YORK UNIVERSITY
FACULTY OF HEALTH
DEPARTMENT OF PSYCHOLOGY
PSYC 2021.03 B – DATA ANALYSIS I
FALL 2015
FRIDAY 2:30 –5:30 AM in CURTIS LECTURE HALL F
Pre- or Co-requisite PSYC 1010.06
with a minimum grade of C in PSYC 1010 if used as a prerequisite

INSTRUCTOR:	Dr. Margarete Wolfram	TAs: Naail Khan naailk@yorku.ca
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OFFICE:	BSB 274	1006 Sherman Health Science Research Ctr.
OFFICE HOUR:	Fr 12:30 – 1:30	Fr 11:00 – 12:00 (Lily)
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TEXTBOOK:

Required: Course kit: Wolfram, M. and Cheng, L. Statistical Concepts and Procedures: The Essentials, 2015

EVALUATION PROCEDURE (official grades and unofficial self-assessment):

Grades will be based on the outcome of two exams, worth 50% each. All tests consist of 50% multiple-choice questions and 50% problem questions. The midterm exam will take place on October 16; the date for the final exam will be scheduled by the Registrar's Office during the final exam period, December 9 - 23. To help students monitor their progress, there will be weekly assignments. Detailed collective feedback on these assignments will be provided on a weekly basis, allowing students to compare their work with the solutions given. Carrying out the assignments is essential for students to practice their skills. While such practice will greatly increase the chances of performing well on the exams, assignments do not count towards the course grade. The function of carrying out assignments is similar to that of trial runs for a sprinter gearing up for a competition.

PROCEDURES FOR MISSED MIDTERM EXAM:

Students who fail to write the exam at the scheduled time need to contact the instructor by e-mail within 48 hours. If they can document a valid reason for their absence they will be allowed to either write a make-up exam at a time specified by the instructor or have their final exam count for 100%.

GOAL OF THE COURSE:

The goal of this course is statistical literacy and competence in choosing and carrying out statistical analyses appropriate to different research questions. Students will gain a better understanding of the experimental findings to which they are exposed in other courses, and they will be able to better interpret and critically evaluate research findings reported in academic journals and in the media. The course will also provide preparation for students who will continue with PSYC 2022, 3030, 4000 or 4170. It is advantageous for students to take this course as early as possible in their course of study.

PARTICULARITY OF A STATISTICS COURSE:

Statistics is an important course. Succeeding in it will open doors for you in your course of study, while failing to succeed will keep these doors shut. Understanding statistics will greatly help you to understand other subject matters, which is the reason why statistics is a mandatory course for psychology majors. Mastering Psych 2021 does not require a special aptitude for mathematics. What it **does require** is a fair amount of **regular work**. According to a questionnaire, successful students spend an average of six hours per week studying statistics in addition to class time. There is, however, a large range in the time required by different students.

Statistics differs from many other courses in that one thing builds on another. Students have to retain it all. The only way this can be achieved is by mastering each part to the point where it becomes automatic. Using statistics then becomes similar to speaking a language fluently without having to explicitly recall each rule. **Lack of investing enough regular time and attention is the one prime reason for failure in this course. The misconception that it is enough to go through the motion of writing exams, appealing to the staff's charity on the basis of what grade is needed and the adversity of one's circumstances is the most frequent reason for repeated failure in this course.** Students are encouraged to call on the teaching staff for extra help to achieve performance. Grades are strictly based on demonstrated performance rather than students' needs. As Henry Ford said, "Whether you think you can or think you can't, - either way you are right." People tend to live up (or down) to their own expectation. However, positive expectations need to be combined with concrete strategies to move beyond wishful thinking.

STRATEGIES TO SUCCEED IN THIS COURSE:

Maximum efficiency can be achieved by:
(a) good resource management, i.e. keeping oneself in good operating conditions (i.e. staying healthy and functional); this implies establishing a personalized schedule to achieve good time management (see guidelines below);
(b) setting aside weekly time periods for regular homework, using several smaller time periods rather than one big block;
(c) establishing contacts with classmates and working with others (EXCEPT DURING EXAMS);
(d) practicing the material by doing the assignments and making use of the models provided;
(e) asking for help when encountering difficulties, i.e. staying on top rather than letting things slide and hoping to catch up at some future point in time;
(f) understanding the material AND making its use automatic through practice.

THE WHY AND HOW OF A PERSONAL SCHEDULE:

Some students are tempted to skip any advice on how to establish a personal schedule. They consider a schedule an option that is not applicable to them because they don't know when they need to be available to their part time boss, their family members, friends, official appointments, etc. For starters, it is essential to take control of one's time instead of being a pawn in somebody else's game. Be aware that a common characteristic of successful students is that they use a personalized schedule. Taking control of our time does not mean that we should or can neglect our obligations to others, but rather that we make room for them in a proactive fashion. Scheduling regular times to be with our friends, children and other significant people is far more beneficial and enjoyable for all concerned than waiting for emergencies to arise from neglect at unpredictable times. Resistance to

following a schedule as being too rigid and contrary to creative spontaneity is similar to the early resistance to traffic lights. We have since come to recognize the usefulness of traffic lights by experiencing the chaos and general slow-down when they fail to function. Schedules are universal and have been around forever. They regulate the behaviour and bodily function of most animals. What is new is the need to make a personal schedule since natural cues that used to regulate human behaviour collectively have been largely erased. Establishing a personal schedule now requires individual initiative; however, the principles of establishing an effective schedule are simple and similar to that of packing items in a box of a fixed size. Start out with surveying the dimensions of the box and carefully identify the things that need to be packed into it. There will be individual variation in what the box needs to contain. Fill in the big rigid items first and gradually add smaller and more flexible things.

Start out with a diagram listing the days of the week horizontally across the top; list the hours of the day vertically. Start with the earliest waking hour and proceed in units of either one or half hours until the end of the waking day. (1) As a first item fill in those activities that are fixed and to which you have already committed. This includes scheduled courses for which you have signed up, fixed hours committed to a part time job and other fixed committed activities. (2) Next fill in activities that serve your healthy functioning. Schedule times for waking, meal times and sleep as regularly as possible. Do schedule recreation at the end of the day and/or week. Consult with family and friends on when to spend time together. (3) Schedule regular time periods for each of your courses; a good estimate is a total of 15 hours per week for a 5 course load. Times per course may vary. You will need more than three hours per week for statistics. (4) Reserve time to attend to significant others either in person or via alternative media. Be aware that spending time indiscriminately on social media is a sure way of not having time resources left to attend to activities that are essential (5) In the spaces remaining fill in chores that need to be done, banking, cleaning the place, doing the wash, buying groceries, preparing meals or whatever else is on your plate. (6) If at all possible, leave some free space in your schedule for the unexpected. Use colour codes to mark the categories of activities so as to make them more salient. Following a schedule will require a certain amount of effort until it becomes an established routine.

CORRESPONDENCE:

Attending lectures cannot be substituted by requesting information and explanations from the instructor or the TA via e-mail. Make sure to get to know several of your class mates so that you can share information and have somebody who can fill you in, in the event that you have to miss a class. However, do take care of assuming the role of a collaborator rather than a freeloader. Serious students typically have little interest in the latter. When you do need to communicate by e-mail; state "**2021**" in the subject line and identify yourself clearly (first and last name). Please read your course outline carefully. It contains all the administrative information students tend to ask about.

IF YOU FEEL THAT YOU NEED EXTRA HELP:

(1) For starters, make an honest effort to cope on your own. Some students hire a tutor to fulfil their need to depend on somebody other than themselves.
(2) Make use of the resources available, i.e. the instructor and TA office hours, PASS sessions (details TBA). (3) Form a study group. (4) If you really find that the available resources do not suffice, look for peer tutoring with UPSA.

COURSE SCHEDULE

Sept. 11   Introduction to the course
Introduction to statistics (Chapter 1)

Sept. 18   Making sense out of data – graphic representation (Chapter 2)
Measures of central tendencies and measures of dispersion (Chapter 3)

Sept. 25   Introduction to standard scores (Chapter 3 cont'd)
Standard scores and the normal curve (Chapter 4)

Oct. 2   Pearson correlation and regression (Chapter 5)

Oct. 9   Review Chapters 1 - 5

Oct. 16   **MIDTERM EXAM (50%)** covering chapters 1 – 5

Oct. 23   Probability (Chapter 6)
Introduction to hypothesis testing (Chapter 7)

Oct. 30   FALL READING WEEK   aka co-curricular days   NO CLASSES

Nov. 6   Hypothesis testing: inferences about a single mean (Chapter 8)
Elements of research design; the t-test for correlated samples (Chapter 9)

Nov. 6   Last day to drop course without receiving a grade

Nov. 13   Elements of research design
t-test for correlated samples (Chapter 9)
t-test for independent samples (Chapter 10)

Nov. 20   t-test for independent samples (Chapter 10 cont'd)
Review of z- and t-tests
The power of statistical tests and the problem of hypothesis testing (Chapter 11)
The confounding effect of N in the outcome of hypothesis testing

Nov. 27   The Chi square test, general principle and goodness of fit test
Chi square test for homogeneity, i.e. correlation of categorical data (Chapter 15)

Dec. 4   Review chapters 4 – 11 and 15

Final Exam   FINAL EXAM (50%) covering chapters 4 – 11 and 15.
Period (Dec 9 – 23)