

PSYCHOLOGY 292: BASIC DATA ANALYSIS
Winter 2006

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, 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>).

Lectures: Tuesdays/Thursdays 10:30 a.m. - 12:20 p.m. in AL 116. No class on March 14 (Campus Day).

Tutorials

Section 101:	Tuesdays	4:30 p.m. - 5:50 p.m.	PAS 1241
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 1241
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 1241

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

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.

Exams and quizzes will be rescheduled only in the case of a medical or family emergency; documentation will be requested in these cases.

Exercises

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).

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, at least 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. 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. *Note:* Tutorials will not be held the first week of class.

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

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: All students registered in the courses of the Faculty of Arts are expected to know what constitutes an academic offence, to avoid committing academic offences, and to take responsibility for their academic 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; on the Web at <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>). If you need help in learning how to avoid offences such as plagiarism, cheating, and double submission, or if you need clarification of aspects of the discipline policy, ask your TA or course instructor for guidance. Other resources regarding the discipline policy are your academic advisor and the Undergraduate Associate Dean. 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>.

Topic Schedule for Psychology 292, Winter 2006

week	topic	chapter(s)	lectures	tutorial	exercises	due	on quiz...
1	measurement, displaying data	1-3	Jan 3, 5	Jan 10/11	--	--	1 (Jan 24)
2	central tendency and variability	4, 5	Jan 10, 12	Jan 17/18	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 20	1 (Jan 24)
3	normal distribution	6	Jan 17, 19	Jan 24/25	6.1, 6.3, 6.4, 6.5, 6.7, 6.8	Jan 27	2 (Feb 14)
4	probability	7	Jan 26	Jan 31/ Feb 1	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 3	2 (Feb 14)
5	sampling distributions	8.2, 12.1	Jan 31, Feb 2	Feb 7/8	12.1, 12.2, 12.3, 12.4, 12.5 plus Week 5 Supplemental Exercise Set	Feb 10	2 (Feb 14)
6	confidence intervals	12.7	Feb 7, 9	Feb 14/15	No textbook exercises; just Week 6 Supplemental Exercise Set	Feb 17	3 (Mar 16)
7	hypothesis testing, 1-sample t-test	8, 12	Feb 16	Feb 28/ Mar 1	12.6, 12.8, 12.9, 12.10, 12.11, 12.12, 12.14, 12.15, 12.17, 12.22	Mar 3	3 (Mar 16)
8	2-sample t-tests	13, 14	Feb 28, Mar 2	Mar 7/8	13.6, 13.12, 13.20, 14.8, 14.11, 14.13, 14.17	Mar 10	3 (Mar 16)
9	power	15 (skip 346-48)	Mar 7	Mar 14/15	15.3, 15.5, 15.9, 15.10, 15.12, 15.18, 15.19	Mar 17	4 (Mar 30)
10	correlation	9	Mar 9	Mar 21/22	9.1, 9.2, 9.4, 9.7, 9.10, 9.19	Mar 24	4 (Mar 30)
11	regression	10	Mar 21, 23	Mar 28/29	10.1, 10.2, 10.7, 10.8, 10.9, 10.10, 10.14, 10.20 (for b, predict weight from height)	Mar 31	4 (Mar 30)
12	chi-square	19 (skip 19.10)	Mar 28	Mar 30*	19.5, 19.6, 19.7, 19.8, 19.18	April 7	on final

* Tutorial coverage of Week 12 lecture material will be held in class on Thursday March 30 following the quiz on that date.