Quantitative Methods

01:830:200:H6

Summer 2015

Monday, Wednesday, Friday 6:00pm – 9:25pm0

LSH-A142, Livingston Campus

Instructor: Kristina Howansky
Email: Kristina.howansky@gmail.com
Office: 607 Tillett Hall, Livingston Campus
Office hours: By arrangement

Course Description:

"There are lies, damned lies, and statistics" -Mark Twain

Every single day we hear statistics from a variety of sources and, more often than not, they are presented in a misleading manor. The purpose of this course is to provide you with the basic tools you will need to succeed in the behavioral sciences and decipher the truth from little statistical lies. While I realize that most students do not choose to this class but take it reluctantly as a requirement for their major, I would like to try to convince you during our time together that statistics can be understandable, important, and (dare I say) fun. This course will provide you with the fundamentals necessary to understand and perform both statistical calculations. These skills are particularly relevant for students wishing to pursue a graduate career in psychology or other research fields. This course has been certified as satisfying both Quantitative and Formal Reasoning Learning Outcome Goals (QQ and QR) of the SAS Core Curriculum.

Course Goals:

Over the course of this course, students will be able to:

1. Describe the conceptual logic behind hypothesis testing and identify the appropriate statistical test for various research designs

2. Analyze forms of the general linear model and communicate results effectively in reports that follow the American Psychology Association research report style
3. Read, understand, and evaluate statistical results used in published research and
4. Think critically about media reported statistics and be able to identify potentially misleading reports

Course Materials

Textbook: Privitera, G. J. (2012). *Statistics for the Behavioral Sciences*. Sage Publications (*ISBN*: 9781412969314) is a good resource and can be found in the Library of Science & Medicine on Busch Campus. Additional materials that you need will be posted under the Resources tab on Sakai. I will post my lecture slides after class and will provide you with free external resources you can use for extra help.

Calculator: You will need a simple calculator capable (at a minimum) of computing square roots. An inexpensive solar-powered scientific calculator would be preferable, since these allow the use of parentheses, have a dedicated squaring function, and are unlikely to run out of power. I recommend the Texas Instruments TI-30X IIS, which can be purchased online for under $15. *Note: even if you have calculator functions on your smartphone or computer, you will need this calculator for your exam. You will not be permitted to use phones or laptops during the exam.*

Course Requirements

Homework: You will have homework assignments from the textbook, which will be posted on Sakai. They will make up 30% of your grade. Students will receive 2 points for each problem correctly answered, 1 point for an honest attempt, and 0 points for not answering the question.

Exams: There will be three unit exams and one comprehensive final exam. The exams will consist of three parts. The first will be a multiple-choice section, followed by a short answer section, and finally a computational section. Only hand-held calculators (no laptops, cells phones, etc.) will be permitted during the exam. You will be permitted to bring a one-sided stand letter-sized (8.5 x 11in) sheet of paper with any formulas or notes on it. Please note that in order to receive credit on the exam, all work must be shown. The exams will be worth 40% of your grade.

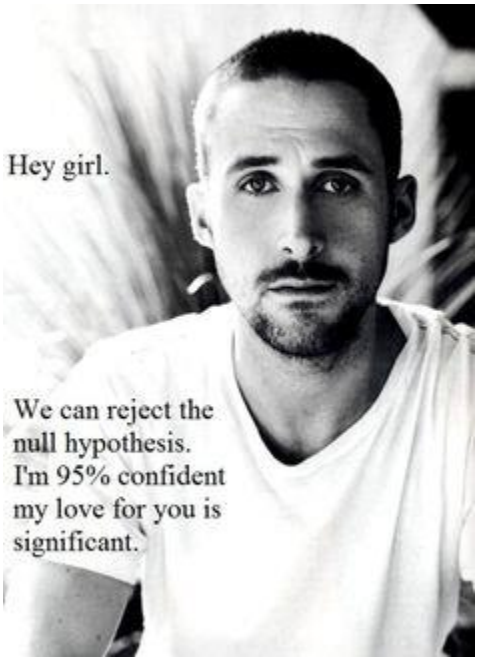
Group Assignments: Early in the semester, you will be assigned into groups. After the lecture portion of some classes, you will have the opportunity to break into your groups and work together to complete group practice problem sets. It will be an opportunity to learn from each other as well as give you the chance to ask me questions before attempting your homework. Participation in group assignment problems will be worth 10% of your grade.

Attendance: Attendance of class periods is mandatory. We are only meeting a few times throughout the summer; this means that if you are a NJ resident, each time we meet costs you approximately $21 (nearly $50 for non-residents). That is a lot of cash. You paid for it, so show-up. For every class beyond two that you miss your final grade will drop one letter. Arriving more than 10 minutes late for class or leaving class early will result in an absence.

Presentations: We will begin three of our exam review session with 10-minute group presentations (2-3 people per group), you may select your group members and presentation day. You will be responsible for outlining the main hypotheses, statistical methods, and results of a scientific article. If you prefer to do an alternative assignment, please contact me during the first week of class. These presentations will be worth 10% of your grade and will be graded by both your classmates and myself.

Academic Integrity: Collusion (getting any form of assistance from other students or outside sources) on exams or quizzes is prohibited. Students suspected of doing so will be brought up on charges before university's Office of Student Conduct, and penalties, up to and including expulsion, will be imposed for those found guilty. (Seehttp://policies.rutgers.edu/PDF/Section10/10.2.13-current.pdf for specifics).

Academic Accommodations: Should you require academic accommodations, you must file a request with the Office of Disability Services for Students (https://ods.rutgers.edu/my-accommodations). You should register with disability services as soon as possible. It is your responsibility to self-identify with the Office of Disability Services and to provide me with the appropriate documentation from that office at least one week prior to any request for specific course accommodations. There are no retroactive accommodations. If you require accommodations for exams (e.g., extended time, reduced distractions) you will be responsible for setting up and scheduling your own accommodations for each exam.



Anticipated Course Schedule (subject to change)

Unit	Date	Lecture	Chapter
Understanding hypothesis testing	*7/6*	*Introduction, central tendency, variability*	*1-4*

	7/8	*Probability, normal distributions, Z scores*	*5-6*
	7/10	*Review*	
	7/13	***EXAM***	
Comparing group differences: 2 groups	*7/15*	*Intro to hypothesis testing, Z test*	*7-8*
	7/17	*Independent and related samples T test*	*9*
	7/20	*Confidence interval, Presentations, Review*	*11*
	7/22	***EXAM***	
Comparing group differences: 2+ groups	*7/24*	*One-way ANOVA (between, within)*	*12-13*
	7/27	*Factorial ANOVA*	*14*
	7/29	*Presentations, Review*	
	7/31	***EXAM***	
Additional tests	*8/3*	*Correlation, Regression*	*15-16*
	8/5	*Non-parametric tests*	*17*
	8/7	*Presentations, wiggle room day!*	
Final	*8/10*	*Final Review*	
	8/12	***FINAL***	