Research Design and Statistics for Behavioural Sciences 1

Instructor: Dr. Brett Beston (**bestonbr@mcmaster.ca**)

TA's: Alex Gough
Juliana Loureiro-Kent
Amy-Beth Warriner
Christina Borges
Sima Hoseinghholizade

Tutorials: Tutorials will take place during the week. Please be sure to attend your assigned tutorial time.

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.

Course Evaluation:

Evaluation breakdown		
Term tests	Test 1	15%
	Test 2	20%
Assignments	Weekly Assignments	15% (drop lowest 2)
Final examination		45%
Participation	in-class (i-clicker)	5%

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.

There will be weekly assignments for this course. Each assignment will be worth roulghly 2-3% of your grade and will be completed on-line using McMaster's Avenue to Learn system. **The lowest two grades will be dropped from the calculation of your Assignment grades**. Some will require statistical software analysis and output as well as step by step work with a calculator. You will receive an assignment every week and will be required to hand it in one week later (see schedule below). **Late assignments will not be accepted, and will receive a grade of zero**. There will be **no exceptions** to this.

There will be three term tests and one exam. There are no make-up exams. If any exam does not take place on the scheduled date due to weather, facilities, or other unforeseen circumstance, it will take place at the beginning of the next scheduled class. Both exams will be completed during class time. The exams will cover lecture material and assigned textbook material equally, and will cover material from throughout the course (cumulative), though the final exam will have an emphasis on material covered since the midterm. The format of the exams will be discussed in class. 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. An approved calculator is any calculator whose name starts with Casio fx991. Sheets with formulae and statistical tables will be supplied for you.

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 75% or more of the classes in which there were iClicker questions posed, 4/5 marks for participating in 65-74.9% of classes with iClicker questions, 3/5 marks for participating in 55-64.9% of those classes, 2/5 for 50-54.9%, 1/5 for 40-49% and 0/5 for participating in less than 40% of those classes.

Course Policies:

Details of the course requirements may change. If it becomes necessary to make changes to some part of the course during the term, reasonable notice and communication will be provided between the students and lecturer. Updates will be discussed in class and will be posted on the class web page.

The instructor reserves the right to scale the final marks up or down depending on an individual's overall performance based on special circumstances.

Scaling:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59	F = 0-49
A = 85-89	B = 73-76	C = 63-66	D = 53-56	
A- = 80-84	B- = 70-72	C- = 60-62	D- = 50-52	

*Final marks may be adjusted up or down on an individual basis, in light of special circumstances and or the student's overall performance in the course

Missed Tests:

It is your responsibility to submit all rationale for missed tests to the office of the Associate Dean of your faculty *within one week* of the original test date. It is *also* your responsibility to *speak with your professor as soon as possible*. Senate regulations for petitions for special consideration have always required that: "40. The student shall make a prompt and timely request for special consideration." No requests for special consideration will be accepted after one month.

E-mail Policy:

E-mail **must** originate from your designated McMaster e-mail account. If we (your professor or TA) need to contact you, we will send the e-mail to your mcmaster.ca account. You should monitor this account regularly. E-mails sent from third-party providers (yahoo, hotmail, cogeco, sympatico, etc.) are likely to be missed. We have this policy for three reasons: (1) to reduce the amount of incoming spam to our accounts; (2) to ensure that we know with whom we are communicating; and (3) to teach the professional use of e-mail. Remember: E-mails to your professors are professional communications. They should include correct spelling and punctuation, and should be polite and to the point.

Website Policy:

This course uses 'Avenue to Learn'. You are expected to check this website with regularity for announcements, updates, discussion board postings, and other valuable information. It is *your responsibility* to keep up with the information provided on this site.
Use of the website's **discussion boards** is strongly encouraged, and, in the case of non-private inquiries (e.g., questions about course content and the running of this course, but *not* emails reporting illness or other private matters) is *preferred to email communications*. Questions asked on the discussion board allow other students with the same questions the chance to see the answer. Discussion board questions also provide a learning experience for students who attempt to answer these questions themselves.

Inappropriate posts will be deleted from the board. The professor reserves the right to *ban* students from the course website if they use the board inappropriately (e.g., posting mean or other inappropriate comments). This will involve lost access to slides and other important course information.

Finally, students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

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

Week-by-week lecture and lab schedule

Week 1
Lectures Jan 7, 9: Course Overview. Scales of measurement. Visualizing data. Frequency histograms. Binomial, normal and skewed distributions.
No *Lab:*
Readings: Chapters 1, 2 and 3

Week 2
Lectures Jan 14, 16: Describing distributions (cont'd). Measures of central tendency.
No *Lab*
Readings: Chapter 4

Week 3
Lectures Jan 21, 23: Measures of dispersion.
Lab 1
Readings: Chapter 5.

Week 4: Correlation, fitting a line vs fitting a curve to data.
Lectures Jan 28, Jan 30
Lab 2
Readings: Chapter 9

Week 5
__Midterm Test 1__ Feb 4 (Covers chapters 1-5 and chapter 9)
No *Lab*.
Readings: Chapter 10.

Week 6: Probability
Lecture Feb 11

Lecture Feb 13
Lab 3
Readings: Chapters 7 and 10

Week 7: The normal distribution and the z-score. Re-grouping data and using pivot tables.
Lectures Feb 25, Feb 27
Lab 4
Readings: Chapter 6

Week 8: Sampling distributions and hypothesis testing
Lectures Mar 4, 6:
Lab 5
Readings: Chapter 8

Week 9: Sampling distribution of the mean
Lectures March 11,13
Lab 6
Readings: Chapter 12

Week 10
Midterm Test 2 March 18: Covers chapter 6-8 and chapters 10-12
Lecture March 20 Intro to t-tests
Lab: no lab this week due to midterm.
Readings: Chapter 12

Week 11: Independent samples t-test.
Lecture March 25,27:
Lab 7
Readings: Chapter 13

Week 12
Lectures April 2, 5:
Readings: Chapter 14