

Statistics in the Behavioral Sciences
PSYC 210-5 (CRN 11260)

Instructor: Bryan R. Burnham, PhD
Class Meetings: Monday & Wednesday 3:00^{PM} to 4:15^{PM}, HYL 102
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Office Hours: Monday & Wednesday, 10:00^{AM} to 11:30^{AM} (sign up for office hours [here](#)), or by appointment
Course page: <http://sites.google.com/site/psyc210stats/>
Homepage: <http://academic.scranton.edu/faculty/BURNHAMB2/>

Welcome:

Hello! If you are in the correct room, then you have made it to PSYC 210! It's my goal to educate you in basic statistical concepts used by behavioral scientists. I want to provide a strong education to prepare you for future empirically-based courses. I am available as much as needed and I encourage you to get help if you think you need help. (If you think you need help, you do.) If you are having trouble: SEE ME, GET HELP BEFORE you get in over your head. Once you are drowning in it there is little I can do to save you!

Statistics in General:

Statistics is a language more than a math. The math is simple, but you use math concepts that you already know in a new way, which is much like applying words and grammar from a native language to new language. Statistics is best understood conceptually. When studying, don't focus on the math, focus on the concepts. Once you understand the conceptual language, the math falls into place. The concepts are cumulative: We start small and build on the earlier topics to form complex concepts. Hence, don't fall behind! There are three main reasons why an understanding of statistics is essential for studies in the behavioral sciences (e.g., psychology, sociology).

1. Statistics helps you understand the professional literature. The majority of journal articles include results that are based off of statistical analyses; hence, without a sound understanding of statistics, this literature will mean nothing to you.
2. Understanding statistics means understanding the rationale underlying research. It is insufficient to apply 'cookbook' formulas to analyze data; rather, you need to have a conceptual grasp of *when, why, and how* certain techniques are applied. Without this conceptual knowledge, statistics are meaningless. This is also why we teach you how to do analyses by hand, not just through computer software; the software is only useful if you know what to ask for.
3. If you are pursuing studies in the behavioral sciences, you will need to do research, especially if you want to go to grad school. To do competent research it is necessary to select correct analyses for your type of design *before* data are collected, which is why statistics is essential. Indeed, many faculty do not accept students as assistants without knowledge of statistics.

Policy and Pledge of Academic Integrity:

Show your work, don't cheat, don't plagiarize! Any student in violation of the Code of Academic Honesty will receive an immediate and unalterable failing grade for the course and be directed to the proper administrative authority. Unless noted students are to work independently. Students must read, sign, and adhere to my [Pledge of Academic Integrity](#).

Course Description (from catalog):

Basic statistics in the behavioral sciences, including organization and display of data; measures of central tendency; variability; correlation and regression; one- and two-sample t-tests; confidence intervals, one-way and two-way analysis of variance, chi-square; and consideration of effect size, power, and null hypothesis testing including types of errors. Introduction to the computerized statistical-analysis package SPSS-PC.

Required Materials:

Text: Burnham, B. R. (2008). *Fundamental statistics for the behavioral sciences* (v 0.92). (**Available on course website**)

Calculator: An inexpensive calculator that can perform square-roots. Cell phones (including iPhone and Blackberry) and the use of any computer is not permitted on tests. There is no exception to this rule!

Formula Packet: Posted on the course website. Contains all of the expressions that you will find in the text and others that I may teach. You may use this on tests. WRITE NOTHING ON THE PACKET!

Statistical Tables: Posted on the course website. Contains all of the statistical tables you will need to complete certain statistical problems. WRITE NOTHING ON THE PACKET!

Attendance:

Is taken but cannot count for you and will not count against you. If you do not attend regularly you will not do well because the concepts require discussion. Students are responsible for all material and announcements made in class, including missed classes.

Dr. Burnham's You'd Have to be a Dumbass to Use an Electronic Device in Class Policy:

Cell phones and other electronic devices must be turned off or put on silent mode in class. Cell phones and electronic devices must be turned off during exams. I have a no tolerance policy for texting and use of these devices in class. If I catch you texting or using an electronic device in class, I will deduct 1% from your final course grade and place your name on the [Inattention Wall of 'Fame'](#). There is no exception to this policy. If you think you deserve a warning...this is it! (See the policy explained [here](#))

Expectations:

1. Arrive a few minutes early; we begin right on time.
2. Come prepared and have assigned readings and homework finished prior to lecture.
3. Ask questions and contribute to discussions; it makes time go by easier (not faster).
4. See me immediately if something does not make sense.
5. Do not speak while I am lecturing! If you are annoying I'll have you make like a tree...and get outta here.
6. Unless used for lecture, the computers are to be turned off. If I hear keys clicking, I won't be happy.
7. Be prepared to spend at least six hours on course material outside of class (e.g., reading, studying, teamwork, exercises)

Evaluation:

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|---------------------------------|--------------------------------------|
| 1. Four (4) midterm tests | 60.0 % (15% per test) of final grade |
| 2. Daily homework assignments | 15.0 % of final grade |
| 3. One (1) final exam | 20.0 % of final grade |
| 4. One (1) SPSS competency test | 5.0 % of final grade |

Tests: Each test including the final exam consists of multiple-guess, short answer, and statistical problems. Each is graded based on the percent correct of the total possible points. Time limit is 75 minutes (one class). Tests are closed-notes/book. You can use a calculator, the formula packet, and the statistical tables if needed. I do not give make-ups unless valid documentation is provided before the test. Exams cannot be taken early. If you miss an test without an excuse it is a zero, period!

SPSS competency test: Given near the end of the semester (finals or dead week) to assess your understanding of SPSS.

Homework assignments: Designed to reinforce lecture material. Assignments are posted on the course website. Assignments are due at the beginning of class (see schedule). Each is graded on a 0–2 point scale, where 2 = all attempted, 1 = some attempted, and 0 = not attempted. Homework grade is the percentage of earned points. Late assignments are not accepted; 'late' is anything not handed in at the beginning of class on the due date. Anything that is handed in late will be checked, but is counted as a 0.

Final Grade: Based on the weighted average of tests 1–4, final exam, homework assignment grade, and the SPSS exam. Your average course grade is compared to the distribution below to determine your letter grade and grade points. There is no curve.

Minimum Average %:	94%	90%	87%	84%	80%	77%	74%	70%	67%	65%	0%
Course Letter Grade:	A	A-	B+	B	B-	C+	C	C-	D+	D	F
Course Grade Points:	4.00	3.67	3.33	3.00	2.67	2.33	2.00	1.67	1.33	1.00	0.00

“Increasing my Final Grade” because I blah, blah, blah... Policy:

Don't ask.

Study Guide Policy:

Start studying now.

Extra Credit Policy:

You can't have any.

Discussion Boards:

On the course page there is a link to a [Google Discussion Group](#). You will all be invited to join this group for the semester. If you have a question or comment you would like others to see and help you with feel free to post. I also have a discussion topic called the “Suggestion Box” where you can post any suggestions that you want me to consider incorporating into class.

Reasonable Accommodations:

Students needing special accommodations are encouraged to see me as soon as possible. It is essential that students with disabilities register with the Office of Equity and Diversity (x6645) for accommodations. To receive the appropriate accommodations, students with disabilities must register with the CTLE. Contact Mary Ellen Pichiarello (x4039) or Jim Muniz (x 4218).

Tentative Schedule					
Day	Date	Topic	Chapter Read Before Class	Homework Due Today	
MON	Aug 24	Welcome/Syllabus; Math skills assessment; Statistics Basics	---	---	
WED	Aug 26	Statistics Basics; Measurement Scales	1, 2	--	
MON	Aug 31	Frequency Distributions; Grouped Distributions	3	1, 2	
WED	Sept 2	Percentiles & Percentile Ranks; Graphing	4, 5	3	
MON	Sept 7	No Class-Labor Day you Commie Pinko's!			
WED	Sept 9	Probability	12	4, 5	
MON	Sept 14	Test 1	---	12	
WED	Sept 16	Central Tendency; Variability	6, 7	---	
MON	Sept 21	Introduction to SPSS	---	6, 7	
WED	Sept 23	Standard (z) Scores; Normal Distribution & Probability	8	SPSS #1	
MON	Sept 28	Normal Distribution & Probability, Sampling Distributions	8, 9	8	
WED	Sept 30	Sampling Distributions, Estimation, Confidence Intervals	9	---	
MON	Oct 5	Test 2	---	9	
WED	Oct 7	Scatterplots; Relationships; Pearson Correlation	10	---	
MON	Oct 12	No Class-Columbus Day—Support the Empire!!			
WED	Oct 14	Spearman Correlation; Univariate Regression	11	SPSS #2	
MON	Oct 19	Counting Rules; Binomial Expression	13	10, 11	
WED	Oct 21	Binomial Approximation to the normal Distribution	13	---	
MON	Oct 26	Test 3	---	13	
WED	Oct 28	Hypothesis Testing; The z-Test	14	---	
MON	Nov 2	One-Sample t-Test	15	14	
WED	Nov 4	Bivariate Designs; Independent Samples t-Test	16, 17	15	
MON	Nov 9	Independent Samples t-Test; Correlated Samples t-Test	17, 18	---	
WED	Nov 11	Correlated Samples t-Test	18	17	
MON	Nov 16	Test 4	---	18	
WED	Nov 18	Inferential Correlation	19	SPSS #3	
MON	Nov 23	Inferential Correlation; Inferential Regression	19	19A	
WED	Nov 25	No Class-Thanksgiving-Remember to save a turkey for Sarah Palin!			
MON	Nov 30	ANOVA, Oneway ANOVA; Post Hoc Tests	20, 21	19A, 19B	
WED	Dec 2	Dead Week	Oneway ANOVA, Post Hoc Tests	21	20
MON	Dec 7		Chi Square	23	21
Final Exam		Location: HYL 102; Date: 12/9/09; Time: 3:00PM – 5:00PM	---	23	

I reserve the right to change anything on the syllabus at any time. Any changes will be immediately reported to the students and will be handed out as an addendum to the original syllabus.

It is also a good idea to check out my [General Policies](#) that are not listed on this syllabus.