

**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
<b>Week 1</b>		
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 Smith & Davis Chapter 3; Stanovich Chapter 10  
**TEST**

**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 Smith & Davis Chapter 7 p. 135 through end  
**TEST**

### Week 7

Wed Oct 8	Two-group designs	Smith & Davis Chapter 10 through p. 224
Fri Oct 10	<b>MEET IN SGM631</b> 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	<b>MEET IN SGM631</b> Sample size, effect size	Chapter 7 through page 135; Chapter 9 p. 204 through end

### Week 9

Wed Oct 22	Placebo and nocebo effects	<a href="http://www.the-scientist.com/?articles.view/articleNo/36126/title/Worried-Sick/">http://www.the-scientist.com/?articles.view/articleNo/36126/title/Worried-Sick/</a> ; 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.
	<b>TEST</b>	

### 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	<a href="http://www.annualreviews.org/doi/abs/10.1146/annurev.clinpsy.1.102803.143810">http://www.annualreviews.org/doi/abs/10.1146/annurev.clinpsy.1.102803.143810</a> ; Stanovich Chapter 8
Fri Nov 7	<b>MEET IN SGM631</b> 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
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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. *Science*, 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](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](mailto: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.