RUTGERS UNIVERSITY

QUANTITATIVE METHODS 830:200:11-14   FALL 2020
LECTURE: Voorhees Hall Room 105
DAYS/TIMES: Mondays & Wednesdays 6:10 – 7:30 PM
RECITATION: See below for day/time/location your section will meet
NOTE: With remote instruction, lectures and recitation assignments will all be available on the course Sakai site.

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Office Hours: TBA   .   Email: skilians@psych.rutgers.edu

RECITATION SECTIONS & TEACHING ASSISTANTS
NOTE: With remote instruction, recitations will not meet in a classroom. TAs may conduct web-based reviews of assigned recitation problems and solutions. You will be notified accordingly regarding the availability thereof.

11   Tues. 1:40 – 3 PM   BE 213
12   Wed. 9:50 – 11:10 AM   CI 203
13   Tues. 9:50 – 11:10 AM   FH B2
14   Tues. 5 - 6:20 PM   LSH B112   `

Textbook: **Inferential Statistics: Drawing Conclusions about Populations from Sample Data**. Kilianski, S.. (2020). This is my self-authored text designed specifically for this course. It is in MS Word format and is available on the Sakai course site in the Resources folder. There is no cost associated with access to it. YOU MUST READ THE CORRESPONDING TEXT CHAPTERS BEFORE OR SOON AFTER EACH LECTURE IN ORDER TO FULLY MASTER THE SUBJECT MATTER!

Goals: RELAX…you know all the math you need to know right now! If you can add, subtract, multiply, and divide, you can handle this course without any problem. Let go of your anxieties – in this course, they are your worst enemy. The subject matter is not difficult. The intent is to focus on what you need to know from a scientific perspective and to avoid the irrelevant and tangential. What you need to know I will make sure you understand very well. If you put in the effort, it is my mission to make sure that you succeed.

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:
a) Formulate, evaluate, and communicate conclusions and inferences from quantitative information (QQ)
b) Apply effective and efficient mathematical or other formal processes to reason and to solve problems

Course Requirements: **Two (2) Hourly Exams**. Each of these will consist of two parts administered separately during 2 consecutive lecture sessions. One part will be conceptual (no calculations, multiple-choice and T/F objective questions) worth 40 points; 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) worth 60 points. Except for the actual numbers, the structure and process involved in solving the computational problems will be identical to those used in class and in recitation. For the computational portion of the exam you will need copies of the relevant tables and will be permitted to bring one 8.5 x 11 sheet of paper (2-sided) with any formulas or notes on it. Only calculators are permitted – no other electronic devices may be used. The conceptual and computational exams will be administered in the lecture hall. **The score on these two exams will account for approximately 58% of your grade (200 pts. – 100 pts. each).** **NOTE: With remote instruction, the exams will be administered via the course Sakai site and will be available ONLY during the designated lecture period.**

Comprehensive Final Exam. This will consist of two parts administered separately during the final exam session in the lecture hall. One part will be conceptual (no calculations, multiple-choice objective questions) worth 40 points; 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) worth 60 points. Except for the actual numbers, the structure and process involved in solving the computational problems will be identical to those used in class and in recitation. For the computational portion of the exam you will be permitted to bring two 8.5 x 11 sheet of paper with any formulas or notes on them. Only calculators are permitted – no other electronic devices may be used **This score will account for approx. 27% of your grade (100 pts.).** **NOTE: With remote instruction, the final exam will be administered via the course Sakai site and will be available ONLY during the university's assigned final exam period.**

Classwork assignments. You will be doing many computational assignments in class during your recitation section. You will turn them in for credit. Obviously, if you're not there, you can't get the credit for in-class assignments. Recitations meet 10 times during the semester, so there are 10 of these assignments. "Forgiveness" will be granted for up to 3 missed classwork assignments (i.e., you will get credit for the ones you miss, but only 3 of them). **No make-up will be allowed for these assignments.   These assignments account for approximately 15% of your grade (50 pts.)**. **NOTE: With remote instruction, the recitation problems will be administered and you will submit the work via the course Sakai site within a designated time frame. This will be accomplished via the "Assignments" tool on the Sakai homepage.**

Extra Credit for Recitation Attendance/Classwork. You can earn an additional 5 points extra credit for *each* recitation attended beyond the 7 specified above. Therefore if you attend (and do the work for) all 10 recitations you would earn the 50 points for the first 7 and an additional 5 for the each of the other 3. **NOTE: With remote instruction in effect, this rule will apply to on-time submission of recitation problems as well.**

Make-up Exams: In order to qualify for a make-up for any exam you must notify me **in advance** by telephone or email **and** provide documentation (i.e., an MD's note, an obituary or funeral notice, police report, etc.). If you don't meet all of these criteria, you will not be permitted to take a make-up.

Academic Integrity: Collusion (getting any form of assistance from other students or outside sources) on exams or the Sakai 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 explusion, will be imposed for those found guilty. (See http://policies.rutgers.edu/PDF/Section10/10.2.13-current.pdf for specifics)

Attendance: Class attendance is not mandatory; however, since the in-class assignments during recitation constitute a large portion of your grade, and you cannot make them up if you miss them, you need to attend consistently. *Missing lecture will render your conceptual understanding and procedural knowledge woefully deficient, so you should not skip those sessions either*. **NOTE: With remote instruction, the lectures (under Media Gallery) will be**

available for extended time periods. However, you should try to view them one-at-a-time, with spacing and text reviewing between, adhering to a schedule that parallels the class calendar. Trying to master the content of multiple lectures in one sitting is a prescription for failure. PLEASE DON'T DO IT. ALWAYS READ THE CORRESPONDING TEXT CHAPTER (see class calendar below) BEFORE OR SOON AFTER VIEWING EACH LECTURE.

Grading: Based on the total points you have accumulated on the 2 hourly exams (100 each), the final (100), the in-class recitation assignments (50) (a maximum of 350 total), and any extra credit earned, grades will be assigned as indicated below:

315-350 = A	262-279 = C+	< 210 = F
297-314 = B+	245-261 = C	
280-296 = B	210-244 = D	

THIS GRADING RUBRIC APPLIES TO ALL STUDENTS IN THIS CLASS – NO EXCEPTIONS FOR ANY REASON.

General Principle   Please ask questions! It's the only reliable way we have of knowing whether you've understood what we're 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. Help everyone out by asking, please! (Unfortunately, with remote instruction this doesn't apply as written. Inquiries are still encouraged either via email, or during in-person or virtual office hours, which I will hold.)

Materials   A simple electronic calculator is all you need. They cost as little as $3 - $5.

Bring your book and calculator to every recitation session – you will need them! It is also recommended that you bring your textbook to every lecture, as I will often be referring to specific tables or examples in the text. Obviously this applies only if remote instruction is NOT in effect.

CLASS CALENDAR
QUANTITATIVE METHODS 830:200:01-05   FALL 2020

DATE	TEXT CHAPTERS	TOPICS & EVENTS	
Wed. 9/3		Orientation and review of syllabus and resources available.	**No recitation sessions this week**
Mon. 9/7 Lecture #1	Chapter 1	Types of measurement – nominal, ordinal, interval, ratio. Independent vs. dependent variables. Descriptive vs. Inferential Statistics: Drawing conclusions about populations from sample data.	**No recitation sessions this week**
Wed. 9/9 Lecture #2	Chapter 2	Measures of central tendency – mean, median, mode. Graphing frequency distributions. Measures of variability – range, variance, and standard deviation. Kurtosis and skew.	**Recitation 1** W/E 9/17
Mon. 9/14 Lecture #3	Chapter 3	Characteristics of the normal distribution and the use of z-scores. .	
Wed. 9/16 Lecture #4	Chapter 3 (cont'd) & Chapter 4	Characteristics of the normal distribution and the use of z-scores (cont'd). Introduction to the Z-test, the Sampling Distribution of the Mean and its characteristics (Central Limit Theorem). .	**Recitation 2** W/E 9/24
Mon. 9/21 Lecture #5	Chapter 4 (cont'd)	The Z-test (inference regarding population means) and confidence intervals (for estimating population means). Null and alternative hypotheses. Alpha levels and statistical significance.	
Wed. 9/23 Lecture #6	Chapter 4 (cont'd)	The t-test – Testing for mean differences. Single-sample t-test. Inferences about populations from samples.	**Recitation 3** W/E 10/1

MON 9/28 Lecture #7	Chapter 5	The Sampling Distribution of the Difference and the independent samples t-test.	
Wed. 9/30 Lecture #7	Chapter 5	Computing CI for mean difference Using Xcel to calculate M and SD Ind. Samples t review	**Recitation 4 W/E 10/8**
MON 10/5 Lecture #8	Chapter 11	Nominal data and the chi-square test	
Wed. 10/7 Lecture #9	Chapter 11	Nominal data and the chi-square test and review	**Recitation 5 W/E 10/15**
MON 10/12	**HOURLY EXAM 1** **COMPUTATIONAL**	**RECITATION SECTIONS DO NOT MEET THIS WEEK**	**ON SAKAI 6:10 – 7:30 PM**
WED 10/14	**HOURLY EXAM 1** **CONCEPTUAL**	**RECITATION SECTIONS DO NOT MEET THIS WEEK**	**ON SAKAI 6:10 – 7:30 PM**
MON 10/19 Lecture #10	Chapter 6	The Correlation Coefficient: Pearson's r Fisher's Z test for difference between two Pearson's r values	**Recitation 6 W/E 10/22**
Wed 10/21 Lecture #11	Chapter 7	Repeated-measures (within-subjects) t-tests.	
MON 10/26 Lecture #12	Chapter 8	The 1-way Analysis of Variance – Testing for mean differences among more than 2 groups. Post-hoc testing (Tukey test).	**Recitation 7 W/E 10/26**

Wed. 10/28 Lecture #13	Chapter 9	Factorial ANOVA – Testing for the effects of more than 1 independent variable on a dependent variable. Main effects and interactions.	
MON 11/2 Lecture #14	Chapter 9(Factorial ANOVA) Continued.	Factorial ANOVA – Continued	**Recitation 8 W/E 11/5**
Wed. 11/4 Lecture #15	Review for hourly exam 2	.	
MON 11/9	**HOURLY EXAM 2** **COMPUTATIONAL**	**RECITATION SECTIONS DO NOT MEET THIS WEEK**	**ON SAKAI 6:10 – 7:30 PM**
Wed. 11/11	**HOURLY EXAM 2** **CONCEPTUAL**	**RECITATION SECTIONS DO NOT MEET THIS WEEK**	**ON SAKAI 6:10 – 7:30 PM**
MON 11/16 Lecture #16	Chapter 10	Linear Regression Analysis: Predicting values on a criterion using a predictor and the regression equation.	**Recitation 9 W/E 11/19**
Wed. 11/18 Lecture #17	Chapter 10	Multiple Regression Analysis: Predicting values on a criterion using a set of many predictor variables	
MON 11/23		. NO CLASS – THANKSGIVING WEEK	**No recitations this week**
Wed. 11/24		. . NO CLASS – THANKSGIVING WEEK	**No recitations this week**

MON 11/30 Lecture #18	Chapter 10	Multiple Regression Analysis: Predicting values on a criterion using a set of many predictor variables	
Wed. 12/2	Chapter 10	Multiple Regression Analysis (cont'd)	**Recitation 10 W/E 12/3**
MON 12/7	Review – Basics of inferential statistics		
Wed. 12/9	Review – Additional inferential statistics		
	FINAL EXAM	This is a comprehensive final assessing all concepts and procedures that have been covered throughout the entire semester. Include both conceptual (40 pts) and computational (60 pts) components	

Academic Accommodations: Should you require academic accommodations, you must file a request with the Office of Disability Services (Office of Disability Services-New Brunswick, Lucy Stone Hall, Suite A145, Livingston Campus, 848-445-6800). 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 testing accommodations.