

**Psychology 240, Scientific Inquiry and Reasoning
Fall 2014**

Syllabus

Instructor: Prof. Margaret Gatz
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Co-Instructor: Dr. Clayton L. Stephenson
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Class Meeting Time: WF 10:00-11:50am
Class Meeting Location: VPD106
Labs (on dates shown): SGM631
Gatz Office Hours:
Fri 11:50-12:20 VPD lobby
Thurs 10:30-11:50 SGM520
and by appointment

Course Description:

This course addresses the inquiry and reasoning skills that are required to solve scientific problems in human behavior. Although focused on psychology, the material is broadly applicable to the study of behavior, and examples will include medical and other social science research. In order to clarify good design, the course also explains sources of error in common examples of nonscience, pseudoscience, psychobabble, and biobunk.

Learning Objectives:

Students will be able to

- Reason about study design and execution of research;
- Identify ethical issues in research;
- Implement data-based and statistical reasoning;
- Apply the logic of evidence-based decision making;
- Be a critical consumer of social science research as it appears in both the academic and popular scientific domains.

Required Books:

Smith, Randolph A., & Davis, Stephen F. (2013). *The Psychologist as Detective: An Introduction to Conducting Research in Psychology* (6th edition). Upper Saddle River, NJ: Pearson Education.

Stanovich, K.E. (2013). *How to think straight about psychology* (10th edition). Upper Saddle River NJ: Pearson Education.

Required Readings: Readings listed on the syllabus are available electronically through the USC library, or available online using the link in the syllabus.

Weekly Topics and Assignments

Assignments should be completed PRIOR TO the class meeting.

Date	Topic	Assignment
Week 1		
Wed Aug 27	Course goals and overview Hindsight bias; introduction to cognitive heuristics (Kahneman & Tversky)	

Fri Aug 29	Cognitive heuristics; illusory correlation, the overlooked cell in a 2X2. Sensitivity and specificity.	http://www.thepsychfiles.com/2009/12/episode-113-interview-with-scott-lilienfeld-on-the-50-great-myths-of-popular-psychology/
Week 2		
Wed Sept 3	The process of science; the four canons; source of evidence	Smith & Davis Chapters 1 and 2 through p. 30 (esp. pp. 1-4 and 14-15); Stanovich Chapter 11
Fri Sept 5	MEET IN SGM631 Introduction to working with data. Ethical principles and dilemmas	Smith & Davis Chapter 2 pp. 30-50
Week 3		
Wed Sept 10	The scientific method, experimental research methods, independent and dependent variables; the 4 validities	Smith & Davis Chapter 5 and Chapter 6 through p. 116; Stanovich Chapter 2
Fri Sept 12	Qualitative research methods TEST	Smith & Davis Chapter 3; Stanovich Chapter 10
Week 4		
Wed Sept 17	Observational studies; correlation	Smith & Davis Chapter 4 through p. 74; Stanovich Chapter 5
Fri Sept 19	MEET IN SGM631 Working with correlations	Smith & Davis Chapter 9 pp. 192-196
Week 5		
Wed Sep 24	Questionnaires, scales of measurement	Smith & Davis Chapter 4 p. 74 through end; Stanovich Chapter 3
Fri Sep 26	MEET IN SGM631 Distributions, organizing and graphing data	Smith & Davis Chapter 9 through p. 192
Week 6		
Wed Oct 1	Confounding, counterbalancing; validity	Smith & Davis Chapter 6 p. 116 through end and Chapter 8; Stanovich Chapter 7
Fri Oct 3	Experimenter effects, demand characteristics TEST	Smith & Davis Chapter 7 p. 135 through end
Week 7		
Wed Oct 8	Two-group designs	Smith & Davis Chapter 10 through p. 224

Fri Oct 10	MEET IN SGM631 Working with t-tests	Smith & Davis Chapter 9 pp. 196-203 and Chapter 10 p. 224 through end
Week 8		
Wed Oct 15	Alternative research designs	Smith & Davis, Chapter 13; Stanovich Chapter 8
Fri Oct 17	MEET IN SGM631 Sample size, effect size	Chapter 7 through page 135; Chapter 9 p. 204 through end
Week 9		
Wed Oct 22	Placebo and nocebo effects	http://www.the-scientist.com/?articles.view/articleNo/36126/title/Worried-Sick/ ; Stanovich Chapter 4
Fri Oct 24	Priming and implicit measures	Vohs, K. D., Redden, J. P., & Rahinel, R. (2013). Physical order produces healthy choices, generosity, and conventionality, whereas disorder produces creativity. <i>Psychological Science</i> , 24, 1860–1867.
	TEST	
Week 10		
Wed Oct 29	More than two groups	Smith & Davis Chapter 11, through p. 251
Fri Oct 31	Measures of association: Chi square; odds ratio	
Week 11		
Wed Nov 5	Decision-making	http://www.annualreviews.org/doi/abs/10.1146/annurev.clinpsy.1.102803.143810 ; Stanovich Chapter 8
Fri Nov 7	MEET IN SGM631 Working with ANOVA	Smith & Davis Chapter 11, p. 251 through end
Week 12		
Wed Nov 12	Message framing; Meta-analysis	Gallagher, K.M., & Updegraff, J.A. (2012). Health message framing effects on attitudes, intentions, and behavior: a meta-analytic review. <i>Annals of Behavioral Medicine</i> , 43,101-116. doi: 10.1007/s12160-011-9308-7.
Fri Nov 14	TEST	

Week 13

Wed Nov 19	More than one independent variable	Smith & Davis Chapter 12 through p. 291; Stanovich Chapter 9
Fri Nov 21	MEET IN SGM631 Working with two way ANOVA	Smith & Davis Chapter 12 page 291 through end

Week 14

Thanksgiving

Week 15

Wed Dec 3	Multi-method research	Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty impedes cognitive function. <i>Science</i> , 341, 976-980
Fri Dec 5	Recap	

Dec 15 8-10 AM **Final Exam**

Requirements, Assignments and Evaluation: Weekly research exercises are designed for you to achieve the course objectives. We will work on these assignments both in class and as homework. Tests will evaluate your understanding of the major concepts in the course and will encompass the assigned readings, lecture material, and class discussions of the research exercises. Tests will include both multiple-choice and short essays.

Grading Breakdown: Grades will be based on (a) weekly research exercises (50%), (b) four tests (40%), (c) a non-cumulative final exam (10%).

Final %	92	90-91.9	88-89.9	82-87.9	80-81.9	78-79.9	72-77.9	70-71.9	68-69.9	62-67.9	60-61.9	59
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

Late Assignments, Missed Classes, and Attendance Expectations: In general, a 0 will be given for a missed test or assignment. Late assignments will have points deducted. Make-ups will be offered only in extreme circumstances when the student provides evidence to support the absence, including a telephone number for the person who can verify the reason. Those who know in advance that a class will be missed (e.g., athletic event, religious holiday) need to provide documentation in advance so that provision can be made for completing the work.

Extra credit: Students have the option of completing 5 hours of research studies through the psychology subject pool across the semester. Only 2 hours may be survey/online. Students are required to write a 1-page double spaced description and critique of one study completed. In accordance ethics requirements, an alternative task will be made available to students who do not wish to complete the research participation experience. Successful completion earns a 2% course bonus.

Academic Integrity:

- USC seeks to maintain an optimal learning environment. General Principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles.
- For an overview, see <http://www.usc.edu/student-affairs/SJACS/forms/AcademicIntegrityOverview.pdf>
- Scampus, The Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://usc.edu/dept/publications/SCAMPUS/gov/> Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review should there be any suspicion of academic dishonesty. The Review process can be found at: <http://usc.edu/student-affairs/SJACS/>
- Quiz on academic integrity: <http://www.usc.edu/student-affairs/student-conduct/aiquiz.html>

Students with Disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to your course instructor as early in the semester as possible. DSP is located in STU 301 and is open from 8:30am to 5:00pm, Monday through Friday. Website and contact information for DSP http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu

Finding required journal articles through the USC library: Ask-A-Librarian says: "To find all of our online journals from the USC Libraries' homepage: <http://www.usc.edu/libraries/> . In the big yellow box above the search box click on "Journals" (it should be in bold letters now) type the name of the journal into the search box and click on the "Search" button. If the journal is online full text, there will be a link to the database and it will take you to all the issues that are online for that journal."

Cost of textbooks: You may be able to purchase books for a lower price by searching in the online marketplace, including options for a kindle edition or a paperback edition. For the Stanovich book, the prior edition would be essentially equivalent and potentially considerably less costly.