

INTRODUCTORY BIOBEHAVIORAL STATISTICS

PSY 204-DE

MW 11:30-12:45; F 11:15-12:05 FHF 401

Fall 2007

Instructor:

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Office Hours: FHF472; TR 3:30-5:00, and W 2:30-5:30 or by appointment

Required text:

Aron, A., Aron, E. N., & Coups, E. J. (2006) *Statistics for psychology (4th ed.)*. Upper Saddle, NJ: Pearson-Prentice Hall. ISBN: 0-13-19167-9

Also Required:

An extremely simple calculator **without** business, scientific, advanced math, graphing, or statistical function keys and **without** programming keys. (square root keys and a single memory, however, should be included and a change of sign key is useful)

Course Description:

Introductory Biobehavioral Statistics is a beginning course in how to describe data and how to test hypotheses using systematically collected data. The material is oriented toward psychology, but the methods are applicable to a variety of fields including other social sciences, biomedical sciences, business, and education. Statistical analysis is a fundamental tool for conducting research. Anyone considering graduate training in the social sciences, biomedical sciences, business or education will discover that the material covered in this course is essential to success in graduate school.

Furthermore, for psychology majors and minors, Experimental Psychology (PSY 316), Tests and Measurements (PSY 332), Experimental Personality and Social Psychology (PSY 418) and Intermediate Statistics (PSY 444) require detailed knowledge of the material in this course, and all 300 and 400 level psychology courses assume a working knowledge of hypothesis testing. (NOTE: Because detailed knowledge of this course is needed in these other courses, psychology majors and psychology minors should **keep this textbook** after the course is over.) In addition, knowledge gained in this course is likely to make a person a more informed and critical consumer of popular news coverage of scientific "breakthroughs" and of advertising which claims to be based on "scientific fact".

The mathematical development of statistical theory will not be covered in this course. Instead the conceptual logic underlying statistics and actual calculation will be emphasized. Calculation will be done by hand using only the most extremely simple calculators. Computer data analysis will receive no coverage.

Prerequisites:

Math 101 (College Algebra), Math 105 (College Algebra and Trigonometry), or scores on the Mathematics Placement Test that qualify for admission to a college calculus course is a prerequisite for this course. You need to be able to work with numbers mathematically, including negative and positive numbers, exponents and roots, fractions, decimals, and percents. You also should be able to manipulate very simple algebraic equations. It is helpful, but not required, to have taken an introductory psychology course as well.

Classes:

Classes will include both lecture-discussion and working out of problems. Everyone is expected to participate in solving problems in class including presenting them to the class. The classes will closely follow the textbook, but the instructor will do some things differently from the textbook. Attendance will be taken in some classes but will not count toward the course grade. Nevertheless, faithful attendance is very strongly recommended. If you do attend class, you are expected to be on time, stay focused on the course material, and remain for the entire class. Cell phones, etc. should be turned off. No distracting material such as newspapers, checkbooks, other textbooks, etc. should be left out. Questions are always welcome.

If you want extra help, you are welcome and encouraged to see my TA or me during our office hours. In addition, you can make use of the textbook's "How Are You Doing" exercises and its website: www.prenhall.com/aron

Any student who misses a class for whatever reason, is expected to obtain notes, handouts, changes in schedule, etc. from fellow students, NOT from the course instructor.

Students are expected to have read the relevant portion from the textbook prior to coming to class. Most students will find that they need to read the text three or four times before they begin to really understand the material. In addition, although only a few questions and problems will be assigned and collected as homework, **students are expected to be able to work through all the questions and problems in each chapter**. Students will be asked to present their answers to questions and problems in class or to have relevant questions to ask based on attempts to do this work. Students should feel free to help each other to figure out the questions and problems. Remember, however, that each student needs to be able to handle the test questions and problems on her or his own, so be sure you really understand the material.

Grading:

TESTS: There will be five tests given during the course plus a comprehensive final exam. Each test covers a unified topic. The tests generally will have multiple choice items, short answer questions, and problems to solve. When solving problems all work must be shown. A problem with the correct answer but no work shown will be counted as incorrect and receive zero points. Students are expected to use extremely simple calculators during the tests but **only** those calculators **without** business, scientific, advanced math, graphing, or statistical function keys and **without** programming keys. (square root keys and a single memory, however, should be included and a change of sign key is useful) We're talking about a calculator that costs between \$0.99 and \$9.95 here; sometimes you can even get one free. Most students who own a calculator will have one that is **NOT** allowed for the tests and will have to buy one of these super cheap and simple ones. PDAs, cell phones, handheld computers, laptops, etc. are **not** permitted even if they are in calculator mode. The five tests are not cumulative in the usual sense, but generally speaking, one needs to know and understand the earlier material in order to learn the new material.

Each of the five tests will count 12% of your course grade (i.e., 60% total). A student who misses a test will receive a grade of zero for that test.

FINAL EXAM: The final exam counts 25% toward the course grade. It will be cumulative. It will be longer than the regular tests but have a similar format.

HOMEWORK: Assigned homework will count 15% of the final course grade. Homework must be the original, and legibly **handwritten** by each individual student. No printed or photocopied homework will be accepted and it may not be faxed or e-mailed. Homework will be graded only on

the basis of being adequately done or not. That is, if it is handed in on time and correctly done, it will receive a Pass and if it is not done, not handed in on time, not handwritten by the student, or inadequately done it will receive a No Pass. Inadequately done means incomplete or missing problems, too little work shown, or other inadequacies. An exact date for each homework assignment is due is shown below, but changes for homework assignments are likely to be announced in class. These changes announced in class must be followed. (Remember a student who misses a class for any reason is still responsible for announcements made in class by communicating with other students in class.) All homework is due at the start of class announced. This means homework will be collected before we go over it in class. Grading for homework for the semester is as follows:

<u>Number of Passes</u>	<u>Grade</u>
12	100%
11	96
10	90
9	82
8	75
7	70
6	60
5	50
4	40
3	30
2	20
1	10
0	0

Students are encouraged to work together on their homework. Nevertheless, each student must hand in his or her own homework in his or her hand writing. A student who fails to hand in homework due to missing a class will receive a grade of No Pass for that homework except in cases of very extreme and very well-documented emergencies. Generally, if you do not hand in homework, the No Pass for that homework is unchangeable. Of course, if you know you will be absent from a class, you can either hand in your homework early or give it to a (trusted) fellow student to hand in for you. You can also have someone else hand it in if you are sick or otherwise unable to be in class. **No e-mails or faxes will be accepted** no matter when they are received.

Course grades will be based on the following:

<u>Letter Grade</u>	<u>Cutoff Percent</u>
A+	97.0
A	91.0
A-	89.5
B+	88.0
B	81.0
B-	79.5
C+	78.0
C	70.0
C-	69.0
D+	68.0
D	59.0
F	<59.0

These cut-offs are absolutes (i.e., if your final average is 89.4999 you will receive a B+ because the cut-off for A- is 89.50).

Everyone is expected to adhere strictly to the honor code during the tests and the final exam. Cheating in any form on a test or the exam will be handled according to the honor code rules.

I will distribute grades during class or office hours and on blackboard only. Please **do not** call or e-mail me or departmental secretaries for your grades. Federal guidelines prohibit distributions of grades over the phone or unsecured internet. If you do need to contact me for any reason, see me in-person or call one of the numbers listed above. Please remember that as university students you are responsible for all the work in this course. Your course grade is based on what you can demonstrate you have learned as shown by your test performance and homework. It is not based on effort or adversity or "need". Grades are not subject to negotiation.

Make-Up Policy:

If you miss a test for **ANY** reason, you will receive a zero out of one hundred points (0%) on that test. Make-up tests generally will NOT be allowed. You must have written and verifiable documentation of an extreme emergency in order to be given a make-up test and it must be made up within 7 calendar days of your return to school. If you are getting married, going on vacation, etc. do not do it during class time. Note: specific dates for tests may be changed from those shown on the proposed schedule. If there is a valid reason for missing a test you know of ahead of time (e.g., a religious holiday or an out-of-town university sponsored function), you must inform the instructor at least 1 week in advance and take the make-up **before** the regularly scheduled test.

Honor Code

Everyone is expected to adhere strictly to the honor code during the tests and the final exam. Cheating in any form on a test or the exam will be handled according to the honor code rules. Each student is expected to do her or his own handwritten homework; however, students are encouraged to work together when solving homework problems.

Do all parts of all the problems listed unless otherwise stated.

PROPOSED COURSE SCHEDULE:*

<u>Date</u>	<u>Topic</u>	<u>Text</u>	<u>Homework</u>
08/22, 24, 27	Introduction to course and to statistics	Chapter 1	p. 31 # 1, 2, 4 [do extended frequency distribution for letter (a) then do (b), (c), (d) + find the %tile for 7, 8 & 13 hours and %tile point for 90 and 66], 12[examples must be original], 16[do a stem-and-leaf plot <u>only</u>], 21 Due 8/27
8/29, 31	Graphs, Central Tendency, Variability	Chapter 2	p. 68 # 1, 5, 13, 14, 20 Due 8/31
8/31	Last day to add a course		

* Changes are likely to be made in the class schedule, homework due dates, or tests during the course. Any changes will be announced in class. It is each individual student's responsibility to be aware of all such changes regardless of whether or not they attend class.

9/03	Labor Day Holiday [No Class ☹]		
9/05, 07, 10	z-scores, Normal Curve, Probability	Chapter 3	p. 109 # 1, 18, 19, 20, 26 & convert 5:2 to a probability as %, convert 83.33% to odds; Due 9/07
9/7	Last day to drop a course without a W		
9/10	FIRST TEST (Ch 1 – 3 + notes)		
9/12, 14, 17	Hypotheses, Tails and Errors	Chapter 4	p. 142 # 14, 3, 4, 7, 21 Due 9/17
9/19, 21, 24	Test of Means, Confidence Intervals, & Effect Size	Chapter 5	p. 181 # 6, 9, 14, 16, 22 Due 9/24
9/26, 28, 30	Power!	Chapter 6	p. 228 # 11, 15, 16, 9, 19 Due 9/28
10/01	SECOND TEST (Ch 4-6 + notes)		
10/03, 05, 08	t-test (single sample & dependent means)	Chapter 7	p. 270 # 1, 6, 14, 18 Due 10/08
10/10, 12, 15	t-test (independent means)	Chapter 8	p. 312 # 3, 5[<u>only</u> make a box and whisker plot with this data], 13, 14, 17 Due 10/12
10/17	THIRD TEST (Ch 7 & 8 + notes)		
10/19	FALL BREAK! [No Class ☹]		
10/22, 24, 26	One-Way ANOVA	Chapter 9	p. 372 # 2- BUT do (a) - (c) for study a only and (d) and (c) for study b (Show <u>ALL</u> work!!!), 7, 14, 20, 25 + additional problem on blackboard; Due 10/26
10/25	Last day to drop a course with a W		
10/29,31; 11/2,5	Factorial ANOVA	Chapter 10	p. 428 # 2, 3, 13, 16, + additional problems on blackboard Due 11/06

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