

Spring 2011

01:830:200 – Quantitative Methods in Psychology

- Sections 01 – 04: Lecture: Tuesdays and Thursdays, 5:00 - 6:20 PM, HLL 114

Recitations:

- Section 01: Wednesdays, 10:20 - 11:40 AM, SEC 208
- Section 02: Wednesdays, 12:00 - 1:20 PM, SEC 208
- Section 03: Thursdays, 1:40 - 3:00 PM, SEC 208
- Section 04: Thursdays, 3:20 - 4:40 PM, SEC 210

- Sections 10 – 13: Lecture: Tuesdays and Thursdays, 6:40 - 8:00 PM, HLL 114

Recitations:

- Section 10: Tuesdays, 8:10 - 9:30 PM, SEC 209
- Section 11: Wednesdays, 5:00 - 6:20 PM, SEC 208
- Section 12: Thursdays, 3:20 - 4:40 PM, LCB 109
- Section 13: Thursdays, 5:00 - 6:20 PM, TIL 204

Instructor:

Dr. John Ackroff

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Tillett 613

Office Hours: Wednesdays, 1:15 – 2:30, and by appointment

Textbook:

Karlin, Robert. A.. *Behavioral Statistics in Simple English.*, 5th Edition, Revision 1.

Available at New Jersey Books, 37 Easton Avenue, New Brunswick. A limited number of copies is available at the Rutgers Bookstore.

About Quantitative Methods – Course Goals:

Many people think Quantitative Methods is a course intended to make their lives difficult. In fact, the principles and techniques you will learn in this course can improve your life. We will talk about how to interpret and understand various forms of data and claims that are made about what those data mean. While the purpose of this course is to teach you how to analyze data you may gather and interpret data that are

presented in the psychological literature, you will also see how you can apply the information discussed in the course to situations outside the classroom.

The course is structured to give you several presentations of each concept in a variety of formats. For each topic, you will read the book, hear it described and explained in lecture, do the Computational Practice Exercises, go over them (and similar problems) in your recitation section, answer questions on the Online Exam, have a second discussion in a review session in lecture, and have the opportunity to review the book, your notes, Computational Practice Exercises, and Online Exams as you study for the exams in class. As psychologists, we know that providing multiple exposures spread over time leads to better and longer-lasting learning than a single intensive (e.g. cramming) exposure. All this may seem like it is a lot of work, and repetitive. But this is done by design, and if you stick with the program, you should finish the course with a good grasp of the material.

Grading:

You are expected to comply with Rutgers' [Academic Integrity Policy](#).

- **Exams:** There will be three exams based on the text and other materials presented in class. You are responsible for bringing pencils with erasers to each exam. Exam scores will be posted in the SAS Gradebook. If you have questions about your score on an exam, you must discuss it with your Teaching Assistant before the next exam.

Each exam is given in two parts: a conceptual part, consisting of multiple choice and/or essay questions, and a computational part. You may use your calculator for the computational part, but not for the conceptual part. You may not use any electronic device other than your calculator. You may **not** use your cell phone calculator. You must bring your Rutgers ID card to the exam.

Use of any electronic device other than a calculator will be considered an attempt to cheat on the exam. You will receive a 0 for that exam; other disciplinary measures may also be taken.

For the computational part of the exam, you must show your work. If you write down the correct answer, but don't show how you arrived at it, you will receive no points. If you set up the problem correctly and make a minor computational error, you will receive most of the credit for the problem. Each error reduces your score. If your answer is obviously incorrect (for example, you compute the mean of 3, 5, and 7 to be 86), you will receive less credit.

The midterm exam is worth 250 points, the ANOVA exam is worth 200, and the final, which is cumulative, is worth 440 points. So 890 points in the course are available through the exams.

If you have a schedule conflict with an exam, you may be allowed to take the exam before the scheduled date at the discretion of the instructor. If you miss an exam, you will be allowed to take a make-up exam only if you provide documentation for a valid reason for missing the exam. For absences due to colds, etc., a note from your Health Center or doctor will be acceptable. For more serious issues such as a death in the family or serious health or personal issues, you may present a note from your Dean's office verifying that you missed the exam due to an excused absence. This note should also indicate a reasonable time frame in which you will be able to make up the exam. You should give this note to the instructor within 1 week of your return to class.

Exams are often given in a different location in order to allow for more room between students. Room

changes will be posted on the class web page. 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 to be hoaxes.

The times listed for the exams in the schedule below are subject to change. The exact times and locations should be determined shortly after the semester begins.

- **Quizzes in Lecture:** Over the course of the semester, there will be 4 to 6 quizzes in lecture, worth 25 points each. Your lowest score will be dropped. Quizzes may not be made up unless you have notified us in advance that you will not be in lecture, and have a valid reason to be absent. You must take the quiz in your assigned lecture. The schedule will not be posted or announced.
- **Computational Practice Exercises:** Each chapter contains several sets of Computational Practice Exercises (CPE). The questions are in each chapter, set off from the text by rows of asterisks. The answers are in the back of the book.

CPE are due in at the beginning of recitation sections according to the schedule on the course web page, and reprinted below. CPE **must** be turned in at the beginning of recitation; they cannot be placed in mailboxes or turned in late. Having said that, it is recognized that buses sometimes run late, you may be ill, etc., so you will receive credit for up to 3 unexcused late (turned in within 1 week of the due date) CPE. If your TA sees a pattern of lateness, you will not receive any credit for late CPE. If a situation arises in which you know you will not be able to turn in your CPE on time, send an email to your TA with a copy to Dr. Ackroff explaining the situation. If we believe you have a legitimate reason to turn in the CPE late, we will reply and grant you an extension to the next recitation. Print out the reply, and attach a copy of it to the CPE involved.

CPE **must** be turned in at the beginning of recitation, and you must turn them in at the recitation you are enrolled in. CPE turned in at the end of recitation will be counted as late; CPE turned in at another recitation will not be counted at all.

Each set of CPE is worth 8 points. The purpose of the CPE is to help you understand the material, so you receive the full 8 points for completing the CPE and turning it in (on time). Since the answers are in the book, it would not make sense to correct and grade them based on how well you did them. If you take the time to do them, and rework the ones you get wrong, it should be reflected in your exam scores.

The point of the CPE is to give you a chance to use what you should be learning to solve problems. The answers are in the book so you can tell whether or not you understand the concepts involved. However, we don't expect people to spend hours and hours on them. If you can't seem to figure out how to solve one of the problems, put down as much of the solution as you have, and then write a note that says "This is as far as I can get with this problem." If your TA feels you have made an honest effort at solving the problem, you will get credit for it.

Make sure you make a copy of your CPE before handing them in. These can be helpful to you as you review material and study for the exams. They will also be useful if your TA's records do not reflect that you turned in a particular set. Since they are graded on an "all or none" basis, we do not keep CPE. Check the SAS Gradebook weekly to be sure you have received credit, and contact your TA promptly if there is a discrepancy. Don't wait until late November to tell us that you *really did* turn in the CPE that was due on September 29; we are unlikely to do anything about it at that point.

There are 14 sets of CPE, each worth 8 points, for a total of 112 points. (Chapter 11 has 2 sets; 11.3 - 11.5 and 11.6 - 11.7.) You will receive 18 bonus points for completing all 14 CPE, bringing the total CPE points for the course to 130. If you have more than 3 unexcused late CPE, you are not eligible for this bonus. Note that these bonus points are counted when we determine grade cutoff points (see below), they are not considered to be Extra Credit points.

- **Online Exams:** Online Exams are available in the "Tests & Quizzes" tab on sakai. The exams consist of conceptual and computational questions, like the class exams. They are different in that they are entirely multiple choice. You can get credit for guessing the right answer to a computational question; this will not work for the exams in class. However, you will be better off actually trying to solve the problems.

There are 12 online exams, each worth 20 points, for a total of 240 points. The schedule for the online exams appears below. Note that the availability dates are fixed; extensions cannot be granted for individual students. In the unlikely event that you are incapacitated for the entire time the exam is available, we will make alternate arrangements.

Taking the Online Exams: You are allowed 2 hours for each exam. Make sure you will have an uninterrupted 2 hours before you start the exam. You cannot "pause" the exam; once you start it, you have 2 hours. At the end of the 2 hour period, your exam will automatically be submitted. Also, be sure to save your answers after you answer each question. Click on "Submit for Grade" only when you are sure you are through with the exam. Once you submit your exam, you cannot work on it any more. You will be able to see your score, which questions you answered correctly, and the correct answers to each question after you submit your exam. If there is a problem while you are taking the exam (e.g., you lose your internet connection), email your TA and explain the situation. Your TA can reset the exam so that you can take it again. Your TA also has a life, so if you wait until 11:30 on the last night an exam is available and you run into a problem, you will probably be out of luck.

The exams are each available for a limited amount of time. You should take each exam shortly after the corresponding chapter is covered in lecture. Waiting until the end of the availability period is not a good idea, since the availability dates are fixed.

Correcting Online Exams: You may submit corrected copies of the first 10 online exams according to the schedule below. If you believe there is a discrepancy, please notify your TA immediately. As with CPE, if you wait until the end of the semester to try to correct records from early in the semester, you may not be successful.

If you scored 8 or more points, you can earn up to the full 20 points; if you scored 4 - 7 points, you may raise your score up to 10 points. **To receive the points, you must make a hard copy of the online exam, and attach your corrections.** For computational questions, re-work the problem to get the right answer. For conceptual questions, give a reference to the page number in the text that has the answer and copy the relevant part of the text. You must hand in your corrected exams in recitation or at the exam in class according to the schedule below. The exams for Chapters 13 and 14 cannot be corrected because there is not enough time at the end of the semester to grade them.

Online exams may **not** be discussed in the sakai Chat Room while they are available to be taken. Once an exam is closed, you may ask your classmates for help or explanations. A separate Chat Room will be created for this, mainly to keep things somewhat organized.

Your original scores for your Online Exams will be recorded in the Gradebook2 on sakai. Scores for your corrected Online Exams, as well as scores for all other assignments, will be recorded in the SAS Gradebook, a link to which is provided on sakai.

- **Final grades:** Grading in this course works differently from most other courses. Your grade will be determined by the total number of points achieved on exams, CPE, and Online Exams. However, do not think that achieving 90% of the total possible points guarantees you an A. In most courses, you are exposed to an overview of various aspects of a discipline; there is no way you can learn everything about the topic. In this course, we cover completely everything you are expected to know. The course is designed to present the material several times in different ways, so it is entirely possible for you to know everything we have presented.

As you can see, there are numerous opportunities to earn large numbers of points, and some of them are "gimmies" -- there is no good reason not to earn the maximum number of CPE and Online Exam points. So earning 90% does not necessarily represent the comprehension associated with an A grade.

At the end of the semester, points for all assignments are totaled for each student. An absolute frequency distribution (see Chapter 2 in your text) is made for each TA's students. (Since there is a certain amount of subjectivity in grading the essay and computational exam questions, we may use different cutoff points for each TA. The same cutoff points will be used for both sections for each TA.) Typically, scores cluster, and there are natural "cut points" in the distribution. The top 20% or so of each TA's students usually do *very* well on everything, and receive an A in the course. The next 25% or so do *pretty* well on everything (or very well on some things and not so well on others), and receive B or B+ for their grade. The next 40% or so do OK, and earn C or C+ grades. The bottom 10 or 15% receive D or F grades.

There are two factors that influence where we draw the cutoff points. As stated above, there are usually natural breaks in the distribution, and we use those as the initial cut points. The second factor is your TA's impression of how well you learned the material. Since your TA is looking at your CPE, reading your essay answers, and grading your computational exam questions, your TA may have a better understanding of how well you grasp the material than your numerical point total reflects. The reason for the "or so" in the description of the grade distribution is that if your TA thinks that more students than usual have a really good grasp of the material, there will be more A grades than usual; if your TA thinks that half the class "phoned in" their work, the distribution is not likely to be as generous.

Extra credit points (see below) are added to the total number of points you score after we determine the cutoffs.

Extra Credit:

There are three ways you can earn extra credit in this course.

- Your TA may give up to 25 extra credit points through pop quizzes. Since these are extra credit, they cannot be made up if you miss them. You must be in your assigned recitation section to earn these points.
- You may submit a paper providing feedback on the text and the course; both have been improved by such papers from previous classes. Feedback can be a list of misprints (other than those we already

know about and have informed you of) to a chapter-by-chapter or lecture-by-lecture review of what was clear and what wasn't. Feedback on the recitation sections is also welcome. You can earn up to 10 extra credit points for this exercise.

You must turn in your paper at the beginning of lecture on April 14.

- We have spent a fair amount of time "cleaning up" the Online Exams. There may, however, still be some errors lurking about. The first student to report a factual or computational error in an Online Exam to his or her TA will receive 5 extra credit points. "Errors" related to round-off will not qualify for this, as we do not consider them to be errors in the first place.

Remember, extra credit points are added to your score **after** we determine the cutoff points for each grade, so the points may result in your receiving a higher grade. Since grades are determined before we look at extra credit, not doing it cannot lower your grade in any way.

Attendance and Correspondence Policies:

- **Attendance:** You should attend all meetings of all of your classes. My lectures are based on the material in the assigned readings, but may also cover material not discussed in the readings. You are responsible for all of this material.

If you arrive late or must leave before class is over, please sit near a door and try to be as inconspicuous as possible. It is distracting to everyone to have people walking in and out of the classroom during class.

Classes are held according to the schedule below as long as the University is open. If the weather appears to be threatening, you can check the [Campus Operating Status](#) here.

If an class is cancelled, postponed, or moved on the day of class, 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 to be hoaxes.

- **Classroom Etiquette:** Please turn off all cell phones, etc., before class begins.

If you wish to use a laptop computer to take notes, that is fine. Note, however, that you will not be able to use these notes during the open book computational exams; make sure to print out copies before the exam and bring them with you. If you wish to use a laptop computer to surf the web, play games, IM your friends, etc., I would suggest you go to the nearest Student Center. This advice also applies to having side discussions with your classmates, reading newspapers, doing puzzles, etc.

- **Questions:** I encourage you to ask questions during class. If something is unclear, or if you have a question related to the material being discussed, please ask your question then. Chances are that some of your classmates would also like some additional discussion of the topic.
- **Email:** I try to answer email promptly. Having said that,
 - Please use a Subject that gives me some idea what you are writing about. This is especially important if you send mail from an account other than eden. Mail from sexgoddess@aol.com with a subject of "hello" is likely to be considered spam and deleted unread.

- If you ask me a question whose answer is on the course web page or Syllabus, my reply is likely to say that.
- If you ask me a question about your standing in the course, please include your name and which course and section you are enrolled in.
- Please re-read the section on "Questions" above. I realize that there are times when you are reviewing notes after class and/or before an exam when you will discover that you have a question. But it is in everyone's best interest for you to ask your questions in class, rather than after the fact, if you have a question while class is in session.
- As stated on the course web page, you are responsible for any announcements, etc., I send to the class via email. Emails are sent to the address that appears when your name is entered into "Search People" on the "Search Rutgers" page. There is a link on the course web page that allows you to update this address.

Lecture Schedule

Date	Lecture	Assignment for next class
Tuesday, January 18	Class business ; basic math test Recitations do not meet this week.	Read Syllabus. Get book, and read Chapter 1.
Thursday, January 20	The basics: Mean, variance, & standard deviation Sample Problems	Read Chapter 2.
Tuesday, January 25	Frequency Distributions: Actual and Theoretical	Read Chapter 3.
Thursday, January 27	The Normal Curve	Read Chapter 4.
Tuesday, February 1	Z scores are <u>THE</u> scores	Review Chapter 4.
Thursday, February 3	The standard error of the mean and Confidence Intervals (Begin challenging material.)	Read Chapter 5.
Tuesday, February 8	Degrees of freedom and establishing population parameters	Read Chapter 6.
Thursday, February 10	The t distribution, estimated CIs, and hypothesis testing	Review Chapters 1 - 6.
Tuesday, February 15	Review Chapters 1 - 6	Read Chapter 7.
Thursday, February 17	Correlation I	Read Chapter 8.
Tuesday, February 22	Correlation II; Regression I	Review Chapter 8.
Thursday, February 24	Regression II and residual variance and the standard error of the estimate; Hypothesis testing: H_0 and H_1 , individual differences, and the limits of inference in	Review for Midterm.

	correlational research	
Tuesday, March 1	Review for Midterm	
Thursday, March 3	(No Lecture)	
Sunday, March 6	MIDTERM EXAM	Hickman 138
	Sections 01 - 04	12:00 - 2:30
	Sections 10 - 13	2:45 - 5:15
	Corrected OE 8 due at the exam.	
Tuesday, March 8	(No Lecture)	Read Chapter 9.
Thursday, March 10	One-way independent groups ANOVA I	Review Chapter 9.
Week of March 14	Spring Break	
Tuesday, March 22	One-way independent groups ANOVA II	Read Chapter 10.
Thursday, March 24	Factorial ANOVA I	Review Chapter 10.
Tuesday, March 29	Factorial ANOVA II	Review Chapters 9 and 10.
Thursday, March 31	Review	Review ANOVA for exam.
Sunday, April 3	ANOVA EXAM	Hickman 138
	Sections 01 - 04	12:00 - 2:30
	Sections 10 - 13	2:45 - 5:15
	CPE 10 and corrected OE 10 due at the exam.	
Tuesday, April 5	(No Lecture or Recitations)	
Thursday, April 7	(No Lecture or Recitations)	Read Chapter 11.1 - 11.3 and 11.6 through first 11.9
Tuesday, April 12	Multiple comparison's and Dunnett's t	Read second 11.9 through the end of the chapter.
Thursday, April 14	Tukey's HSD	Read Chapter 13.
	Extra Credit paper due at beginning of Lecture.	
Tuesday, April 19	No Lecture; Recitations meet on normal schedule.	
Thursday, April 21	Statistical assumptions, ordinal data, nominal data, and F_{MAX}	Read Chapter 14.
Tuesday, April 26	Chi Square	Review for Final.
Thursday, April 28	Review	
	Chapter 14 CPE due at beginning of Lecture.	
Thursday, May 5	FINAL EXAM, Sections 10 - 13	8:00 - 11:00 PM, Beck AUD
	Rules for Final Exam Conflicts	
Friday, May 6	FINAL EXAM, Sections 01 - 04	12:00 - 3:00 PM, Livingston Gym

Recitation Schedule

NOTE: Recitation sections do not meet until the week of January 24.

Week of	Topic	Chapters	Due
January 24	Basics and frequency distributions	1 and 2	CPE 1
January 31	The Normal Curve and z scores	3 and 4	CPE 2 and 3
February 7	standard errors, confidence intervals, t scores, df	4 and 5	CPE 4
February 14	Hypothesis testing; Correlation	6 and 7	CPE 5 and 6
February 21	Correlation and regression; the null hypothesis	7 and 8	CPE 7
February 28	Regression; review for exam	8	CPE 8
March 7	No recitations this week.		
March 14	Spring Break		
March 21	Single factor designs: F tests and the t test	9	
March 28	Factorial ANOVA	10	CPE 9
April 4	No recitation sections this week.		
April 11	t -tests and multiple comparisons	11	
April 18	t -tests and multiple comparisons, cont'd	11	CPE 11.3 - 11.5
April 25	Assumptions underlying parametric tests; F_{MAX} ; ordinal data and Chi squared; review	13 and 14	CPE 11.6 and 11.7; CPE 13

Online Exam Schedule

The Exams are available from 12:05 AM on first day of availability through 11:55 PM on the last day.

Chapter	Available Online	Corrections Due
1	January 24 - January 31	Recitation 2, week of January 31
2	January 24 - February 7	Recitation 3, week of February 7
3	January 24 - February 7	Recitation 3, week of February 7
4	January 31 - February 14	Recitation 4, week of February 14
5	February 7 - February 14	Recitation 4, week of February 14
6	February 14 - February 21	Recitation 5, week of February 21
7	February 14 - February 28	Recitation 6, week of February 28
8	February 21 - February 28	Exam, Sunday, March 6
9	March 21 - March 28	Recitation 8, week of March 28
10	March 28 - April 2	Exam, Sunday, April 3
11	No online exam	
12	No online exam	
13	April 18 - April 25	No corrections allowed
14	April 25 - May 2	No corrections allowed

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