

Basic Research Methods (aka "Human Experimentation")

PSYC 892 006: Special Topics

Updated 1/9/2012

Instructor: Matt Peterson

Do not rely on this document. The correct syllabus can be found at: <http://archlab.gmu.edu/people/mpeters2/Courses/Psy892-s12/p892-s12.html>

Time: 1:30 - 4:10pm Thursdays

Classroom: Science & Tech I, Room 126

Office: 2058 David King Hall

Ph: 993-4255

email: mpeters2@gmu.edu (please put PSYC 892 in the subject header)

Text: *None. I will provide downloadable readings on the course web site. Critical papers will be in my ArchLab mailbox.*

Prerequisites: Psychology 530 & 611 or consent of instructor.

Note: ♦ In the future, this course (new course number is TBA) will be the methodology course for the new Cognitive Neuroscience program. ♦ It will also be recommended that Human Factors PhD students take this course in addition to PSYC 645.

Objectives: ♦ This course will teach you the critical research methods needed for a career as an experimental psychologist, whether it be in industry or academia. Topics and methods discussed will vary from analyzing accuracy and response time data, the use of simulators, eye tracking, electrophysiology, and fMRI. Other topics will include how to analyze data sets, remove outliers, simulate data, and perform ANOVAs and contrasts (this will be an ongoing project throughout the semester). In addition, students will also learn how to critically analyze journal articles and technical reports.

This course will be taught in a combined lecture and seminar format -- the classes will be largely discussion, with two (or more students) leading a discussion of one of the papers each week. At times, I will lead the discussion or lecture on background topics (e.g. explaining steady-state visual evoked potentials, fMRI, or neuroanatomy). I expect everyone (especially the discussion leaders!) to read the assigned articles before class.

Attendance Policy: Although I do not grade on attendance, this is a graduate level course and I expect (barring unforeseen circumstances) to see you in class each week.

GMU Honor Code: George Mason University has a code of Honor that each of you accepts by enrolling as a student. My expectation is that all of the work you do for me in this class will be the work of one individual. Having said that, I fully encourage you to discuss the readings and topics raised in this class with your fellow students.

Disabilities: If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at 703-993-2474. All academic accommodations must be arranged through that office."

Exam Make-up Policy: You may take a test after (or before) the scheduled date only if you (a) receive my

permission before the day of the test, or (b) have a valid excuse (note from a doctor, judge, sergeant, etc.). Papers will not be accepted beyond the due date. Homework assignments will not be accepted late.

A+	97+			
A	93-96	Grading	Critical Papers	15
A-	90-92		Participation	15
B+	87-89		Mid Term	25
B	83-86		Presentation	20
B-	80-82		<u>Final Paper</u>	25
C	70-79			100 points total
F	0-69			

Critical Papers (15%): Over the course of the semester, we will be critiquing the methodology of several journal articles and tech reports. These will not be available online. Each student will be responsible for leading at least 1 discussion throughout the semester. The remaining students should email me a list of the flaws they found in the paper before class.

Participation (15%): Part of the class time will be spent having lively discussions about the papers covered in class. If you do not say anything during class, you will not receive any points.

Mid Term Exam (25%): The mid-term exam will be take-home format. Students will need to critically analyze a data set using the techniques learned in class.

Paper and Presentation option 1 (25% & 20%): For your presentation, you will be presenting current or future research ideas, and the class will critique your methodology. For the paper, you will write a critique of other students' presentations, evaluating them based on methodological issues.

Paper and Presentation option 2 (25% & 20%): Your grade for this class will be based in part on a paper in which you will either critically examine a published peer-review article or write a literature review of a new research methodology.

Calendar:

Note: The schedule below is tentative, and though I will try to follow it as closely as possible changes may occasionally be necessary.

Note that January 31st is the last day to add this class and February 24th is the last day to drop this class.

Notes on Readings:

The methodology articles will be available either online or in my Archlab mailbox.

The critique articles (CA) will only be available in my mailbox.

Date	Topic	Methodology Articles	CA	Assignment

26-Jan	Intro bad data			
2-Feb	Accuracy & outliers	Ratcliff, 1993		
9-Feb	Speed-accuracy trade-offs	Wickelgren, 1977; Ratcliff, 1985	HW	Data Sorting; Between vs. Within
16-Feb	Living beyond your means - Mixture models	Johnson 1995, P. Toffanin, 2009	GB	Outlier Removal
23-Feb	Processing stages	Donders, 1869; Townsend, 1990; McClelland 1979	AJ*	SDT
1-Mar	Timing and expectations	T&A 36-39; Luce 8-10,13-15, 51-56, 71-80;	DOT	
8-Mar	Dual-Tasks	Johnston 1995; Hegarty, 2000	WL	Midterm
15-Mar	SPRING BREAK			
22-Mar	Roll-your-own: regions of interest, bootstrapping, and other techniques	DiNocera, 2001 Rousselet, 2008	TR	Midterm due
29-Mar	Classifiers (Bayesian, ANN, SVM, etc.)	TBA	RE	
5-Apr	ANOVA and the cult of the interaction; Is post-hoc really after-the-fact?		IG	
12-Apr	Complex experimental designs / Hot to get published / professional issues	Sternberg, 1993; Bradley, 1982	Robots	
19-Apr	Presentations			

26- Apr	Presentations			
3- May	Presentations			Paper