Research Methods 1: Statistics & Design

Professor Stephen Flusberg

Lecture: Monday/Thursday 12:30 - 2:00 PM (HUM 1042)

Lab: Thursday 2:30-5:30 (LIB 1004C)

This course will cover the nature of scientific knowledge, how to design and run a psychology experiment, research ethics, and basic statistics. Most importantly, this class will give you powerful new tools for thinking critically about psychological research, and the practical skills needed to scientifically investigate human behavior and the world around you. You will gain hands on experience with data management and statistics software, as well as designing and running experiments, and you will learn what bags of candy can teach us about probability. You must have completed at least 40 credits and received a grade of C or better in Introductory Psychology to take this course, and Psychology majors must earn a grade of at least a C in this class to progress to Research Methods II. This course satisfies the SUNY mathematics general education requirement.

Course Objectives

- Acquire all of the skills required of courses that satisfy the Math general education requirement
- Learn how to design, run, and analyze observational and experimental psychology studies
- Develop the ability to critically evaluate the science depicted in popular and academic media
- Learn how to use Excel to organize and manage data, and JASP to conduct statistical analyses
- Acquire a conceptually rich understanding of basic statistical concepts and procedures
- Cultivate a rigorous and ethical scientific mindset

Instructor Contact Information

Prof. Stephen Flusberg
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Office Hours

Mon/Weds, 10:30-11:45 AM
Nat Sci Building, Room 2045

Learning Assistant Contact Info

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Laura Freise
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Office Hours

Wednesdays, 6:30-7:30 PM
Nat Sci Building, 1st Floor Lounge

Tuesdays, 5:30-6:30 PM
Nat Sci Building, 1st Floor Lounge

No appointment is necessary to attend any office hours. Please use the Discussion Board on the course Moodle site if you have any basic questions and one of us (or one of your peers) will respond in a timely fashion. If you contact us, we will do our best to get back to you within a 24-hour period, but we will not typically respond to emails after 9:00 PM.

Course Overview:

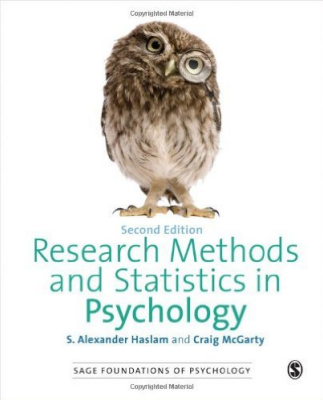
This is an advanced psychology course that will include lectures, readings, assignments, exams, and hands-on research activities. There are two lecture periods and one lab each week. Coursework will center on the following elements:

1. Attendance & Participation

Attendance for the full class period is required; if you cannot arrive by 12:30 and stay until 2:00 (or 5:30 for lab), I would ask that you drop the course. I will post lecture slides on Moodle after class, but they will be difficult to understand if you're not in class. Laptops and similar technology are permitted during lecture for note-taking purposes only (although some research suggests that taking notes by hand may result in better memory for lecture material). Please exercise common courtesy to your instructor and fellow classmates by avoiding the use of distracting applications during class, such as email, web browsing, chat programs, etc. Five unexcused absences from class or lab will result in an automatic F. Participation in class discussions and activities is a *must* in a course like this. Questions are a perfectly thoughtful form of contribution; no one is required to be brilliant all the time, especially when it comes to challenging course material. If speaking in class is difficult for you, you may compensate by coming to speak to us in office hours or posting on the Moodle class Discussion Board.

2. Readings

We will be using Research Methods & Statistics in Psychology, 2nd Edition, by S. Alexander Haslam and Craig McGarty as our textbook for this course. You can purchase the book at the campus bookstore or online, and there will be a copy on reserve at the library. There will be additional required and optional readings as well, which will be available on Moodle. Optional readings will be drawn from the open source Passion Driven Statistics iBook. The readings are designed to *complement* the lecture material, and to stimulate your thinking about research methods and statistics in the behavioral sciences. I will lecture on some material that is not covered in the readings (and vice versa). I recommend doing the assigned reading *before* coming to class.



3. Computer Software

Since this is a research-intensive methods course with a weekly lab, you will probably not be surprised to hear that you will be getting a lot of hands-on experience with a variety of computer programs. One of our principal tools will be Microsoft Excel (though most open-source alternatives, like Google Sheets, will likely be sufficient for use on your own). This is the most popular spreadsheet software and is used by almost every company and researcher in the world. In other words, even if you do not plan on a research-based career, you will greatly benefit from beefing up your Excel skills.

The other important program that we will be using is the free, open-source JASP statistics software, which will be on all of the computers in our lab room this semester (and which you should download for yourself if you own a laptop or desktop by going to https://jasp-stats.org). In the past, this course

has used IBM's SPSS software (and many researchers, including some of our faculty, use it as well), but SPSS can be complicated and is very expensive, while JASP is free and was created by psychologists specifically for use in psychological research. Plus, once you learn JASP, figuring out how to use SPSS is not as difficult (in case you need to use it for your senior project). The last program, which we are very lucky to have access to, is the new, *free*, browser-based TELLab psychology experiment software (http://lab.tellab.org/home). I have set up a course group (Research Methods I Spring 2017) that you will sign up for online. We will be using this software to design and run experiments during several lab periods. Details will be provided in class. Recommended: buy a USB flash drive (at least 4GB)!

4. Homework Assignments

There will be regular homework assignments that will give you practice with Excel and JASP as well as enhancing your understanding of research methods and statistical concepts. These assignments will include online activities as well as printed handouts. All assignments are due on the dates specified on the course schedule (or in class/on Moodle if the schedule changes), and must be turned in at the beginning of class/lab to receive full credit, no exceptions.

5. Lab Reports

You will have to complete a written lab report for several of our lab-based experiment activities. Each lab report will consist of a methods section and a statistical results section, written and formatted in APA style, as they would appear in a scientific journal article. Details will be provided as we move throughout the semester.

6. Exams

There will be 4 in-class exams in this course (this includes the final). I strongly advise against cramming for these tests! Exams will consist of multiple choice, short answer, and analysis questions. Exams will also include a statistical analysis component that will be completed during our lab period. Each exam will focus primarily on material covered since the previous exam, but because of the nature of this course the information on the exams will really be somewhat cumulative. The 4th exam (the final) will be fully integrative and cumulative. On the plus side, you can drop your lowest exam score!

7. Research Methods Resource Binder

Please purchase a 3-ring, 1" binder. Throughout the course, you will be required to keep all handouts, lab activities, class notes, assignments, and work in your class binder. This binder will serve as your own personal how-to statistical and research manual that you will reference for Research Methods 2 and your senior project. You must bring this binder with you to every lab meeting, and you are expected to manage this binder on a weekly basis to ensure that it is organized, labeled logically and well, and will actually be useful to you in the future. At the end of the semester, we will collect your binders and assess to what extent the binder (a) Includes all the relevant course material, and (b) has been properly organized, labeled, and annotated to serve as a manual for you in the future. A complete binder, for example, would have the course syllabus, ethics certificates, all assignment and lab, handouts, and completed "how-to" sheets (provided on Moodle) for each statistical analysis we will be using.

Grading

Grading in this course will adhere to the Purchase policy on cheating and plagiarism. This policy explicitly prohibits cheating, plagiarism and other forms of academic dishonesty. Plagiarism is the appropriation or imitation of the language, ideas, and/or thoughts of another person and the representation of them as one's own original work. Students are responsible for familiarizing themselves with the definition of plagiarism and the acceptable methods of attribution. Plagiarism will earn you an immediate F in the course. Please refer to the college website for information on this policy: http://www.purchase.edu/policies/plagiarism.asp.

	% Total Grade
Homework	30 %
Lab Reports	30 %
Exams	30 %
Participation	10 %
TOTAL	**100 %**

Note: There are 4 total Exams in this course including the final. You will drop your lowest exam score

Academic Accommodations

Students with documented physical, learning, psychological, and other disabilities are entitled to receive reasonable accommodations. If you need classroom or testing accommodations, please contact the Office of Special Services (Student Services third floor; 251-6035) or the Counseling Center (Module 1 on Lincoln Ave., 251-6390). I encourage students with disabilities to let me know as soon as possible during the semester what, if any, special accommodations will be needed. After-the-fact accommodations will not be possible. For more information go to: http://www.purchase.edu/studaff/specialstudentservices

Course Schedule

The most up-to-date schedule of topics and assignments will always be posted on the Moodle calendar, as this schedule might change a bit as we move through the semester. All changes will be reflected on the calendar and important communications will be sent via Moodle announcements (which are permanently archived on Moodle so that you can access past messages at any moment).

DATE				TOPIC	READING	ASSIGNMENTS
Week 1	M	23-Jan	**Last Monday of Winter Break...**			
	Th	26-Jan	Class	Introduction to the course		
			LAB	**LAB 1: PRELIMINARIES**		
Week 2	M	30-Jan	Class	Thinking like a scientist	Chapters 1 & 2	
	Th	2-Feb	Class	Measuring the world	Chapter 3	
			LAB	**LAB 2: VARIABLES**	optional: iBook ch 1 & 2	
Week 3	M	6-Feb	Class	Research Ethics	Chapter 14	HW1
	Th	9-Feb	Class	Intro to statistical thinking	Chapter 6	
			LAB	**LAB 3: DATA**	optional: iBook ch 3 & 4	
Week 4	M	13-Feb	Class	Probability and inference	Chapter 7	HW2
	Th	16-Feb	Class	Observational methods	Chapter 9	HW3
			LAB	**LAB 4: OBSERVATIONAL STUDIES 1**		
Week 5	M	20-Feb	Class	Statistical inference	optional: iBook ch 5	HW4
	Th	23-Feb	Class	**EXAM #1 (class + lab)**		
			LAB			
Week 6	M	27-Feb	Class	Review Exam #1		
	Th	2-Mar	Class	Survey research	Chapter 5	
			LAB	**LAB 5: OBSERVATIONAL STUDIES 2**	optional: iBook ch 8	
Week 7	M	6-Mar	Class	How to read a scientific article	TBA	Lab Report 1 Due
	Th	9-Mar	Class	Experimental Design I	Chapter 4	
			LAB	**LAB 6: EXPERIMENTAL STUDY 1**		

Week 8	M	13-Mar	Clas	Experimental Design II	Chapter 8	
	Th	16-Mar	Class	Conducting Experiments	optional: iBook ch 6	HW5
			LAB	**LAB 7: EXPERIMENTAL STUDY 1**	Appendix A	
Week 9	M	20-Mar	Class	Critiquing Articles I	TBA	Lab Report 2 Due
	Th	23-Mar	Class	**EXAM #2 (class + lab)**		
			LAB			
Week 10	M	27-Mar	Class	Review Exam #2		
	Th	30-Mar	Class	Complex Designs I	Chapter 10	HW6
			LAB	**LAB 8: EXPERIMENTAL STUDY 2**	optional: iBook ch 7	
Week 11	M	3-Apr	Class	Complex Designs II	optional: iBook ch 10	HW7
	Th	6-Apr	Class	Complex Designs III		HW8
			LAB	**LAB 9: EXPERIMENTAL STUDY 2**		
Week 12	M	10-Apr	**SPRING BREAK**			
	Th	13-Apr				
Week 13	M	17-Apr	Class	Critiquing Articles II	TBA	Lab Report 3 Due
	Th	20-Apr	Class	**EXAM #3 (class + lab)**		
			LAB			
Week 14	M	24-Apr	Class	Review Exam #3		
	Th	27-Apr	Class	Additional Analyses	Chapter 11	HW9
			LAB	**LAB 10: ORIGINAL STUDY**	optional: iBook ch 9	
Week 15	M	1-May	Class	Choosing the right statistics	optional: iBook ch 12	HW10
	Th	4-May	Class	Catching Up	Chapter 15	HW11
			LAB	**LAB 11: ORIGINAL STUDY**		
Week 16	M	8-May	Class	Course Review		Lab Report 4 Due
	Th	11-May	Class	**EXAM #4 (class + lab) -** Binder Due		
			LAB			

School of Natural and Social Sciences Spring Lecture Series

2nd Annual Darwin Day Lecture, Tuesday, Feb 7th, 7PM, NS1001

"How Understanding the Evolution of Microbiomes Should Be Changing Our Lives"

Robert DeSalle, Ph.D.

Curator, Molecular Systematics, American Museum of Natural History Principal Investigator, SICG Genomics Lab, American Museum of Natural History
Professor, Richard Gilder Graduate School, American Museum of Natural History

Dr. DeSalle works in molecular systematics, microbial evolution, and genomics. His current research concerns the development of bioinformatics tools to handle large-scale genomics problems using phylogenetic systematic approaches. Dr. DeSalle has worked closely with colleagues from Cold Spring Harbor Labs, New York University, and the New York Botanical Garden on seed plant genomics and development of tools to establish gene family membership on a genome-wide scale. His group also focuses on microbial genomics, taxonomy, and systematics. In particular, they approach tree-of-life questions concerning microbial life using whole genome information. He also dabbles in *Drosophila* systematics.*This lecture is made possible by a generous contribution from ConEdison*

Tuesday, March 21st, 7PM, NS1001

"*Sleep: The Pattern of Life*"

June Pilcher, Ph.D.

Sigma Xi Distinguished Lecturer
Alumni Distinguished Professor, Department of Psychology
Faculty Scholar, Clemson University School of Health Research

Although humans spend one third of their lives sleeping, few people understand what is happening when we sleep and the benefits of good sleep habits. This talk will describe sleep (something that sleep scientists are very good at) and will delve into the possible functions of sleep (something that sleep scientists are still trying to figure out). Good sleep habits are equally important for long-term good health as good exercise and eating habits; however, many people in our society continue to view sleep as something they can give up at least temporarily. We pay a clear price for bad sleep habits and chronic sleep loss. This talk will cover the negative effects of regular sleep loss and poor sleep habits and will offer ideas for how to improve sleep. *This lecture is made possible by a generous contribution from Sigma Xi*

Tuesday, April 4th, 7PM, NS1001

"*Latino Immigrants, Acculturation, and Health: Promising New Directions in Research*"

Ana Abraido-Lanza, Ph.D.

Professor, Department of Sociomedical Sciences, Mailman School of Public Health, Columbia University

Dr. Ana Abraido-Lanza's research focuses on cultural, psychosocial, and socioeconomic processes that affect psychological well-being, adjustment to chronic illness, and mortality among Latinos, as well as health disparities between Latinos and non-Latino whites. Her current research projects include the study of acculturation and cancer-related behaviors among Latinos, as well as coping and psychosocial adjustment and socioeconomic status and disability among Latinos with arthritis. Her work on cancer screening among Latina women examines the extent to which socioeconomic factors and quality of health care predict breast and cervical cancer screening among Latinas vs. non-Latina whites. Dr. Abraido-Lanza serves as the director of the Initiative for Minority Student Development (IMSD) at the Mailman School, an education project aimed at increasing the number of under-represented students who enter research careers in public health. *This lecture is made possible by a generous contribution from ConEdison*