Descriptive Statistics (PSYCH2XE3) Course Outline - Winter 2012-13

NOTE: This is a preliminary version of the course outline and may be updated as the course proceeds. For the most up-to-date version please go to http://www.science.mcmaster.ca/psychology/psych2xe3/index.html

Instructor

Professor Sue Becker, becker@mcmaster.ca
Office hours: by appointment.

Course Assistance

Please post any course-related questions to Avenue (click on Psych2XE3 and go to the Discussion tab). Rather than emailing the professor or one of the individual TA's you should post your question on Avenue (unless it is of a personal nature). Others will likely have the same question and will benefit from seeing the answer. From Jan 8 onwards, your TA's will be monitoring the Avenue discussion board several times daily and you will get a fast response this way.

Teaching Assistants

TO1 Stefanie Northover northosb@mcmaster.ca
TO2 Chris Slugocki slugocc@mcmaster.ca
TO3 Luxi Li lil54@mcmaster.ca
TO4 Mitchell LaPointe lapoimrp@mcmaster.ca
TO5 Jordan Lass lassjw@mcmaster.ca
Course co-ordinator: Amy Beth Warriner warrinab@mcmaster.ca

Private tutor available for statistics:

Lindsay Farber, Ph.D. (c)
Neuroscience Graduate Student, MiNDS program
Bennett/Sekuler Vision and Cognitive Neuroscience Lab
farberle@mcmaster.ca
905 525 9140 ext. 24489
(please email Lindsay directly to inquire about her rates and availability)

Schedule

Lectures: Tuesdays and Fridays 12:30-1:20 ITB-AB102
Labs:
T01 Th 15:30 KTH/B123
T02 Tu 09:30 KTH/B123
T03 Th 09:30 KTH/B123
T04 Mo 14:30 KTH/B123
Course Objectives

Students should gain a strong foundation in core statistical concepts including measures of central tendency and dispersion, correlation, data distributions, comparing groups, different ways of plotting data and other exploratory data analyses through a combination of lectures and hands-on exercises in weekly computer labs. Note that labs are not optional and all lab assignments must be submitted during the lab time.

Materials and Fees

Course textbook:
Fundamental Statistics for the Behavioral Sciences, edition 7e, by David C. Howell, published by Wadsworth. Some supplementary readings from online sources will be added for the second half of the course.

Software:
We will use Excel and SPSS, both of which are available in all of the computer labs. Assignments will be completed and submitted during the lab times so students should not need to purchase their own copy of the software.

iClickers:
Every student needs to purchase an iClicker and should bring it to every lecture. iClickers can be purchased at the Titles campus bookstore and must be registered online with your name and McMaster student ID in order to receive participation credit for your iClicker response, see http://www.bookstore.mcmaster.ca/textbooks/iclicker-faq.html

MacID:
You will need to activate your MacID if you have not already done so, to work on the computers in the labs, and to receive course emails. See http://www.mcmaster.ca/uts for information on obtaining and activating your MacID.

Avenue:
You should check the Psych2XE3 discussion group on a daily basis for questions and answers, and also check the Course Announcements section.

Assessment

There will be 3 multiple-choice exams. There are no make-up exams. You may bring only an approved calculator, pencils and erasers suitable for multiple-choice scan sheets, and your McMaster student ID card to the exams. Sheets with formulae (if required) will be supplied for you. An approved calculator is any calculator whose name starts with Casio fx991. The possible weights for the three exams are presented below. The option that generates the highest value will determine your final grade. The instructor reserves the right to alter the evaluation scheme if necessary.

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<thead>
<tr>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
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<tbody>
<tr>
<td>Midterm 1</td>
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<tr>
<td>Midterm 2</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>40%</td>
<td>60%</td>
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<tr>
<td>Lab Assignments</td>
<td>15%</td>
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<tr>
<td>Participation</td>
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Lab assignments: Each lab assignment must be completed and submitted on Avenue during the
corresponding lab time (see schedule below). There will be a total of 9 lab assignments and the best 7 will make up 15% of your final mark. Late submissions outside of the regular lab time will not be accepted. There will be no make-up assignments.

**Participation** is earned by using your iClicker to answer questions posed during the lectures, no matter whether you got the question right or wrong (often there is no single right answer). Full marks (5/5) for participation will be earned for answering questions (maximum 1 point per class) in 80% or more of the classes in which there were iClicker questions posed, 4/5 marks for participating in 70-79% of classes with iClicker questions, 3/5 marks for participating in 60-69% of those classes, 2/5 for 50-59%, 1/5 for 40-49% and 0/5 for participating in less than 40% of those classes.

### Week-by-week lecture and lab schedule

**Week 1**


*Lab:* there is no lab this week.

*Readings:* Chapters 1, 2 and 3

**Week 2**


*Lab 1:* Intro to excel, plotting histograms.

*Readings:* Chapter 4

**Week 3**


*Lab 2:* Measures of central tendency.

*Readings:* Chapter 5.

**Week 4:** Correlation, fitting a line vs fitting a curve to data.

*Lectures Jan 29, Feb 1*

*Lab 3:* Measures of dispersion.

*Readings:* Chapter 9

**Week 5**

*Lecture Feb 5:* Regression.

*Midterm Test 1 Feb 8. Covers chapters 1-5 and chapter 9.*

*Lab:* no lab this week due to midterm.

*Readings:* Chapter 10.

**Week 6**

*Lecture Feb 12:* Multiple regression

*Lecture Feb 15:* Probability

*Lab 4:* Correlation and line-fitting

*Readings:* Chapters 7 and 11

**Week 7:** The normal distribution and the z-score. Re-grouping data and using pivot tables.

*Lectures Feb 26, March 1*

*Lab 5:* Regression and multiple regression.

*Readings:* Chapter 6

**Week 8:** Sampling distributions and hypothesis testing

*Lectures Mar 5, 8:

*Lab 6:* Probability

*Readings:* Chapter 8

**Week 9:** Sampling distribution of the mean

*Lecture March 12:* Central limit theorem and confidence intervals

*Lecture March 15:* Bootstrapping to estimate confidence intervals
Lab 7: Manipulating data with z-transforms, pivot tables
Readings: Chapter 12 up to p305 and one additional reading TBA

Week 10
Lecture March 19: Intro to t-tests
Midterm Test 2 March 22. Covers chapter 6-8 and chapters 10-12
Lab: no lab this week due to midterm.
Readings: Chapter 12

Week 11: Paired sample t-tests
Lecture March 26 (no classes Mar 29)
Lab 8: Central limit theorem and bootstrapping.
Readings: Chapter 12

Week 12
Lectures April 2, 5: Independent samples t-test.
Lab 9: The t-test.
Readings: Chapter 14

Week 13
Lecture April 9: Review for final exam.
Lab: no lab this week.

Academic integrity:

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: .Grade of F assigned for academic dishonesty.), and/or suspension or expulsion from the university. It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at http://www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:
1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

Notice of changes to course structure:

The university reserves the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes."

The professor reserves the right to change any and all course requirements if the need should arise. Any change in the course requirements will be posted on the webpage and emailed to the class, and the details will be announced in class. Any concerns about announced changes should be addressed with the professor as soon as the changes are announced.
Other courses taught by Sue Becker

Psych 3BN3 - Cognitive Neuroscience I
Psych 4BN3 - Cognitive Neuroscience II
Neural network models of cognition and perception (graduate course)