

## Honors Research Design, Analysis, and Presentation

Fall Semester, 2013

### A Writing-Intensive Seminar

Rutgers University Psychology Department

#### Course Information:

Rutgers Course Number: 01:830:490

Date and Time: Fridays from 10:20-1:20

Location: ARC-105

Credit hours: 3

Prerequisite: Acceptance into the Psychology Honors Program.

#### Instructor:

Dr. Lyra Stein

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Office: Tillett 313 (Livingston Campus)

Office Hours: Monday/Wednesday 3:30-4:30, Tuesday 3:00-3:30

**Learning Goals for this Course:** Performing original scientific research in Psychology can be a highlight of your Rutgers career, but it is also a novel challenge for most students. The purpose of this course is fivefold. First, it will broaden your formal education in research design, analysis, and presentation to complement and extend your ongoing research project. Second, it will give you the opportunity to get feedback from your peers and professor as you formally present your plans and progress in class. Third, it will provide hands-on training in scientific writing. Fourth, it will expose you to the extraordinarily broad range of subjects explored and techniques applied in the many different areas of Psychology. Finally, it will foster the development of a community of Psychology Honors students to provide mutual support throughout the semester. The specific skills you will learn in this course include:

- Experience considering a wide range of experimental designs, including hypothesis specification, subject selection, and issues of sensitivity / power.
- Completion of written assignments on increasingly detailed and technical subjects, beginning with short, ungraded essays on paradigm shifts in recent history, graduating to writing about and making scientific figures, and finally handing in a draft and then revision of your Honors Thesis Introductions and Methods
- Application of statistical methods to real-world datasets and careful interpretation of the results.
- Practical knowledge of how to visually display complex datasets and prepare publication-quality figures
- Formal training and experience in both delivering and critiquing scientific presentations, including public speaking and poster presentations.

**Textbook:** Tufle, E. R. (2001). *The visual display of quantitative information*, (2<sup>nd</sup> edition). *CT Graphics, Cheshire.*, ISBN #0961392142. This text will only be used explicitly in one week of the class, but provides a useful reference throughout the process of preparing your data for presentation.

American Psychological Association (2010). *Publication manual of the American Psychological Association* (6<sup>th</sup> Ed.). Washington, DC: Author.

**Attendance & Grading:** Attendance in this course is mandatory, and the roll will be taken at the *beginning* of each class. There are only 13 class meetings, so any absence is a significant loss. Students are permitted three absences. For the fourth and every subsequent absence, students will be penalized the equivalent of half a letter grade (e.g. a B+ becomes a B). In accordance with Rutgers policy, absences for religious observance or participation in Rutgers-approved activities do not count against the limit, nor does research-related travel (e.g. presenting your Honors project at a scientific conference). However, students are required to report ALL absences using the Rutgers absence reporting system at <https://sims.rutgers.edu/ssra>.

**Conduct:** Students are expected to pay attention in class. Use of computers and other electronic devices for anything other than note-taking is distracting to fellow students and is not permitted. All students must comply with the University's Academic Integrity Policy, which can be found at <http://academicintegrity.rutgers.edu/>.

**Sakai:** The course has a dedicated Sakai site at [sakai.rutgers.edu](http://sakai.rutgers.edu). All registered students should automatically be members of the site. The site includes downloadable readings for the course, this syllabus, a chat room, and a venue for announcements to the class. This is the tool I will use to email the entire class when necessary.

**Evaluation:** This class will include both graded and ungraded assignments.

*Ungraded:*

- Essay on an example of a Kuhnian paradigm shift (2 pages)
- Diagnostic quiz on applied statistics
- Essay on your favorite figure from Tufte's textbook (2 pages)
- The first in-class presentation (3 minutes)
- Peer critiques of student presentations

*Graded:*

- Your flow chart illustrating your experimental design 20 pts
- Evaluation of Evidence 30 pts
- Article critique 40 pts
- The second, in-class presentation (15 minutes) on your Honors project 60 pts
- Your Introduction and Methods sections for your thesis 100 pts
- Your in-class participation, including questions during student presentations 50 pts.

Total 300 pts.

A: 270-300, B+: 255-269, B: 240-254, C+: 225-239, C: 210-224

Please be aware that correct sentence structure, grammar, and spelling are expected in answers to all written assignments. When in doubt, consult the APA. Publication Manual or Strunk and White's *Elements of Style*.

### Course Schedule

**NOTE: The due dates for assignments are definite, but the exact schedule of which material is covered on which day may vary slightly.**

Week 2 – Sept. 13

Topics: Overview of Honors research process, perspectives on scientific progress, intro to public speaking/APA style/The format of research papers/Library research/ Responsible Research (Responsibilities as an Honors student, plagiarism, authorship, etc.)

In-class activities: Two Truths and a Lie (Public speaking exercise – audience interaction)

Student presentations, 3-minute intro.

### Week 3 – Sept. 20

#### **Assignment due: Paradigm shift essay**

Topics: Experimental design (hypothesis testing, within vs between subjects designs; factorial designs; confounds; controls; planned comparisons; subjects; approvals)

In-class activities: Interactive editing of student essays

Student presentations: 3-minute intro.

### Week 4 – Sept. 27

#### **Assignment due: Flow chart showing experimental design**

Topics: Literature review (Data sources, logical flow, paragraph structure, hypothesis statement, references, plagiarism)/Critical Evaluation of Evidence

In-class activities: Scenes from a Hat (Public speaking exercise)

Student presentations: 3-minute intro.

### Week 5 – Oct. 4

#### **Assignment due: Evaluation of Evidence**

**Read For Class** Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological science*, 22(11), 1359-1366.

Topics: Data Analysis, Part 1: Comparison of Groups (means, medians, and standard errors, paired and unpaired t-tests, one-way & two way ANOVA, interaction, post-hoc testing, reporting stats)/False positive psychology

In-class activities: Discussion forum on student research concerns

Student presentations: 3-minute intro.

### Week 6 – Oct. 11

#### **Assignment due: Critique of assigned article**

Topics: Data Analysis, Part 2, Beyond the Hegemony of the Mean (Variance, regression & correlation; subsets of data & preplanning comparisons; Bonferroni correction).

In-class activities: (Public speaking exercise – projection & gestures)

Student presentations: 20-minute presentation/discussion/critique.

### Week 7 – Oct. 18

**Assignment due: Peer critiques of student presentations**

**Reading due: All of Tufte's textbook**

Topics: Data display (rich bar charts, within-subjects registration, scatterplots).

In-class activities: Scenes from a Hat (Public speaking exercise – word choice)

Student presentations: 20-minute presentation/discussion/critique.

Week 8 – Oct. 25

**Assignment due: Essay on favorite figure from Tufte's textbook**

**Assignment due: Peer critiques of student presentations**

Topics: Guest lecturer: Dr. John McGann -Graduate school (choosing programs, preparing an application, interviewing),

In-class activities: Interactive editing of student essays

Student presentations: 20-minute presentation/discussion/critique.

Week 9 – Nov. 1

**Assignment due: Peer critiques of student presentations**

Topics: Writing a methods section (replicability, validation, references)

Student presentations: 20-minute presentation/discussion/critique.

Week 10 – Nov. 8

**Assignment due: DRAFT OF INTRO & METHODS SECTIONS; Peer critiques of student presentations**

Topics: Challenges in student research (null results, no results, weird results)

In-class activities: Discussion forum on student research concerns

Student presentations: 20-minute presentation/discussion/critique.

Week 11 – Nov. 15

**Assignment due: Peer critiques of student presentations**

Topics: How to practice explaining your data (a.k.a. How to Bore Your Roommates)

In-class activities: Interactive editing of student Introductions

Student presentations: 20-minute presentation/discussion/critique.

Week 12 – Nov.. 22

**Assignment due: Peer critiques of student presentations**

Topics: Preparing a scientific poster and preparing for a poster session

In-class activities: Interactive editing of student Methods sections

Student presentations: 20-minute presentation/discussion/critique.

**NOVEMBER 27 – THANKSGIVING BREAK – NO CLASS**

Week 13 – Dec. 6

**Assignment due: Peer critiques of student presentations**

Topics: Course wrap-up and review of outstanding requirements for the Honors program

In-class activities: Discussion forum on student research concerns

Student presentations: 20-minute presentation/discussion/critique.