PSYCHOLOGY 292: BASIC DATA ANALYSIS
Winter 2012

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@uwaterloo.ca)

TAs: To be announced on LEARN, 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 LEARN.

Text: In lieu of a traditional textbook, students will be asked to subscribe to an online "course" called Statistical Reasoning, which is part of the Open Learning Initiative at Carnegie Mellon University. Please register at http://oli.web.cmu.edu/openlearning/ using **course key 2855LEC001**. Please register using your real name and, for your "account ID," enter your UW userid (unless it has already been taken on the OLI system). This will allow us to more easily match your records across the OLI and LEARN systems.

Lectures: Tuesdays/Thursdays 10:30 a.m. - 12:20 p.m. in AL 116.

Tutorials
Section 101:	Tuesdays	4:30 p.m. - 5:50 p.m.	EV1 132
Section 102:	Wednesdays	4:30 p.m. - 5:50 p.m.	HH 139
Section 103:	Tuesdays	1:00 p.m. - 2:20 p.m.	EV1 132
Section 104:	Wednesdays	6:00 p.m. - 7:20 p.m.	HH 2107
Section 105:	Tuesdays	4:30 p.m. - 5:50 p.m.	HH 1108
Section 106:	Wednesdays	8:30 a.m. - 9:50 a.m.	HH 1106

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

Evaluation
Checkpoints	10%	(10 online checkpoints worth 1% each toward final mark)
Unit Tests	60%	(3 in-class tests, collectively worth 60% of final mark)
Final exam	30%	(held during final exam period as scheduled by registrar)

Checkpoints
You will be asked to complete these relatively brief, online assessments throughout the term. There are 12 assigned checkpoints in total; if necessary you can miss two as final marks are based on the best 10 of 12 checkpoint scores. **You are allowed up to three attempts at each checkpoint** and will receive feedback on each attempt. In the case of multiple attempts, your final score for each checkpoint will be determined by the percentage of correctly answered items from your best-scoring attempt.

checkpoint(s)	due
Examining Distributions 1	Jan 13
Examining Distributions 2	Jan 20
Random Variables	Feb 3
Sampling Distributions 1 *and* 2	Feb 10*
Estimation	Feb 17
Hypothesis Testing	Mar 2
Case C → Q (ANOVA problem not scored)	Mar 9
Examining Relationships 1	Mar 16
Examining Relationships 2	Mar 23
Case C → C and Q → Q, *and* Inference for Relationships	Apr 2*

* Note that **two** checkpoints are due on these dates.

Unit Tests and Final Exam

Three unit tests will be held in class. In a sense, the three tests are non-cumulative, but topics covered in this course naturally build on one another. For example, to carry out a t-test (covered on Test 3), you need to know how to calculate a standard deviation (covered on Test 1). All unit tests are closed-book, but sheets with relevant statistical formulas and tables will be provided so you won't have to memorize them. These sheets will also be provided for use during the final exam, which is cumulative; for the final exam, students may also bring and use one additional (double-sided) page of their own notes. Test dates are listed in the schedule below; final exam is scheduled by the registrar.

The three unit tests, taken together, will account for 60% of your final mark. Your highest test score will count for 25% and your lowest for only 15%, with the intermediate score counting for 20%. This should help to offset, at least somewhat, the effects of a having "bad day" on one of the unit tests. Out of fairness to other students, please note that the instructor cannot offer any further changes in the weighting of the unit tests and final exam, or additional work for extra credit.

If you have a concern about how an item on a unit test was marked, please first have a look at the answer key (posted on LEARN). 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 Unit Tests and Exams

Unit tests or exams can only be rescheduled in the case of an illness (or other medical problem), circumstances of serious distress due to a family emergency or personal crisis, or (for students who commute) adverse weather on the day of the test. Documentation of some form is generally required in order to reschedule a test or exam. It is important to be aware that, in such cases, the only accommodation that can be offered is rescheduling the test or exam. Once the test 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 test or exam to the student's final course mark.

A rewrite session will be scheduled for each unit test for those students who were unable to take it at the scheduled time and can provide valid documentation. Scheduled rewrite sessions will be posted on LEARN; please email your tutorial TA to confirm that you will be attending the rewrite session. All students who missed the originally scheduled unit test are expected to attend the rewrite session. Exceptions will be granted only if additional documentation is provided covering the date of the rewrite session; decisions about how to proceed then will be made by the instructor on a case-by-case basis.

> *Official Department Policy:* Students who are requesting accommodation for course requirements (assignments, midterm tests, final exams, etc.) due to illness should do the following:
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> • seek medical treatment as soon as possible and obtain a completed UW Verification of Illness Form*:
>
> > http://www.healthservices.uwaterloo.ca/Health_Services/verification.html
>
> • submit that form to the instructor within 48 hours.
>
> • (preferably) inform the instructor by the due date for the course requirement that you will be unable to meet the deadline and that documentation will be forthcoming.
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> In the case of a missed final exam, the instructor and student will negotiate an extension for the final exam which will typically be written as soon as possible, but no later than the next offering of the course.
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> In the case of a missed assignment deadline or midterm test, the instructor will either:
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> 1. waive the course component and re-weight remaining term work as he/she deems fit according to circumstances and the goals of the course, or
>
> 2. provide an extension.
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> In the case of bereavement, the instructor will provide similar accommodations to those for illness. Appropriate documentation to support the request will be required.
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> Students who are experiencing extenuating circumstances should also inform their academic advisors regarding their personal difficulties.

Tutorials
Each week in tutorial sessions, your TA will guide the group through solutions to a set of target exercises. These target exercises are drawn from unit tests given in previous years, and so are a good guide to what you can expect to see on unit tests this term. The target exercises to be covered each week will be posted in advance. You will likely find the tutorials to be 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 helpful feature of the course.

How to Do Well in the Course
Here are some things you can do to more effectively learn the material and enjoy the course:
- carefully complete assigned reading each week *before* the lecture
- complete the "Learn by Doing" and "Did I Get This?" activities as you encounter them while doing the assigned reading in the online textbook
- test yourself on problems from previous years' unit tests (downloadable from the course LEARN site)
- 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 on the course LEARN site. 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 tutorial exercises, unit tests, 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, unit tests 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 LEARN before sending e-mail, as often the answers to questions we receive can be found there.

Schedule for Psychology 292, Winter 2012

lecture	topic	module(s)	tutorial	on test...
1 Jan 3	introduction	1 (through Measures of Center)	Jan 10/11	1 (Jan 24)
2 Jan 5	measurement and displaying data		Jan 10/11	
3 Jan 10	measures of central tendency	1 (from Measures of Spread)	Jan 10/11	
4 Jan 12	measures of variability		Jan 17/18	
5 Jan 17	probability & random variables	5, 6 (thru discrete random variables)	Jan 17/18	
6 Jan 19	normal distribution 1	6 (remainder)	Jan 24/25	2 (Feb 16)
7 Jan 26	normal distribution 2		Jan 31 /Feb1	
8 Jan 31	sampling distributions 1: EV and SE	7	Jan 31 /Feb1	
9 Feb 2	sampling distributions 2: central limit theorem		Feb 7/8	
10 Feb 7	confidence intervals 1: population mean	8 and 9	Feb 7/8	
11 Feb 9	confidence intervals 2: population proportion		Feb 14/15	
12 Feb 14	hypothesis testing: one-sample tests	10	Feb 14/15	3 (Mar 20)
13 Feb 28	hypothesis testing: related samples		Feb 28/29	
14 Mar 1	hypothesis testing: independent samples	11 (skip ANOVA)	Mar 6/7	
15 Mar 6	hypothesis testing: effect size and power	wise.cgu.edu/powermod	Mar 6/7	
16 Mar 8	inferential statistics: review	--	--	
17 Mar 13	correlation	2 (through Scatterplot)	Mar 13/14	on final
18 Mar 15	regression 1	2 (from Linear Relationships), 12 (Case Q → Q)	Mar 20/21	
19 Mar 22	regression 2		Mar 27/28	
20 Mar 27	chi-square	12 (Case C → C)	Mar 27/28	
21 Mar 29	test selection (review)	12 (Wrap-Up: Inference for Relationships)	--	