

Quantitative Methods for Psychological Sciences
CLPS0900
Semester II, 2012-13

Class Schedule

Lectures: MWF 10:00-10:50
MacMillan 115 (B&H 166 on 2.08.13)

Instructor

Jack Wright
Metcalf 355, 190 Thayer Street
Email: Jack_Wright@brown.edu
Office hours: F 11:00-1:00

Teaching Assistants

Office hours for computer labs are held in Metcalf 107. Personal offices for TAs are listed on the course website.

[Kimberly Brazier@brown.edu](mailto:Kimberly_Brazier@brown.edu)

Office hour: Wed 5:00-5:50.

[Kathryn Kalafut@brown.edu](mailto:Kathryn_Kalafut@brown.edu)

Office hour: Tue 4:00-4:50.

[Zachary Page@brown.edu](mailto:Zachary_Page@brown.edu)

Office hour: Wed 2:00-2:50.

[Megan Reilly@brown.edu](mailto:Megan_Reilly@brown.edu)

Office hour: Tue 5:00-5:50.

Overview

This course provides a survey of statistical methods used in the psychological sciences. It satisfies the quantitative requirement for the AB and ScB Psychology concentrations in the department of Cognitive, Linguistics, and Psychological Sciences (CLPS), and may also be appropriate for other life or social sciences.

Topics to be covered include: exploratory data analysis and descriptive statistics, probability, distributions, hypothesis testing, power, one- and two-sample inference, one-way and two-way analysis of variance, correlation, regression, and methods for categorical and rank data. Emphasis will be placed on learning which methods are appropriate for different types of data, understanding the assumptions of different statistical tests, gaining proficiency with statistical methods and software using

sample data, and learning to report statistical results in APA style. Less emphasis will be given to mathematical proofs; students seeking such treatment should consider courses in applied mathematics. Because analysis of variance is heavily used in the psychological sciences, it will be covered in some depth; students who need more coverage of regression methods, especially multiple regression, should consider other appropriate courses.

Text, Readings, & Lecture Notes

The textbook for the course is Howell (2011), *Fundamental Statistics (7th ed.)*, New York: Thomson. Additional materials can be found on the textbook [website](#). Supplemental readings will be posted on the course website or distributed in class as needed. Class meetings will include lectures, demonstrations of software used in problem sets, and brief quizzes. Portions of the lecture notes will be posted on the course website before each class and/or distributed in class.

Please note the following policies on lecture notes: (1) the material will be ready to post or distribute only at the beginning of each class and will not contain the full lecture notes; (2) the in-class handouts and related website postings are not a substitute for attending class; (3) the *full* lecture notes are normally posted only when the exam review materials are distributed one week before each exam; (4) lectures may deviate from posted notes depending in part on questions raised in class; students are responsible for taking notes on these deviations and should not expect them to appear as revisions to materials already posted on the website; (5) students who do not attend lectures should not expect remedial help beyond what they normally receive in office hours.

Exams and Quizzes

There will be three exams (see attached schedule). Each includes multiple choice items, brief definitions, and data analysis problems involving small batches of numbers. Sample questions will be distributed before each exam. Students will be

allowed to use hand calculators, but not laptop computers. Students who miss either of the first two 1-hour exams can take the make-up exam that is scheduled during reading period. No other make-up sessions will be given for these exams. Students should check their schedules to make sure that they will be able to take these make-up exams if need be. For the final exam, students will have three hours. Students must follow all College guidelines regarding incompletes. Those who do not take the final exam at the regularly scheduled time will receive either an INC or ABS, as circumstances warrant, and will have to take the make-up exam that is proctored by the Registrar, typically the following September. There will be no other make-up exams for the final, regardless of the reason for missing the exam.

Brief quizzes (7-8 over the semester) will be given to monitor student progress and to help ensure mastery of the material. Of these, the two lowest scores will be discarded and the remaining scores will count toward your final grade. Make-up quizzes will not be given. Although some quizzes may be announced beforehand, most will not.

Problem Sets

Problem sets are an integral part of this course. One of their objectives is to provide students with experience using statistical software they are likely to need in subsequent lab courses, independent research, or honors projects. Whereas exams and quizzes focus on concepts and solving problems with very small batches of numbers using hand calculators, problem sets often involve larger data sets and more realistic data analysis problems. Some of the data sets used on problem sets can be found on the website for our [textbook](#).

Computer Lab Hours and Office Hours

Drop-in lab hours in the departmental computer lab (Metcalf 107) provide students with ample access to computers. Students will also use these times to consult with TAs and/or collaborate with other students on their assignments. If you prefer to work on your own computer and have relevant software installed on it, you may also use it during the times reserved for this course. The reserved times will be indicated on the course calendar (see website). As of this writing, there are 10 additional hours per week when the computer lab is open to all students taking CLPS courses. Any changes to this policy will be announced on the course website as the information becomes available.

Hardware & Software

Although the course does not assume any computer programming skills, students will learn to use data analysis applications that are widely used in the field. For problem sets, students will most often use *SPSS*, *Excel*, and *R*. All necessary software will be provided on the workstations in the computer lab in Metcalf. For work outside of these times, students will also have access to workstations in CIS and libraries. Students who wish to use their personal computers are free to do so, but should note the following: (1) it is students' responsibility to acquire and install all personal software; (2) Brown does not have a site license for student downloads of SPSS; students have the option of purchasing a short-term student license; (3) MAC users should note that certain applications may not be available for their operating system; (4) students who have their own installation of Excel will need to obtain statistical add-ons; (5) *R* is freeware that runs on most current Windows machines and MACs. Details on computer facilities and software will be provided in the first week of class.

You will need a scientific calculator that can compute sums, means, and sums of squares on a batch of numbers. Basic scientific calculators by HP or Texas Instruments are suitable, but calculators built into cell phones are not. Students should bring their calculators to every class and exam. Please do not expect other students to share their calculators with you. Students are responsible for learning how to use their own calculators.

Students are responsible for making copies of any compute work they do during lab or office hours. Materials cannot be stored on the computers in the computer lab. A flash drive is recommended, but some students prefer to email their work to themselves or use DropBox or similar services.

Participation in Research

This course is one of several that participate in the human subject pool that is coordinated by the CLPS Department. Students in these courses are expected to participate in ongoing research both as a way to learn about research methods and to help ensure that undergraduates and graduate students are able to carry out their honors and thesis research. To fulfill the research participation component, students are expected to participate in 3 hours of approved research over the semester. An online signup portal will post available times and loca-

tions. Students who do not wish to participate have the option of completing a brief paper on APA ethics for the treatment of human participants and/or on the advantages and disadvantages of using human subjects in psychological research. Details on the Departmental pool procedures will be distributed in class and posted on the course website.

Grading

Performance in the course will be assessed as follows: weekly problem sets (25%), quizzes (10%), first in-class exam (20%), second in-class exam (20%), and final exam (25%). Students who complete the research participation option or the replacement exercise (see above) will have two points added to their weighted average for the course. Problem sets must be turned in to the TAs in class on the due date that is announced on the course calendar and schedule. One-fifth of the value of each problem set will be deducted for each day that it is late. Work submitted 5 days or more after the due date will not be graded. Students seeking homework extensions for medical reasons or other bona fide “dean’s excuses” will need to provide a note from the appropriate Dean or their physician.

Email, Laptops and Other policies

Please note the following guidelines concerning email and computers. (1) Problem sets are not to be submitted by email unless you have made specific arrangements with the instructor or TA in advance. This is to avoid complications that arise when emails are not received, or cannot be opened or printed. (2) Use email conservatively and only when it is the most appropriate way to have a question answered. Take advantage of office hours and class time to ask questions before using email. (3) In the subject field of your email, note the course (CLPS0900) and the topic of your message. (4) Do not expect an immediate reply to your email; 12 hours is a typical response time. (5) You are welcome to bring your laptop to class, but only for reading handouts, note-taking, or running demonstrations. (6) If students’ use of laptops disrupts the class, the first option will be for these students to sit toward the rear of the class; if this does not resolve the problem, internet access and/or use of computers during class times may be terminated.

Course Website

This course uses this website:
<http://bit.ly/CLPS0900-2012-13>

All of the materials handed out in class are archived there. The website is not a replacement for coming to class; you should not expect the instructor to explain materials you find there if you did not attend class when these materials were presented. Most students are able to use the website using their preferred internet browser. If you encounter problems with your browser, try using Google Chrome. If you still encounter problems, check with a TA or the instructor.

To give us contact and other information we need about you, complete this online form as soon as possible:

<http://bit.ly/CLPS0900-StudentInfo>

Academic Code and Collaboration

Brown’s Academic Code may be found [here](#).

For problem sets, students are allowed to collaborate. Acceptable forms of collaboration include discussing the concepts and methods used to solve a problem, and helping or receiving help from another student on how to import data sets and run software. Copying another student’s answers or other work (with or without permission), copying syntax or other procedures for software, or having another student do your work for you constitute violations of the Code. On each problem set you will be asked to identify any student(s) with whom you collaborated.

For exams, students are not allowed to: give or receive help of any kind; use notes, books, laptops or other computers, or any other materials that are not authorized; copy or transmit the exam or their answers. For some of the in-class quizzes, you will work independently; for others you have the option of collaborating with other students. Each student is responsible for the answers they provide on quizzes, regardless of whether the work was done collaboratively or not. The format of each quiz will be clearly stated when it is given.

Quantitative Methods in Psychology
Schedule of Class Meetings and Examinations
 Semester II, 2012-13

Topics to be covered in lectures appear below. Readings from text (Howell, 2011, 7th Edition) are indicated as "H". Supplemental readings are "S"; these will be posted on the course website. Exam dates are firm. However, exact timing of topics covered in lectures may be adjusted depending on snow days and in-class discussion. Any revisions to this schedule will be announced in class and posted on the course website. Check the Registrar's website for the schedule of final examinations; this will also be posted on the course calendar.

<i>Day</i>	<i>Date</i>	<i>Topic</i>	<i>Reading</i>	<i>Problem set (PS)</i>
W	1.23	Introduction.	H1	
F	1.25	Basic concepts	H2	
M	1.28	Displaying data	H3, S1	PS1 distributed.
W	1.30	Central tendencies	H4	
F	2.01	Variability I	H5	
M	2.04	Variability II		PS1 due 2.04, PS2 distributed.
W	2.06	Normal distributions I	H6	
F	2.08	Normal distributions II		
M	2.11	Probability I	H7	PS2 due 2.11
W	2.13	Probability II		
F	2.15	Exam 1		PS3 distributed.
M	2.18	<i>No class. Long weekend.</i>		
W	2.20	Binomials	S2	
F	2.22	Sampling distributions & NHST	H8	
M	2.25	NHST II		PS3 due 2.25, PS4 distributed.
W	2.27	NHST III		
F	3.01	One-sample inference I	H12	
M	3.04	One-sample inference II		PS4 due 3.04
W	3.06	One-sample dependent <i>t</i>	H13	
F	3.08	Two-sample independent <i>t I</i>	H14	
M	3.11	Two-sample independent <i>t II</i>		
W	3.13	Review.		
F	3.15	Exam 2		PS5 distributed.
M	3.18	ANOVA I	H16	
W	3.20	ANOVA II		
F	3.22	ANOVA III		PS5 due 3.22
S	3.23	<i>Spring recess</i>		
M	4.01	ANOVA IV		PS6 distributed.
W	4.03	Factorial ANOVA I	H17	
F	4.05	Factorial ANOVA II		
M	4.08	Factorial ANOVA III		PS6 due 4.08, PS7 distributed.
W	4.10	Correlation I	H9	
F	4.12	Correlation I		
M	4.15	Regression I	H10	PS7 due 4.15, PS8 distributed.
W	4.17	Regression II		
F	4.19	Regression III		
M	4.22	Chi-square	H19	
W	4.24	Review		
F	4.26	Reading period begins.		PS8 due 4.26
T	5.07	Makeup exams.		
Th	5.09	Final Exam. 9:00am-12:00.		