PSCH 343
Statistical Methods in Behavioral Science
Spring 2016
Course Syllabus
CRN 27526 (4 Credit Hours)

Instructor:
Edward Sargis, Ph.D.
Office: 1060 BSB
Office Hours: Wednesday 1-2pm; Tuesday, 12:30-2pm, and by appointment.
E-mail: esargis@uic.edu

Teaching Assistants:
Carlos Salas | salas5@uic.edu
Natalie Jorion | njorio2@uic.edu

Lecture: 11 – 12:15 T Th; BSB 140

See Timetable for discussion section days, times, and leaders.

Prerequisites: PSCH 242 and ENGL 161 with a minimum grade of C; MATH 118 (or the equivalent) with a minimum grade of C or MATH 090; or consent of the instructor. For psychology and neuroscience majors only.

Students who do not have prerequisites will be dropped from the course.

Overview

This is an introductory course in statistics that is designed for students majoring in Psychology, although students from other disciplines within the behavioral and social sciences should also find it of value. The primary goal of the course is to help you develop an understanding of the ways in which mathematics and statistics can be used to deepen our understanding of psychological phenomena. To accomplish this goal I will to provide you with a conceptual understanding of statistics. People often believe that learning statistics entails memorizing formulas and performing rigorous hand calculations. However, that is not the focus of this course. This is not to say that you will not have to perform calculations by hand, or understand different formulae. Rather, this course is designed to help you understand what the terms within various formulae mean, how various statistics are calculated, as well as how to interpret the results of statistical analyses. It is hoped that you will leave this class with confidence in your ability to understand statistics in published articles (both research articles as well as those you encounter in newspapers, on television, etc.), and in your ability to determine the kinds of statistical analyses that are appropriate for different kinds of data.

Suggested Text

Aron, A., & Aron, E. N., & Coups, E, (2008). Statistics for the Behavioral and Social Sciences, 4/e: *A Brief Course*. Upper Saddle River, NJ: Prentice Hall.

I do not require a text for this course. I have required the above text in the past and found that I have not fully utilized it. Rather than requiring you to spend money I will simply let you know that you can purchase this book if you wish if you would prefer to read about the course material in greater detail. You can find this book online for approximately $90.

Required Materials

I-Clicker2 remote. Available in the bookstore. You must have the updated version of the iClicker with the LCD screen. You will need this because some assessments will require alpha-numeric input.

A basic pocket calculator. You should bring this calculator with you to lecture and lab sections. Any basic calculator will do as long as it can perform addition, subtraction, multiplication, and division, as well as compute square roots. Note that you will not be allowed to use cell phone or graphing calculators on exams.

Discussion Sections

Weekly lab sections are designed to give you "hands on" experience with the concepts discussed in class. Attendance at lab sections is expected and will count toward your lab section grade. Attendance will be taken at the start of lab sections. If you arrive after attendance is taken, you may let your TA know that you were late the first time it occurs. If lateness becomes a chronic problem you will be marked absent in the future. In addition, if you leave early, after attendance has been taken but before you complete that day's activity, you will be marked absent from the section. If you need to leave early on a particular day, see your TA. Your lab section attendance grade will be based on the percentage of sections you attend.

The other portion of your lab section grade will come from homework. A total of 7 homeworks will be assigned over the course of the semester. Homeworks will be posted to Blackboard will be due on the dates outlined in the syllabus. Your lowest of the seven homework grades will be dropped.

Keep two things in mind when doing the homeworks:

1. Be sure to show all your work for each problem that requires written calculations. Do not simply report your final answer. If your final answer is incorrect it may still be possible to earn partial credit if some parts of the problem were done correctly. This is possible, however, only if you have shown all of your intermediate steps.
2. Neatness counts. If your work is illegible, crammed together, or so disorganized that it cannot be followed step by step in a logical sequence it will be difficult to assign partial credit.
3. If your assignment is on multiple pages **STAPLE** the pages together (do not do the fold the corner and tear the top trick, it does not work).

Late homeworks will not be accepted under any circumstances. Moreover, class assignments are to be handed in at the start of the class period in which they are due. No assignments will be accepted at the end of class or in my or your TA's mailbox at a later time. If you are unable to turn in a homework assignment on or before a due date, you will receive a 0 for that homework and it will become the homework that will be dropped at the end of the semester. Please note that you are welcome to hand in assignments to your TA as early as you like.

Exams

There will be four exams offered during the course; three exams during the semester and a final exam. Your lowest grade of the four will be dropped. The tests will be worth 70% of your final grade (See below for exam dates). Exams offered during the semester will be non-cumulative with the caveat that each section of the course builds on previous sections. Though I will not explicitly test you on concepts from an earlier unit, you will have to draw on knowledge from previous units on later exams. A cumulative final exam will be offered during the week of finals.

As mentioned above, the lowest of the four exams will be dropped. I will drop your lowest exam for several reasons. The primary reason one exam will be dropped is that it eliminates the need for make-up exams. **Make-up exams will not be given under any circumstances.** You may be sick or out of town on a particular exam day, or oversleep on the day of the exam. If this were to occur, you would not need to worry about missing the exam because that exam will be dropped. A second reason I drop the lowest exam is that everybody has a bad

day now and then. If you happened to take an exam on a day you were not prepared and you were not satisfied with your score, you could take the final exam. If the score on your final is better than one of your previous exams, the earlier exam would be dropped from your final grade calculation. However, this can only happen if you take the first three scheduled exams. In addition, if you are happy with your first three exam scores, you are not required to take the final.

i-Clicker Assessments

During most lectures, there will be questions you will respond to with your i-Clicker2. The questions may be about that day's lecture or a previous lecture, or they might ask for your opinion on an issue. The questions may be asked all at one time during a lecture, or at different points throughout a lecture. These activities are meant to enhance your learning and to serve as a self-check on your knowledge as it accumulates over time. All assessments will be conducted in class and graded on a credit/no credit basis. To receive credit, you must answer all questions during a class session. In other words, if I ask a question at the beginning of lecture, a student responds to that question, but leaves lecture early, and I ask another question, the student would not receive credit for that day. **You are responsible for bringing your i-Clicker2 to class every day and ensuring that it is operational (i.e., make sure you have extra batteries).** From time to time, additional in class assessments may be given to verify that students are present in class on a given day. At the end of the semester, you will receive a score that reflects the percentage of the assignments that you complete. I will allow you to miss up to two classes and still receive 100% for your score.

Course Grading

Course grades will be based on exams (70%), iClicker2 assessments (5%), and lab activities and homework (25%). Grades will be based on the following scale.

Grade	Percent
A	89.5 – 100
B	79.5 – 89.4
C	69.5- 79.4
D	59.5 – 69.4
E	0 – 59.4

To estimate your grade during the semester, you can use the following formula:

(0.7 * Exam average) + (0.05 * i-Clicker Assessment Score) + (0.25 * Homework Average[1])

Before finals week, I will post detailed instructions on how to compute your final grade based on the exact number of quizzes and the number of discussion sections that we had during the semester

[1] The average number of sections you attend will be factored in to this average at the end of the semester.

A Note about Attendance:

Statistics is a unique class in that each topic builds directly on the previous one. If you miss a class, you run the risk of being completely lost in the next lecture. Consequently, it is important that you attend each lecture.

If you miss class it is your responsibility to get the notes, handouts, homework assignments, and/or other announcements from one of your fellow classmates. If you are absent from class, do not ask your instructor or TA what you missed. Find someone in class that you can get this information from.

Miscellaneous

When you are in class, I ask that you be courteous to me as well as your fellow students. **Please do not have conversations with or write notes to fellow students during lecture. In addition, please do not listen to your MP3 player, send text messages via your cell phones, or engage in similar distracting behaviors during lecture.** You may feel like you are an anonymous student in a class and that the instructor doesn't notice. Instructors do notice these things, and I find this distracting, and it ultimately disrupts the class. If I ask that you stop doing some behavior and you persist, I may ask you to leave class. In extreme cases, I will ask you not to come back, and you will have to forfeit any points you receive for attending lecture.

It will be your responsibility to keep track of your scores in Blackboard. If you notice that a score has been incorrectly entered into Blackboard, you must show the original paper with the correct grade to your TA by Monday of finals week.

To reiterate, **cell phone or graphing calculators will not be allowed during exams**. You will need to find an inexpensive calculator that can do basic addition, subtraction, multiplication, and division as well as calculate square roots

In fairness to the vast majority of students who take their college career seriously, no form of cheating will be tolerated. If you cheat on any assignment in this class, you will fail the entire class and I will file official judicial charges against you immediately with the Dean of Students, who will place a notice about the incident in your permanent record. There will be no exceptions to this policy.

Cheating includes, but is not limited to, looking on others' tests or letting them look on yours during a test, copying or giving others test answers, and plagiarism which includes copying the words of a fellow student or any other author in your papers, copying even short phrases from written work that you are using as a reference (even if you cite it properly), handing in work that you have handed in for another class, handing in papers you've gotten from the internet or from other students, etc.

Please see the following for additional information about academic dishonesty and plagiarism:

http://dos.uic.edu/docs/Student%20Disciplinary%20Policy.pdf

http://pols.uic.edu/docs/default-source/student-docs/avoiding_plagerism.pdf?sfvrsn=2

Students with disabilities who require accommodations for access and participation in this course must be registered with the Office of Disability Services (ODS). Please contact ODS at (312) 413-2183 (voice).

Information about reasonable accommodations is found at https://drc.uic.edu/students/

Religious Holidays: Students who wish to observe their religious holidays must notify me by the tenth day of the semester they will be absent unless their religious holiday is observed on or before the tenth day. In such cases, the student shall notify me at least five days in advance of the date when he or she will be absent.

University policy on incomplete grades is very strict and I follow that policy. I will grant an incomplete grade only under the most extreme circumstances. Do not request an incomplete unless the following conditions apply (taken from the undergraduate catalogue):

> Course work is incomplete when a student fails to submit all required assignments or is absent from the final examination; incomplete course work will normally result in a failing grade. The IN (incomplete) grade may be assigned in lieu of a grade only when all the following conditions are met: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all course work due to unusual circumstances that are beyond personal control and are acceptable to the instructor; (c) the student presents these reasons prior to the time that the final grade roster is due. The instructor must submit an Incomplete report with the final grade roster for the IN to be recorded. This report is a contract for the student to complete the course work with that instructor or one designated by the department executive officer in the way described and by the time indicated on the report. In resolving the IN, the student may not register for the course a second time, but must

follow the procedures detailed on the report. An IN must be removed by the end of the student's first semester or summer session in residence subsequent to the occurrence, or, if not in residence, no later than one calendar year after the occurrence. When the student submits the work, the instructor will grade it and change the IN to the appropriate grade. <u>If an undergraduate fails to meet the stated conditions, the instructor will assign an E for the final grade.</u>

Note that you will be graded according to the grading criteria listed above. **Please do not ask to be bumped up to the next highest grade at the end of the semester** (e.g., ask me for a C in the course when you have a 67.7% in the course). I will not do this. The number one factor that puts students in this situation is missed assignments and quizzes. I have a drop policy because I understand that sometimes students must miss class. However, if you are the type of student who frequently misses classes for any reason (e.g., work, family responsibilities, etc.), I recommend that you drop my course and take it with an instructor with a less conservative attendance policy.

With this said, **if you have any problems or concerns throughout the class, please come see us during our office hours, before it is too late at the end of the semester.** I and the TAs are happy to work with you during the semester to help facilitate your understanding of the course material. Please use office hours whenever possible, but we are willing to make appointments if your schedule makes it impossible to make our office hours.

Note that you can also email me, however, please understand that I receive many e-mails in a given day. Each semester I teach up to three classes and have as many as 300-400 students. At this point I am unable to respond to all of the emails I receive. Provided you ask a reasonable question and articulate yourself clearly in your message, I will respond. If what you ask is a good question that is relevant to the rest of the class, I will frequently address your question in class instead of responding to the e-mail.

Finally, note that although e-mail may seem private and secure, sending an e-mail is roughly like sending a postcard through the regular mail. Anyone who desires to take a look, and, in the case of email, has some technical knowledge, can do so. While your TAs and I will keep any information you send us via e-mail private, there is no guarantee that the information you send is secure and no one else would be able to read it. This is not likely to be a concern in most instances, but may be important to consider when contacting me regarding certain topics. If you would like to discuss a sensitive topic, it would be best to see me during office hours, after class, or by appointment.

Tentative course topics and reading schedule

The following page contains a listing of topics and assigned readings. I am leaving the old readings from the Aron, Aron, & Coups textbook in the schedule in case you are interested in purchasing the book, but remember, this text is not required.

Note: The dates listed correspond to the Monday of each week.

Note 2: This topic schedule is **extremely** tentative, topics may take more or less time to cover depending on class understanding of various topics. Note that you have lab section unless indicated otherwise (i.e., even if there is not a homework due).

Week #	Date	A A & C Chapter	Lecture Topic
1	1/11	------	Introduction Quantification and Scales of Measurement **No Discussion Sections Week 1**
2	1/18	CH 1	Displaying order in a group of numbers Central tendency, variability, & z-scores
3	1/25	CH 2	Central tendency, variability, & z-scores (cont.) **Discussion Section: Homework 1 Due**
4	2/1	CH 3	Quantifying the Association Between Variables: Covariance Quantifying the Association Between Variables: Correlation **Discussion Section: Homework 2 Due**
5	2/8	CH 3	Quantifying Mathematical Relationships Between Variables **Discussion Section: Homework 3 Due**
6	2/15	CH 3	**EXAM 1, Tuesday, February 16** Estimating parameters of simple linear models
7	2/22	------	Evaluating model fit: R-squared Evaluating Model Fit: Comparing Mathematical Models
8	2/29	------	Explaining Residual Variance: Errors in models and errors in measurement precision Catch-up **Discussion Section: Homework 4 Due**
9	3/7	CH 6	**EXAM 2 – Tuesday, March 8** Sampling error: An intuitive exploration of the problem
10	3/14	CH 5	Quantifying sampling error: The standard error of the mean Null hypothesis significance testing: Using sampling distributions to make decisions about sampling error
SB	**3/21**		**Spring Break – No Classes**
11	3/28	CH 5, 8	Null hypothesis significance tests: T-tests **Discussion Section: Homework 5 Due**
12	4/4	CH 9 CH 10	Null hypothesis significance tests: T-tests (cont.) Null hypothesis significance tests: ANOVA **Discussion Section: Homework 6 Due**
13	4/11	CH 10	Null hypothesis significance tests: ANOVA (cont.) **Discussion Section: Homework 7 Due**
14	4/18	CH 11	Null hypothesis significance tests: Chi-Square Statistical power & effect size
15	4/25	CH 7	**EXAM 3 – Tuesday, April 26**
Final Exams	5/2	-------	**FINAL EXAM -- TBA**