Quantitative Methods in Psychology – Fall 2020
830:200:20, 4 Credits

(This syllabus has been amended from Spring 2019 syllabus prepared by Dr. Stephen Kilianski for 830:200 Quantitative Methods)

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Office Hours: Tuesdays: 12:30 PM - 1:30 PM virtually or in office, by appointment, or if you can catch me in my office. Given the current situation, Zoom meetings are preferred. Email appointment is the preferred option (you should email me before coming to my office to ensure I'll be around, I have other obligations to attend to outside of this class).

Note: A lack of availability for questions/interactions with me **WILL NOT** be an excuse for poor performance in this class. Very simply, I will give you more than enough options to be in touch with me. I will have virtual office hours weekly, we will have discussion posts to keep in contact, and I will answer any email you send me within a reasonable time frame. I am more than happy to schedule meetings with any one of you to discuss questions you may have, but we must respect one another's time. If you want to talk with me directly, have your questions ready! I won't ask you for your attention without a clear purpose, please don't ask me to give you mine without the same

Time: Asynchronous

Location: Remote

Dates: Weekly, lectures posted on Sundays and Wednesdays; 09/01/20 - 12/22/20

*****Disclaimer**:***
Everything in this syllabus is subject to change at my discretion. You will be informed if such changes are made.

Textbook:
None required.

I will provide you with the materials you will need.

Assigned Reading

You are expected to complete the assigned reading for the day **BEFORE** you view each lecture. Although I have not specifically taught this course remotely, I am confident that remote instruction for this class will be less than ideal. That being said, it is especially important that you approach the lectures already familiar with the topic being discussed that week. ***I am lecturing with the assumption that everyone has completed the assigned readings for that day; if you don't read, you will very likely be lost!*** You are **not** responsible for sections of the chapters titled "Spotlight on SPSS" or "For Excel Users."

Description:

Despite what you may have heard about this course, you should not approach it like a math course (afterall, you are taking a **PSYCHOLOGY** course). This is a course in which understanding data is the overall goal. To do this, we *will* use math, but you know all of the math you need to know before we even begin (addition, subtraction, multiplication, division, exponents, and square roots). Those who attempt this class with this understanding will likely find great success. Let go of your worries and anxieties about calculations and above all else focus on just understanding the data -- that is the goal of using statistics, afterall.

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.

Course Requirements:

Two Midterm Exams (50% of total course grade: 25% each)

Each of these will consist of two parts administered separately. One part will be conceptual (no calculations, multiple-choice objective questions); the other will be computational (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 exams you will need your book and will be permitted to prepare anything you might want to use to help you (e.g., one or two 8.5 x 11 sheet(s) of paper with any formulas or notes on it is recommended). Given that this course is remote, any other resources you might want to use will

be permitted as well (though my warning is that the exams will be constructed in such a way that online sources won't be of much help to you; you'll be asked to *apply* what you've learned to novel situations I create). You will certainly need your textbook, a basic four function calculator, and a few blank pieces of paper for each exam.

The exams will be given through the "Tests and Quizzes" tab on Sakai. Exams will go "live" and be available for you to take beginning at 8:00 AM EST on the Wednesday of an exam week (e.g., **September 30th for Exam I** and **October 28th for Exam II**). From that time, you will have 24 hours to begin and complete the exam. You will have some set amount of time (I am tentatively thinking 3 hours) to complete the exam once you begin the exam on Sakai. I won't make you use any proctoring software (I find it to be a bit of an invasion of privacy, and I don't want to subject you to that). That being said, everything in the "Academic Integrity" section of this syllabus still applies. You can still cheat, and you will still be reported if you do. My exams will have randomly generated questions from a pool I create, the data I give you for computational problems will differ from student to student, and there will be written components that require unique responses. In other words, if you try to cheat you will both be wrong (likely) and it will be very obvious to me. It's really not worth it.

Comprehensive Final Exam (25% of total course grade)

This will be similar in structure to the unit exams (so, part will be conceptual multiple choice and part will be computational), but any and all material covered throughout the whole course *will be* fair game. Tentative final exam date is **Wednesday, December 9th.**

"Recitation" Assignments (15% of total course grade: 5 assignments worth 3% each)

Throughout the semester I will be giving "recitation" assignments (computational problems) that I will assign without prior warning that need to be done and handed in by the end of the week. If you are keeping up in class and paying attention, these will be easy points! I'm assigning these to ensure that you are practicing the computational problems (so you won't be blindsided on the exams) and to ensure you're paying attention during lectures. They will be fully open-book, open-note, and I will be available for questions. My expectation is that you'll take a photo of your work and upload it to Sakai. If you don't have a traditional scanner, there are useful phone apps that can help (for example, CamScanner is free, very intuitive to use, and produces the type of document I am looking for).

Warning: you won't find these in the course schedule. I will assign them within the lecture videos I post and make clear there when I expect them to be handed in.

Discussion Posts (10% of total course grade)

Roughly every two weeks (see course schedule for due dates) I will create a discussion thread aimed specifically at getting you to think about the application of one of the statistical tests or principles that I mentioned in my lectures. I would like this to take the form of a true

discussion. In other words, I am looking for dialogue. Perhaps you'll have a meaningful statement to make, a question (to me, or your classmates), or an answer. However you choose to contribute is up to you. Be aware, though, that I am looking for meaningful contributions to the discussion in your posts; i.e., simply replying "I agree" will not suffice. Instead, for example, tell me why you have that opinion.

Grading:

Final grades will be assigned using the following scale:

A: 90.0 -100.0%
B+: 85.0-89.99%
B: 80.0-84.99%
C+: 75-79.99%
C: 70-74.99%
D: 60.0 - 69.99%
F: 0.0 - 59.99%

Because of an increasing tendency of students to try to persuade me to change their grade after the semester is over, let me be very explicit: I will give anyone as much help as they need to prepare for tests during the semester. If you need to get extra help, or want to do "extra" work (i.e., prepare more, think more, study harder, talk to me more...), the time to do so is during the semester. **There will be absolutely no "extra credit" offered** outside of your exams and the in-class assignments. During your exams and in-class assignments are the times to earn all the credit you can. Please do not send me an email asking me to round your grade or give you points, either. Neither NASA nor your bank will "round up" just to achieve a more favorable outcome, and neither will I.

"Attending" Lectures:

Everyone taking this class is an adult. As such, choosing whether or not you're going to take the time to watch the posted lectures is your choice. That being said, it's hard to imagine how anyone could succeed without watching the lectures. ***The vast majority of content on the exams will come from my lectures, not the textbook or my slides (per se)***.

Everyone who watches the lectures, is paying attention, and actively engages with me and the material should do well in this class. If you don't watch them, or if you use them as white noise to fall asleep to, you will probably do poorly. If you don't want to pay attention to the lectures, it is probably best not to take this (or any) course (why are you in college?). If you don't watch, you should feel very uncomfortable using anyone else's notes as a substitute for watching. The material of this course needs to be explained and will be difficult to grasp from reading alone (especially from someone else's notes). The bottom line is, if you make that little effort to pay attention while you are watching, you will very likely learn a lot and get a good grade. I also happen to think that the material is interesting and useful in many contexts (even

outside of psychology). On a final note, I will be posting my PowerPoint slides for the semester. They are **NOT** a substitute for attendance. Believe me, you will **NOT** understand them if you don't watch!

Academic Integrity:

Each student in this course is expected to abide by the Rutgers University Code of Student Conduct and Academic Integrity Policy. Any work submitted by a student in this course for academic credit will be the student's own work. Penalty for violation of the University Code of Student Conduct can also be extended to include failure of the course and University disciplinary action. The risk really isn't worth it.

During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. It will be very obvious to me if you are doing your own work or not. You are expected to show all of your work on all computational problems. Any collaborative behavior during the examinations ***will*** result in failure of the exam, and may lead to failure of the course and University disciplinary action. In short: do not cheat! Do not plagiarize! Visit http://academicintegrity.rutgers.edu/resources-for-students for info and useful links.

Accommodations:

Appropriate accommodations are available for students with disabilities. In compliance with the Rutgers University policy and equal access laws, I am available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations are to be made during the first week of the semester, unless for unusual circumstances, so arrangements can be made. Students are encouraged to register with the Office of Disability Services to verify eligibility for appropriate accommodations and to provide me with documentation. Please see web site of the Office of Disability Services for Students (https://ods.rutgers.edu/) for more information.

General Principle:

Please ask questions! It's the only reliable way I have of knowing whether you've understood what I'm trying to convey. 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 floundering, but I can't read your minds (I promise). Help everyone out (including me) by asking, please!

Materials:

A simple electronic calculator is necessary and sufficient for the course. They cost as little as $3 - $5. Bring your book, a calculator, as well as something to write with and on to every lecture -- you will need them!

Class Schedule (tentative; subject to change)

Week	Week of...	Text Readings	Topics/Events
1	8/31	N/A	- Orientation material - syllabus review
2	9/6	Lecture 1 - Chapter 1 - Chapter 9 (p. 198 - 208) - Chapter 2 (p. 25 - 46) Lecture 2 - Chapter 3 (p. 54-59; 61-66) - Chapter 4 - Chapter 7 (p. 156-160)	Lecture 1 - Types of Measurement (Nominal, ordinal, interval/ratio - Independent v. Dependant Variables - Issues in scientific measurement: reliability and validity - Measures of central tendency (mean, median, and mode) - Graphing frequency Distributions Lecture 2 - Measures of variability (range, variance, and standard deviation) - Kurtosis and skew - Characteristics of the normal distribution and use of z-scores - Sampling distribution of the mean - Central Limit Theorem *Discussion Post 1 due (Fri)*
3	9/13	Lecture 3 - Chapter 6 (p. 144-151) - Chapter 7 (p. 156 - 167) Lecture 4 - Chapter 8 (p. 170-173; 175-193)	Lecture 3 - Null and alternative hypothesis testing - The Z-test and confidence intervals\ - Alpha level and significance Lecture 4 - Single sample t-tests
4	9/20	Lecture 5 - Chapter 10 (ignore p. 253) Lecture 6 - N/A	Lecture 5 - Independent samples t-test Lecture 6 - Review problems for exam I *Discussion Post 2 due (Fri)*

5	9/27	**EXAM I**	**EXAM I**
6	10/4	<u>Lecture 7</u> - Chapter 13 (p. 374-385; 395) <u>Lecture 8</u> - Chapter 11 (p. 287-296; skip bottom of 296 to 300; 300-306; 310-311)	<u>Lecture 7</u> - Nominal data - Chi-Squared tests (Goodness of Fit and Independence) <u>Lecture 8</u> - Pearson's R (correlations)
7	10/11	<u>Lecture 9</u> - Chapter 15 (p. 447-453) <u>Lecture 10</u> - Chapter 12 (p. 330-350; ignore steps 1-4 on p. 342 for calculation of 1 way ANOVA "F"	<u>Lecture 9</u> - Repeated measures (within-subject) t-test <u>Lecture 10</u> - One way ANOVA *Discussion Post 3 due (Fri)*
8	10/18	<u>Lecture 11</u> - N/A <u>Lecture 12</u> - N/A	<u>Lecture 11</u> - Review problems for Exam II (Pearson's R/repeated-measure t-test) <u>Lecture 12</u> - Review problems for Exam II (One way ANOVA)
9	10/25	**EXAM II**	**EXAM II**

10	11/1	Lecture 13 - Chapter 12 (Factorial ANOVA) pp. 350-360; 363-365 Lecture 14 - Chapter 12 (Factorial ANOVA) pp. 350-360; 363-365	Lecture 13 - Factorial ANOVA - Testing for the effects of more than 1 independent variable on a dependent variable. Main effects and interactions. Lecture 14 - Factorial ANOVA (continued)
11	11/8	Lecture 15 - Chapter 14 Lecture 16 - N/A	Lecture 15 - Linear Regression Analysis: Predicting values on a criterion using a predictor and the regression equation. Lecture 16 - Review (Factorial ANOVA/linear regression) *Discussion Post 4 due (Fri)*
12	11/15	Lecture 17 - N/A Lecture 18 - N/A	Lecture 17 - Review (Exam I material) Lecture 18 - Review (Exam I material)
13	11/22	**THANKSGIVING RECESS**	**THANKSGIVING RECESS**
14	11/29	Lecture 17 - N/A Lecture 18 - N/A	Lecture 19 - Review (Exam II material) Lecture 20 - Review (Exam II material)
15	12/6	**FINAL EXAM**	**FINAL EXAM**