# Example Syllabus
# Research Methods in Cognitive Science
# 01:185:320

## Logistics

- Lecture: XX
- Professor: XX
    - Email: `XX`
    - Office: XX XX
    - Office Hours: TBA; by appointment
    - RuCCS Business Office: 848-445-1625

## Course Description

The aim for this course is to provide students with the necessary foundation to think critically about research in cognitive science. The course reviews the scientific method and considers the strengths and weaknesses of a range of approaches, such as laboratory experimentation, neuroscience methods, and computational modeling. Students will be introduced to statistical reasoning in science, including a basic overview of common statistical techniques. We will also discuss principles for the ethical conduct of research. The course will culminate in a research paper. The pre-requisite is 185:201 'Introduction to Cognitive Science' or 185:411 'Advanced Topics in Cognitive Science' or 185:301 'Cognition and Decision Making' or by special permission number. This course counts for 3 credits.

## Course Objectives

Upon successful completion of the course, students will:

- Evaluate a broad range of methods in cognitive science and consider how they suit various research questions

- Understand basic principles of experimental design and how to move from a general idea to a specific research question
- Conduct simple statistical analyses
- Consider ethical questions and the role of the Institutional Review Board
- Come up with research questions and effectively communicate them
- Find appropriate background literature suitable to particular research questions

## Texts

Methods in Behavioral Research by Paul Cozby and Scott Bates, 11th edition (2011), McGraw Hill. ISBN#: 978-0078035159

## Evaluation

There will be a total of 1000 points possible in this course.

- Attendance (5%) (50 points): Come to class prepared and ready to participate. You may miss at most two lectures for any reason.
- Short Analytic Assignments (25%) (250 points): You will complete five critical/analytic take-home assignments related to the material covered in class worth 50 points each. Please submit these via Sakai under Assignments **in .pdf** form. The schedule lists the due dates for each assignment. Every day that an assignment is late will result in an automatic one-grade reduction.
- Exams (40%) (400 points): There will be two equally-weighted exams in class: a midterm on **XX** and a final exam on **XX**.
- Paper (30%) (300 points): A research paper is required for this course. There are two options. (1) Choose a highly focused topic and conduct a thorough literature review on that topic using a reasonable selection of research articles (10-20 sources) or (2) Choose a topic and describe an experimental design that has not been conducted that aims to answer an interesting empirical question. Regardless of which option you select, the

paper should be 15-20 pages in length, double-spaced, 12 point font. If you submit a draft by XX, I will read it, without prejudice, and make suggestions for you to use in your final version. The final (be it the first or revised) draft is due by **XX**. Your grade on this paper will be based only on the final draft. Every day that a paper is late will result in an automatic one-grade reduction. I have posted a guide for writing on Sakai under Resources that I encourage you to consult.

- Extra Credit Options: (1) A number of researchers in Linguistics conduct experiments. You have the opportunity to participate in at most 3 experiments for 3 points each added to your final grade. Information for accessing the subject pool is available on Sakai under Resources. (2) If this option does not interest you, please contact me as soon as possible for another alternative for extra credit. It will involve a reading and writing assignment.

## Additional Seminars this Term

RuCCS hosts a weekly seminar series you may find interesting that features distinguished speakers. The talks are Tuesdays 1-2:30pm in Psychology 101. For a schedule: `http://ruccs.rutgers.edu/ruccs/index.php/talks/ruccs-colloquia`

## Rutgers Policy on Academic Integrity

Rutgers has a very detailed policy on Academic Integrity and Code of Student Conduct: `http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers`. Violations include cheating, fabrication, plagiarism, denying information to or misleading others, or facilitating these violations.

## No Computers or Phones

Please turn off all computers and cell phones in the classroom. If you wish to record the lectures, approval of the individual speaker is required. Please see the following article in the Chronicle "Why I am asking you to not use laptops" `http://chronicle.com/blogs/linguafranca/author/acurzan`.

| Date | Topic | Readings | |
|---|---|---|---|
| January | | | |
| 20 | Introduction | | |
| 27 | Scientific Understanding of Behavior | Chapter 1 | **Assign #1** |
| February | | | |
| 3 | Where to Start | Chapter 2 | |
| 10 | Ethical Research | Chapter 3 | **Assign #2** |
| 17 | Studying Behavior | Chapter 4 | |
| 24 | Measurement Concepts | Chapter 5 | |
| March | | | |
| 3 | Observational Methods | Chapter 6 | **Assign #3** |
| 10 | **Exam #1** | | |
| 17 | SPRING BREAK | | |
| 24 | Experimental Design | Chapter 8 | |
| 31 | Conducting Experiments | Chapter 9 | **Assign #4** |
| April | | | |
| 7 | Complex Experimental Designs | Chapters 10 and 11 | |
| 14 | Description and Correlation | Chapter 12 | **Assign #5** |
| 21 | Statistical Inference | Chapter 13 | |
| 28 | Generalizing Results | Chapter 14 | **PAPER DUE at 8am** |
| XX | **Final Exam** | | |