteed that every student will benefit from tutoring, but working with a tutor may be a useful supplement to the course for those needing a little extra help.

Calculators
For the exercises, quizzes, and final exam, you will find it helpful to have a calculator, ideally with basic statistical functions (e.g., standard deviation). *Please bring your calculator to every class meeting.*

Sending Questions by E-mail
This is a large course, and as a result we typically receive lots of e-mail from students with questions about course content, assignments, quizzes and exams, etc. We are happy to receive questions by e-mail and will do our best to answer them promptly. To manage all this e-mail, however, we ask that whenever possible you direct your e-mail questions to your tutorial TA. The TA will either answer your question or forward it to the instructor as appropriate. For basic questions about the course content and scheduling, please be sure to read through the syllabus and announcements on UW ACE before sending e-mail, as often the answers to questions we receive can be found there.

Note on avoidance of academic offences (from the Associate Dean of Arts, Undergraduate Studies):
All students registered in the courses of the Faculty of Arts are expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for their actions. When the commission of an offence is established, disciplinary penalties will be imposed in accord with Policy #71 (Student Academic Discipline). For information on categories of offences and types of penalties, students are directed to consult the summary of Policy #71 which is supplied in the Undergraduate Calendar (section 1; www.adm.uwaterloo.ca/infousec/Policies/policy71.htm). If you need help in learning what constitutes an academic offence; how to avoid offences such as plagiarism, cheating, and double submission; how to follow appropriate rules with respect to "group work" and collaboration; or if you need clarification of aspects of the discipline policy, ask your TA and/or your course instructor for guidance. Other resources regarding the discipline policy are your academic advisor and the Undergraduate Associate Dean, as well as the following Arts Faculty Web page, "Avoiding Academic Offences" (http://arts.uwaterloo.ca/arts/ugrad/academic_responsibility.html).

Student's right to grieve: Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance, http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm.

Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.

Topic Schedule for Psychology 292, Winter 2007

week	topic	chapter(s)	lectures	tutorial	exercises	due	on quiz....
1	measurement, displaying data	1-3	Jan 4	Jan 9/10	3.1, 3.2, 3.9	Jan 12	1 (Jan 23)
2	central tendency and variability	4, 5	Jan 9, 11	Jan 16/17	4.11 (only for the data on ADDSC), 4.12, 4.16, 4.17 (only for the median), 4.18, 5.1, 5.2, 5.3, 5.4, 5.15, 5.16, 5.21 (for part b, you don't have to make the "graphics")	Jan 19	1 (Jan 23)
3	normal distribution	6	Jan 16, 18	Jan 23/24	6.1, 6.3, 6.4, 6.5, 6.7, 6.8	Jan 26	2 (Feb 13)
4	probability	7	Jan 25	Jan 30/31	7.2, 7.3, 7.4, 7.5, 7.10, 7.12, 7.16, 7.18, 7.19, 7.20 (thought question; no need to calculate)	Feb 2	2 (Feb 13)
5	sampling distributions	8.2, 12.1	Jan 30, Feb 1	Feb 6/7	12.1, 12.2, 12.3, 12.4, 12.5 plus Week 5 Supplemental Exercise Set	Feb 9	2 (Feb 13)
6	confidence intervals	12.7	Feb 6, 8	Feb 13/14	No textbook exercises; just Week 6 Supplemental Exercise Set	Feb 16	3 (Mar 15)
7	hypothesis testing: single and related samples	8, 12	Feb 15	Feb 27/28	12.6, 12.8, 12.9, 12.10, 12.11, 12.12, 12.14, 12.15, 12.17, 12.22	Mar 2	3 (Mar 15)
8	hypothesis testing: independent samples	13, 14	Feb 27, Mar 1	Mar 6/7	13.6, 13.12, 13.20, 14.8, 14.11, 14.13, 14.17	Mar 9	3 (Mar 15)
9	power	15 (skip 346-48)	Mar 6	Mar 13/14	15.3, 15.5, 15.9, 15.10, 15.12, 15.18, 15.19	Mar 16	4 (Apr 3)
10	correlation	9	Mar 8	Mar 20/21	9.1, 9.2, 9.4, 9.7, 9.10, 9.19	Mar 23	4 (Apr 3)
11	regression	10	Mar 20, 22	Mar 27/28	10.1, 10.2, 10.7, 10.8, 10.9, 10.10, 10.14, 10.20 (for b, predict weight from height)	Mar 30	4 (Apr 3)
12	chi-square	19 (skip 19.10)	Mar 27	Mar 29*	19.5, 19.6, 19.7, 19.8, 19.18 (recommended, not to be handed in)	--	on final

* Tutorial coverage of Week 12 lecture material will take place in class on Thursday March 29.