Quantitative Methods in Psychology Course Syllabus
830:200, Section 21
Summer 2020
Rutgers University

Synchronous sessions: Wednesdays, 6-10 PM, https://rutgers.webex.com/meet/rachrubi
Instructor: Dr. Rachel Rubinstein
Instructor's Office Hours: Wednesdays 3:30-5:30 PM by appointment only, on Webex; signup lists will be distributed each week.
Instructor's Email: rachrubi@psych.rutgers.edu

Textbook: **Basic Statistical Analysis (9th Edition)**. Sprinthall, R. C. (2012). Needham Hts., MA: Allyn & Bacon.

Goals:

1. Describe the conceptual logic behind hypothesis testing and various inferential statistics, and identify the appropriate statistical test for various research designs
2. Execute null hypothesis tests and describe results in writing
3. Read, understand, and evaluate statistical results used in publish research and orally communicate about these findings
4. Think critically about media reported statistics and be able to identify potentially misleading reports

In addition, this course has been certified as satisfying both Quantitative and Formal Reasoning Learning Outcome Goals (QQ and QR) of the SAS Core Curriculum. Specifically, students will be able to:

1. Formulate, evaluate, and communicate conclusions and inferences from quantitative information (QQ)
2. Apply effective and efficient mathematical or other formal processes to reason and to solve problems (QR)

General information

General Principle
Please, please, PLEASE ask questions!! Please!! It's the only reliable way I have of knowing whether you understand the course material. Even if you can't articulate what it is you don't understand, just say "I have no idea what you're talking about," or, "I'm lost," or "Help!" Chances are that if you don't get it, there are a number of your classmates who are also struggling. Please help everyone out by asking!

Course format
Each week starting with the second week of classes, you will be responsible for watching lecture videos online BEFORE we meet that week. Within some videos, there will be quizzes that you will need to take before that week's class period, and these will count toward your final grade. Late video quizzes will not be accepted without documentation of a legitimate

reason for the lateness (e.g., doctor's note). In class each week, I will give a review lecture, but we have very limited time together, so I will not be able to cover everything that is in the videos, so it is absolutely CRUCIAL that you watch the videos before class and come to class prepared with any questions that cropped up while watching the videos. After the review lecture, I will walk everyone through a sample problem and then you will break into groups and complete practice problems.

Time commitment
Given the condensed timeline of this 4-credit course, this course will be very time-intensive. To succeed in this course, you should expect to devote 20-30 hours per week to it; some weeks you may spend more time (e.g., exam weeks), and some weeks you may spend less time.

Requirements

Materials
You will need to have a calculator in each class session. Graphing calculators and other calculators that store equations are not permitted.

Necessary technological equipment for the course
- Functioning webcam
- Smartphone capable of using scanning apps (e.g., Genius Scan, Cam Scanner)

Baseline technical skills necessary for online courses
- Basic computer and web-browsing skills
- Navigating Canvas Technology

Technology skills necessary for this specific course
- Collaborating on VoiceThread
- Recording a slide presentation with audio narration using VoiceThread

Exam proctoring
- To take this course, you MUST be willing to agree to be supervised while taking the exam by Proctortrack. If this is a privacy concern for you, you should drop the course, because the use of Proctortrack is non-negotiable.

Assessment

Midterm	30%
Cumulative final	30%
Classwork	10%
Homework assignments	10%
VoiceThread presentation	10%
Video quizzes	10%
Total	100%

Grading: Final grades will be assigned according to the following scale:

A: 89.50 -100.0%
B+: 84.50-89.49%
B: 79.50-84.49%
C+: 74.50-79.49%
C: 69.50-74.49%
D: 59.50 - 69.49%
F: 0.0 - 59.49%

THIS GRADING RUBRIC APPLIES TO ALL STUDENTS IN THIS CLASS. NO EXCEPTIONS WILL BE MADE FOR ANY REASON.

Midterm exam. The midterm will consist of two separate parts: a conceptual component and a computational portion. These two exams will be available during a 24-hour window on Canvas, and **you will be supervised by Proctortrack.** You will have 1 hour and 15 minutes for the conceptual portion, and 1 hour and 45 minutes for computational (which usually takes students longer). The **conceptual portion is closed-book** and consists of multiple-choice questions; computational will involve calculating the appropriate statistics, determining whether or not to reject the null hypothesis, and describing results in layperson's terminology. For the computational portion of the exam you are permitted to have one 8.5 x 11 sheet of paper with any formulas or notes on it, and printed tables from the textbook. Only calculators are permitted – no other electronic devices may be used on the computational portion. You may not use graphing calculators or other calculators that can store equations. **You may NOT collaborate with your classmates; if anyone is found to be doing so, they will be brought up on formal academic integrity charges with the university, as will anyone using notes, books, etc. on the conceptual exam.**

Comprehensive final exam. This will be similar in structure to the midterm exam (so, part will be conceptual multiple choice and part will be computational), but will cover material from the whole course. In addition, this whole exam will be completed during our scheduled class session and will only be available during that time window (instead of for 24 hours). This exam also will be supervised using Proctortrack.

Note about exams: A functioning webcam is mandatory for this course due to the use of Proctortrack. If you have a broken webcam during an exam, you will need to provide documentation of the webcam problem, and will need to wait to take the exam until your webcam is fixed. **You must tell me this before you access the exam to qualify for a makeup exam.** If your webcam is not working, you will know this before you start the exam, so you must tell me before you start the exam.

Classwork assignments. You will be doing computational assignments in each class. You will turn them in for credit. Obviously, if you're not there, you can't get the credit for in-class assignments. You can miss one class with no penalty, but you will subsequently lose points for missing classwork. If you come to every class session, you will receive 1% of extra credit added to your final course average.

In my experience, students who miss several class sessions do not succeed in the course. This is not only because the in-class assignments constitute a substantial portion of your grade, and you cannot make them up if you miss them without documentation, but also because our class sessions are the only chance you will have to hear the material taught live, with chances to ask questions.

Homework assignments. There will be two homework assignments throughout the course of the class—one before each exam. These homework assignments are meant as a lower-stakes way to practice for the computational exam. You will upload scans of your homework onto Canvas BEFORE the deadline. I will post the answer keys after the deadline so you can study from your mistakes. For these assignments, for each problem, you will receive no credit if you leave it blank, half credit if you make an honest effort, and full credit if you get the answer correct. NOTE: You will NOT be allowed to turn the homework in late since the answer keys will be posted. If you do not submit the pictures of the homework before the deadline on Canvas, you will not receive credit for the homework.

VoiceThread Presentation. You will be responsible for a group presentation of a journal article that outlines its purpose, hypotheses, statistical tests, and conclusions that you will present using VoiceThread on Canvas. In order to record your presentation, you will need access to a computer with a microphone. If you would prefer to complete an alternate written assignment, please let me know.

Video quizzes. Within many of the videos, there will be quiz questions for you to take throughout the video. These quizzes allow me to see how well you understand the material. You get half credit for any answer and full credit for the correct answer. The video quizzes are due **before** the start of class each week.

Make-up exams and classwork: In order to qualify for a make-up for exams **OR** for make-up classwork, you must notify me ***in advance*** by email ***and*** provide documentation (i.e., a doctor's note, police report, etc.). If you don't meet all of these criteria, you will not be permitted to take a make-up. **Remember, there are no makeups for the homeworks.**

Academic Integrity: Getting any form of assistance from other students or other outside sources on exams is prohibited, as is plagiarism in your written work and presentations. Students who get outside assistance or plagiarize will be brought up on charges before university's Office of Student Conduct, and penalties, up to and including explusion, will be imposed for those found guilty. (See http://policies.rutgers.edu/PDF/Section10/10.2.13-current.pdf for specifics.)

Class Calendar

(Subject to change if necessary)

Date	**Text readings** (Read AFTER you've watched the videos and class has met)	**Topics and events**	**Videos and video quizzes due BEFORE class*** *Note: if video is labeled "quiz" you will find it in the Assignments tab on Canvas. If it is labeled "no quiz" you will find it in the Media Gallery, where you can search by title.
Wed 5/27	Chapter 1 Ch 9 (pp. 198-208) Chapter 2 (pp. 32-47) Chapter 3 (pp. 54-59; 61-66) Chapter 4	Types of measurement – nominal, ordinal, interval, ratio. Independent vs. dependent variables. Measures of central tendency – mean, median, mode. Graphing frequency distributions Measure of variability – range, variance, and standard deviation. Kurtosis and skew. Characteristics of the normal distribution, Z-scores and their use.	• Syllabus walkthrough (no quiz) • Fundamental Principles and Terminology (quiz) • Central Tendency and Variability (quiz) • Shapes of Distributions (quiz) • Z scores and the normal distribution (quiz)
Wed 6/3	Chapter 7 (pp. 144-151; 156-167) Chapter 8 (pp. 170-173; (ignore p. 174); 175-193)	Null hypothesis testing and the z-test. Inferences about populations from samples. The t-test – Testing for mean differences. Single-sample t-test (part 1).	• Sampling distribution of the mean (quiz) • Null hypothesis testing and the z-test (quiz) • Z-test problem walkthrough (no quiz) • Single-sample t-test (quiz)
Wed 6/10	Chapter 10 (ignore p. 253)	Using and performing the single-sample t-test The Sampling Distribution of the Difference and the	• Using and performing the single-sample t-test (no quiz) • Independent samples t-test (quiz)

		independent samples t-test.	• Independent samples t-test problem walk-through (no quiz)
Friday 6/12 11:59 PM Homework 1 due on Canvas			
Sunday 6/14 MIDTERM EXAM AVAILABLE 12 AM-11:59 PM on Canvas			
Wed 6/17	Chapter 11 (pp. 287-296; 300-308; 310-311 Chapter 15 (pp.447-453) Chapter 12 (pp. 330-350) (ignore Steps 1-4 on p. 342 for calculation of 1-Way F	The Correlation Coefficient: Pearson's r Repeated-measures (within-subjects) t-tests.	• Correlations: Pearson's r (quiz) • Pearson's r problem walk-through (no quiz) • Paired samples t-test (quiz) • Paired samples t-test problem walk-through (no quiz) • One-way ANOVA conceptual video (quiz)
Wed 6/24, 11:59 PM	Group presentations due on Canvas		
Wed 6/24	Chapter 12 pp. 350-360 (ignore steps 1-7 on pp. 353-354); 363-365	The 1-way Analysis of Variance – Testing for mean differences among more than 2 groups. Post-hoc testing (Tukey test). Factorial ANOVA – Testing for the effects of more than 1 independent variable on a dependent variable. Main effects and interactions.	• One-way ANOVA problem walk-though (no quiz) • Factorial ANOVA conceptual video (quiz) • Interpreting factorial ANOVA results (quiz) • Factorial ANOVA problem walkthrough (no quiz)
Friday 6/26 Homework 2 due 11:59 PM on Canvas			
Wed 7/1	FINAL EXAM (during normal meeting time)		