

RUTGERS UNIVERSITY

QUANTITATIVE METHODS 830:200:B6 SUMMER 2017

LOCATION: Tillett Hall 253 **DAYS/TIMES:** M, W, F 600 – 9:30

Instructor: Dr. Stephen Kilianski

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Office Hours: By appointment

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Textbook: Basic Statistical Analysis (9th Edition). Sprinthall, R. C. (2012).
Needham Hts., MA: Allyn & Bacon. *Note: Do not purchase an earlier edition. Page numbers and problems differ and the consequences will be disastrous.* The bookstore will be selling a paperback edition with unnecessary chapters omitted for a reduced price. **You will need the book for every class and for exams.**

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. 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. One part will be conceptual (no calculations, multiple-choice objective questions) which will be taken via Sakai (but if you don't have a device with access, a paper copy will be administered); 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). Except for the actual numbers, the structure and process involved in solving the computational problems will be identical to those used in class. For the computational portion of the exam you will need your book and will be permitted to bring one 8.5 x 11 sheet of paper with any formulas or notes on it. Only calculators are permitted – no other electronic devices may be used on the computational portion. **The score on these two exams will account for 80% of your grade (400 pts. – 200 pts. each).**

Classwork assignments. You will be doing many computational assignments in class. You will turn them in for credit. Obviously, if you're not there, you can't get the credit for in-class assignments. Other than exams, we meet 13 times during the semester, so there are 13 of these assignments. You can get credit for 10 of them (assuming you turn in the work). Therefore, you can miss three with no loss of points. **No make-up will be allowed for these assignments. These assignments account for 20% of your grade (100 pts.).**

Make-up Exams: In order to qualify for a make-up for the midterm or the final 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 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)

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 put your conceptual understanding and procedural knowledge in jeopardy, so you should not skip those sessions either.

Grading: Based on the total points you have accumulated on the 2 hourly exams (200 each = 400 total) and the in-class recitation assignments (100) (a maximum of 500 total), grades will be assigned as indicated below:

450-500 = A	375-399 = C+	< 300 = F
425-449 = B+	350-374 = C	
400-424 = B	300-349 = 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!

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

For students who have a device that can access Sakai, you will need those for exams. If any students are lacking such devices, the conceptual portion of exams will be given on paper..

Bring your book and calculator to EVERY CLASS, as I will often be referring to specific tables or examples in the text.

CLASS CALENDAR
QUANTITATIVE METHODS 830:200:B6 SUMMER 2017

DATE	TEXT READINGS*	TOPICS & EVENTS
Wed. 5/31	Chapter 1 Ch 7 (pp. 166-179) Ch 9 (pp. 198-208) Chapter 2 pp. 32-49 (pp. 32-46)	Orientation and review of syllabus and resources available Types of measurement – nominal, ordinal, interval, ratio. Independent vs. dependent variables. Issues in scientific measurement: Reliability and validity Measures of central tendency – mean, median, mode. Graphing frequency distributions
Fri 6/2	Chapter 3 pp 58-63 and 65-70 (pp. 54-59; 61-66) Chapter 4	Measure of variability – range, variance, and standard deviation. Kurtosis and skew. Characteristics of the normal distribution, Z-scores and their use .
Mon. 6/5	Chapter 5 pp.108-110; 120-129 Chapter 7(pp. 144-151; 156-167)	Fundamental Principles. The Sampling Distribution of the Mean and its characteristics. The Z-test and confidence intervals. Null and alternative hypotheses. Alpha levels and statistical significance.
Wed 6/7	Chapter 6 pp. 136-137; 141-159 Chapter 8 (pp. 170-173; (ignore p. 174); 175-193)	The t-test – Testing for mean differences. Single-sample t-test. Inferences about populations from samples. Confidence intervals with t-values.
Fri. 6/9	Chapter 8 pp. 215-222; pp. 224-233; pp. 235-250. Chapter 10 (ignore p. 253)	The Sampling Distribution of the Difference and the independent samples t-test. Confidence intervals for mean differences
Mon 6/12	Chapter 11 pp.350-361; 37-371 Chapter 13 (pp. 374-385, 395)	Nominal data and the chi-square test
Wed. 6/14	Review for Midterm Exam	Covers all material up to and including 6/12. If we are behind, we will catch up here

Fri. 6/16	HOURLY EXAM 1	TEXT AND CALCULATOR ARE REQUIRED for computational portion of exam WIRELESS ACCESS DEVICE (if owned) for conceptual portion of exam
Mon. 6/19	Chapter 9 pp. 259-268; 272-278; p.282. Chapter 11 (pp. 287-296; skip bottom of 296 to 300; 300-306; skip 307-309; 310-311)	The Correlation Coefficient: Pearson's r
Wed. 6/21	Chapter 13 pp.425-440 Chapter 15 (pp.447-453)	Repeated-measures (within-subjects) t-tests.
Fri. 6/23	Chapter 10 pp. 304-324 Chapter 12 (pp. 330-350) (ignore Steps 1-4 on p. 342 for calculation of 1-Way F)	The 1-way Analysis of Variance – Testing for mean differences among more than 2 groups. Post-hoc testing (Tukey test).
Mon. 6/26	Chapter 10 pp. 324-338 Chapter 12 pp. 350-360 (ignore steps 1-7 on pp. 353-354); 363-365	Factorial ANOVA – Testing for the effects of more than 1 independent variable on a dependent variable. Main effects and interactions.
Wed. 6/28	Ch 12 pp. 382-395 Ch 14 pp.404-417	Linear Regression Analysis: Predicting values on a criterion using a predictor and the regression equation. Introduction to Multiple Regression Analysis
Fri. 6/30	Ch 12 pp. ??? Ch 14 pp.???	Multiple Regression Analysis
Mon. 7/3		REVIEW FOR EXAM
Wed 7/5	NO CLASS	
Fri. 7/7	EXAM	Covers all topics that have been covered throughout the entire semester

*Reading assignments in **RED** are the corresponding chapters and page numbers in the non-customized, hard cover edition of the text.

Academic Accommodations: Should you require academic accommodations, you must file a request with the Office of Disability Services ([Kreger Learning Center](http://www.kregerlearningcenter.org) 151 College Avenue, Suite 123, disabilityservices.rutgers.edu). 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.