Course Syllabus

Quantitative Methods 830:200   Fall 2014

Lecture: Tuesdays & Thursdays 1:40-3:00pm in Hill Auditorium (114)
Instructor: Dr. Melchi M. Michel
Office: 125 Psychology Bldg. (Busch Campus)
Email: melchi.michel@rutgers.edu
Phone: (848) 445-8919
Office Hours: Th 3:15pm-4:30pm (or by appointment)

Recitation Sections

Section	Day & Time	First Meeting	Location	TA
01	TH 10:20am – 11:40am	9/11	TIL 258	Howansky
03	W 10:20am – 11:40am	9/10	BE 253	Howansky
04	W 12:00pm – 1:20pm	9/10	BE-253	Hughes
05	W 1:40pm – 3:00pm	9/10	LSH-B267	Hughes

Teaching Assistants

	Office Hours	Location	Email
Kristina Howansky	TBA	607 Tillett	kh463@scarletmail.rutgers.edu
Christopher Hughes	TBA	TBA	chrishughes1989@gmail.com

Course Materials

Textbook: Privitera, G. J. (2012). *Statistics for the Behavioral Sciences*. (1st Ed.) Sage Publications.
 ISBN: 9781412969314
You will need to bring this textbook to your recitation sections.

Clicker: Turning Technologies, *ISBN*: 9781934931400
Clicker questions will be asked in lecture for extra credit points. You are not required to purchase a clicker, but I hope you do because, in addition to allowing you to earn extra credit points, it will enhance your learning experience and help me to focus attention on the material with which you have the most trouble. *Note: **__the clicker must be a Turning Technologies device__**. Other devices (e.g., iClicker) will not work.*

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 in the middle of an exam. 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 exams. You will not be permitted to use phones or laptops during the exams.*

Access to a PC: You will need internet access to view course materials on the Sakai site.

Course Goals

This course has been certified as satisfying both Quantitative and Formal Reasoning Learning Outcome Goals (QQ and QR) of the SAS Core Curriculum.

The purpose of this course is to provide you with an introduction to statistics in the behavioral sciences. 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 over the course of this semester that statistics is understandable and inherently interesting. This course will necessarily involve some math, but nothing beyond middle school arithmetic and some basic algebra. If you can add, multiply, divide, and know how to apply mathematical formulas to numeric values, then you have all the skills necessary to succeed in this course.

There are three key objectives that I would like to meet over the course of this semester. First, I would like you to become familiar with the key underlying concepts involved in descriptive and inferential statistics. These include general probability, measurement, variability, point estimation, confidence intervals, inference, and hypothesis testing. Having you memorize dozens of equations is not an objective of this course. There are several key equations that I will expect you to remember, but my view is that you can always check the book or other sources for necessary equations after the course is finished. The focus of this course is not rote memorization, but the development of a conceptual and mathematical understanding of these topics.

Second, I would like you to become a knowledgeable consumer of behavioral research. As you continue your studies in psychology, you will be increasingly exposed to peer-reviewed journal articles and other primary sources of research (some of you may even eventually publish your own research). I would like you to be able to read, understand, and critically evaluate the statistical methods used in this research. Finally, I would like you to be able to appreciate the role that statistics plays in everyday life. After this class you should be able to read news with a more critical view of the use of statistics in popular media.

Course Requirements

Midterm Exams: Two time-limited midterm exams will be given during normal lecture hours. Each of these exams will consist of two parts. The first part will be conceptual (i.e., no calculations, only multiple choice and short written answers to objective questions) and the second part will be computational. For the computational portion of the exam you will be permitted to bring one standard letter-sized (8.5 x 11in) sheet of paper with any formulas or notes on it. _In order to receive any credit on the computational part of the exams, you must show your work_. Only calculators are permitted, no other electronic devices may be used.

Comprehensive Final Exam: The final exam will be structured similarly to the midterm exams, but will be somewhat longer. As with the midterm exams, you will be allowed to bring a single letter-sized sheet of paper with any formulas or notes on it. Again, only calculators will be permitted.

The midterm and final exams will together make up 85% of your grade. To compute your overall exam grade, the final exam will count as two midterm exams, giving you a total of four exam scores. The lowest of these resulting scores will then be dropped and your overall exam score will be taken as the average of the three remaining scores. Note that all three exams must be taken (e.g., you cannot simply miss one of the midterms and use it as a dropped score). A missed exam will result in a course grade penalty of one whole letter grade (e.g., from B+ to C+).

If an exam is cancelled or postponed on the day of the exam, there will be a member of the Psychology Department in the room at the scheduled time to make the announcement. Notices posted on doors or on the blackboard are likely hoaxes.

Make Up Exams: In order to qualify for a make-up for either of the midterms of the final exam, you must notify me _in advance_ by telephone or email _and_ provide appropriate documentation (e.g., a physician's note, an obituary or funeral notice, a police report, etc.). Except in case of an unforeseeable emergency, you must notify me at least one week in advance of the exam. If you do not meet _all_ of these criteria, you will not be permitted to take a make-up. In addition, because make up exams must be generated _ad hoc_, they may differ significantly in structure from the in class exams.

Homework/Classwork Assignments: Homework/classwork assignments assigned throughout the semester will contribute to 15% of the course grade. Problem sets will typically be assigned in class (and posted on the Sakai site) on Thursday and will be due at the beginning of class the following Thursday. Each homework problem will be worth two points: one point for a good faith effort at completion, and one point for correctness of the answer. No late homework assignments will be accepted. As with the exams, to receive any credit on computational questions, you must show your work.

Clicker Questions: You can earn extra credit points by purchasing a clicker and bringing it to class to answer clicker questions. Each day in class there will 1-4 clicker questions available. Any answer to a clicker question gets you half credit because it shows you were in class and paying attention, and a correct answer (for questions that have a correct answer) will get you full credit. Use of clickers is not required but does allow you to earn extra credit points. Thus, try not to get worried if you occasionally forget your clicker or it if occasionally does not work properly. You can earn up to 10 points on your final course grade by answering the clicker questions regularly in class.

Extra Credit: The midterm and final exams may include several extra credit questions. Otherwise, the only way to get extra credit is to regularly answer clicker questions in class. There are no other extra credit options available.

Attendance

Regular class attendance is expected of all students, but will not be directly enforced (i.e., I will not lower your course grade simply for missing classes). Nonetheless, you are strongly encouraged to attend all lectures and recitations. Historical student performance in this course indicates that you are highly unlikely to do well in this course if you do not regularly attend class. Attending class makes you more likely to conceptually grasp the material covered in lectures, some of which is not covered in the book.

Attending recitations will help solidify your procedural knowledge and will likely improve your homework/classwork score, since TA's will spend much of the recitation going through assigned homework problems.

If you expect to miss class, please use the University website *https://sims.rutgers.edu/ssra/* to indicate the date and reason for your absence. You will not be penalized on the basis of this information.

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. (See http://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. The request form can be found here.

Anticipated Course Schedule (*subject to change*)

Note: Assigned readings should be read in advance of the associated lectures.

Date	Topics	Assigned Readings
Tues. 9/2	Course Orientation, Review of Syllabus and Available Resources	Appendix A Review and Self-Test
Thurs. 9/4	Basic Statistical Concepts and Notation	Chapter 1
Tues. 9/9	Measures of Central Tendency, Frequency Distributions, Plotting Data & Reading Graphs	Chapters 2&3
Thurs. 9/11	Measures of Dispersion or Variability	Chapter 4
Tues. 9/16	Basic Concepts of Probability I	Chapter 5
Thurs. 9/18	Basic Concepts of Probability II	Chapter 5
Tues. 9/23	Probability, Normal Distributions, & z-Scores	Chapter 6
Thurs. 9/25	Sampling Distributions	Chapter 7
Tues. 9/30	Catch up & Review	
Thurs. 10/2	**Exam 1**	
Tues. 10/7	Intro to Hypothesis Testing	Chapter 8

Thurs. 10/9	z-Tests and Intro to t-Tests (One Sample)	Chapter 9 (9.1-9.6)
Tues. 10/14	t-Tests II (Two Independent Samples)	Chapter 9 (9.7-9.10)
Thurs. 10/16	t-Tests III (Two Related Samples)	Chapter 10
Tues. 10/21	Estimation & Confidence Intervals	Chapter 11
Thurs. 10/23	Introduction to ANOVA	Chapter 12 (12.1-12.5)
Tues. 10/28	ANOVA I Continued (One-Way, Independent Samples) & Post-hoc Tests	
Thurs. 10/30	ANOVA II (One-Way, Repeated Measures)	Chapters 12&13 (12.5-12.7,13.5)
Tues. 11/4	Catch up & Review	Chapter 13
Thurs. 11/6	**Exam 2**	
Tues. 11/11	ANOVA III (Factorial Design)	Chapter 14
Thurs. 11/13	ANOVA III Continued	Chapter 14
Tues. 11/18	Correlation	Chapter 15
Thurs. 11/20	Linear Regression	Chapter 16
Tues. 11/25	Nominal Data & The Chi-Square Test	Chapter 17
Thurs. 11/27	**Thanksgiving Break**	
Tues. 12/2	Nonparametric & Distribution-Free Tests	Chapter 18
Thurs. 12/4	Catch up & Review	
Tues. 12/9	Review	
Mon 12/15	**FINAL EXAM @ 8:00am** Be sure to check http://finalexams.rutgers.edu/ for updates	

The schedule above is subject to change. Please check the Sakai site regularly for announcements and updates.