

Course Syllabus

Quantitative Methods 830:200

Fall 2012

Lecture: Tuesdays & Thursdays 1:40-3:00pm in LSH Auditorium

Instructor: Dr. Melchi M. Michel

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Phone: (848) 445-8919

Office Hours: Th 10:00-11:00am (or by appointment)

Recitation Sections

Section	Day & Time	First Meeting	Location	TA
03	Th 8:40 – 10:00am	9/20	LSH B276	Mescher
04	W 10:20 – 11:40am	9/19	BE 253	Mescher
05	W 12:00 – 1:20pm	9/19	BE 253	Robotham
06	W 1:40 – 3:00pm	9/19	LSH B276	Robotham

Teaching Assistants

	Office Hours	Location	Email
Kris Mescher	Th 10:00am-12:00pm	629 Tillett Hall	kmescher@eden.rutgers.edu
Lloyd Robotham	TBA	515 Tillett Hall	lloyd.robatham@rutgers.edu

Course Materials

Textbook: Howell, D. C. (2011). *Fundamental Statistics for the Behavioral Sciences (7th Edition)*.

Belmont, CA: Wadsworth, Cengage Learning. **ISBN-13:** 9780840032973 **ISBN-10:** 0840032978

You will need to bring this textbook to your recitation sections.

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 straightforward squaring function, and are unlikely to run out of power in the middle of an exam. I recommend the **Texas Instruments TI-30X IIS** suggested on the course registration page, 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.

Goals

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 take 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 midterm exams will be given during normal lecture hours. Each of these exams will consist of two parts administered separately on consecutive lecture sessions. One part will be conceptual (i.e., no calculations, only multiple choice and written answers to objective questions) and the other 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 consist of two parts, a conceptual part and a computational part, administered separately during the final exam session. 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 the blackboard are likely hoaxes.

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.). If you do not meet all of these criteria, you will not be permitted to take a make-up.

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.

Attendance

Class attendance is not mandatory. However, you are strongly encouraged to attend all lectures and recitations. 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.

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 Educational Affairs (BC 114, extension 3327). It is your responsibility to self-identify with the Office of Educational Affairs 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.

Anticipated Course Schedule (*subject to change*)

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

Date	Topics	Assigned Readings
Tues. 9/4	Course Orientation, Review of Syllabus and Available Resources	
Thurs. 9/6	Basic Statistical Concepts and Notation	Chapters 1&2
Tues. 9/11	Measures of Central Tendency, Frequency Distributions, Plotting Data & Reading Graphs	Chapters 3&4

Thurs. 9/13	Measures of Dispersion	Chapter 5
Tues. 9/18	The Normal Distribution & z-Scores	Chapter 6
Thurs. 9/20	Basic Concepts of Probability	Chapter 7
Tues. 9/25	Sampling Distributions & Hypothesis Testing	Chapter 8
Thurs. 9/27	Catch up & Review	
Tues. 10/2	Exam 1 (Conceptual)	
Thurs. 10/4	Exam 1 (Computational)	
Tues. 10/9	t-Tests I (One Sample)	Chapter 12
Thurs. 10/11	t-Tests II (Repeated Measures)	Chapter 13
Tues. 10/16	t-Tests III (Independent Samples)	Chapter 14
Thurs. 10/18	Statistical Power	Chapter 15
Tues. 10/23	ANOVA I (One-Way, Independent Samples) & Post-hoc Tests	Chapter 16
Thurs. 10/25	ANOVA II (Repeated Measures)	Chapter 18
Tues. 10/30	ANOVA III (Factorial Design)	Chapter 17
Thurs. 11/1	Catch up & Review	
Tues. 11/6	Exam 2 (Conceptual)	
Thurs. 11/8	Exam 2 (Computational)	
Tues. 11/13	Correlation	Chapter 9
Thurs. 11/15	Regression	Chapter 10
Tues. 11/20	Multiple Regression	Chapter 11
Thurs. 11/22	THANKSGIVING BREAK – NO CLASSES	
Tues. 11/27	Nominal Data & The Chi-Square Test	Chapter 19
Thurs. 11/29	Nonparametric & Distribution-Free Tests	Chapter 20
Tues. 12/4	Choosing the Appropriate Statistics	Chapter 21
Thurs. 12/6	Catch up or Advanced Topics (TBA)	
Tues. 12/11	Review	
Thurs. 12/13	Review	
Mon. 12/17	FINAL EXAM @ 12:00pm	

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