

PSY 4980/6980/7980 - Scientific Graphics & Writing

TR 2:30-3:50, UH 5000

Ricky Heffner UH 5008

Office Hours T 9-2, by appointment

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Textbooks *Graduate students only

Kosslyn, S.M. 2006. Graph Design for the Eye and Mind. Oxford University Press.

***Tuft, E.R. 2001.** The Visual Display of Quantitative Information, 2nd ed. Graphics Press.

Olson, R., 2015. Houston, We Have a Narrative, Chicago Press. This book addresses the overall organization of ideas in scientific writing.

Barzun, J., 2001. Simple and Direct. 4th ed., Harper. This book deals with how ideas get conveyed.

This course is intended for graduate students and undergraduates who plan a professional career in any field that involves presenting information to others: clinical psychology, scientific research, medicine, law, business . . .

The course will focus on application of good graphics theory based on psychological research in perception and cognition. As such you will not be reading a large number of journal articles. However you will be poring over journal articles both in and outside of your area of interest looking at graphs for inspiration and entertainment.

The topic for the week will be presented by the instructor on **Tuesdays**. Read the assignments before the class meets on Tuesday. You will present the graphs you find or your written project on **Thursday** (owing to holidays, this schedule will be reversed for a few weeks beginning Sept. 28). In the first part of the course, you will search in the scientific literature for **at least two graphs** that illustrate good or poor design examples of the topic for each class meeting. Post these to the Discussion Board before the class meeting on Thursday. Annotate them with your comments as to good and poor features and we will discuss them in class.

Later in the course we will consider features of good scientific writing and practice writing Introductions to papers and grant proposals (the part that really determines success) and composing posters (exercises in simple and direct presentation).

In the last part of the course you will learn to use a good graphing program and practice making professional looking graphs of your own data. We'll even design a poster and write a few abstracts. Finally, we will pull all this together and write an introduction for a grant proposal.

Grades: Based on quality of examples and critiques of graphs presented in class 50% and on the quality of the graphs, posters, and writing that you do yourself 50%.

Schedule for Fall 2017	
Aug 29	Why Graph
31	Bring to class the analysis and graphs based on the data tables provided in Blackboard
Sep 5	Kosslyn, Ch 1 Eye and Mind Tufte, Time Series pp 28-43, Data Density pp 161-175
7	Student presentations
Sep 12	Kosslyn, Ch 2 Choosing a Format Tufte, Gridlines and Junk pp 112-121
14	Student presentations
Sep 19	Kosslyn, Ch. 3 Creating a Framework Tufte, Data/Ink ratio pp 122-125, Proportion and Scale pp 184-190
21	Student presentations
Sep 26	Kosslyn, Ch 4 Pie Graphs, Divided Bars, Visual Tables Kosslyn, Ch 5 Bar Graph Variants Tufte, Redesign of the Bar Chart pp126-129, Choice of Design pp178-183
no class 28	No Class
Oct 3	Student presentations (Pies, Divided Bars, Visual Tables)
5	Kosslyn, Ch 6 Line Graphs and Scatterplots Tufte, Redesign of the Scatterplot pp130-137 Doherty & Anderson, 2009 (pdf in Blackboard)
Oct 10	Student presentations
12	Kosslyn, Ch 7 Color, Fill, etc Tufte, Chartjunk pp. 107-112

Schedule for Fall 2017	
Oct 17	Fall Break
19	Student presentations
Oct 24	Kosslyn, Ch 8 “Lies, Damned Lies, and Statistics” Tufte, Graphical Integrity pp 54-77 Do the Blackboard assignment on Frog Abundance for class discussion
26	Student presentations
Oct 31	Learning a graphing program that does your bidding (Kaleidagraph is available but there are others); use the tutorials on your own before the class meets. In class we will practice with the program by graphing the data provided for the cost of candy bars . For future use: Bring to class three journal abstracts that you think are good abstracts and three more that you think are not good. The good and the bad abstracts should each include one abstract from your area of psychology, one from a different area of psychology, and one should be from the natural sciences. Keep these as PDF files because we will discuss them later. Browse through your own journal files and use the online journals from the library.
Nov 2	More graphing practice in class: working through tutorials, trying different layouts, etc
Nov 7	Bring to class a graph of your own data (real or imaginary) for discussion. Also bring a more complex graph of data in your field (or someone else’s field) and we will discuss them in class. For future use: Bring in an abstract for a journal article or poster that you have written. Or, write an abstract for a project on which you are working making up the results and conclusions (we are not concerned with true facts, just how you might present the work).
9	How to Write Badly (lecture) Start reading: Olsen, Introduction, Chapters 5, 6, 7, 8, 9, 10. (you can skip chapters 1-4).
Nov 14	Keep reading Olsen chapters; class topic to be determined Read the three editorials from Science and Nature posted in Blackboard

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16	Olsen, Chapters 11, 12 (pp 185-195 only), 13, 14. In class discussion of the six abstracts you have found. Analyze each one using Olsen's schemes of ABT and AAA (mark these on the abstracts). Does this account for why you did or did not like an abstract? You will turn in the six abstracts at the end of class. Rewrite one of the abstracts you didn't like and be prepared to present your re-write to the class and explain how you improved it. Your re-write and its original will be posted on Blackboard.
Nov 21	Barzun, Chapters 1 & 2 No class , but keep reading in Barzun so you don't get behind. Take notes, think about what points he makes that might apply to you or some of the journal articles you have read.
23	Thanksgiving (read George Orwell's 1984 if you are not cooking for a crowd and think about what the pilgrims were striving for— what would they think of the US now?)
Nov 28	Tufte, Aesthetics pp 177-190 Barzun, Chapters 3 & 4 Trends in Neuroscience article on posters Bring to class three copies of a sketch for a poster in your field, maybe even a poster you hope to present; include a compelling abstract clearly written and a couple of figures. Leave space for methods, figures (i.e., these are the results), and conclusion. There are two generic layouts for a smaller and a larger poster for you use to set a good overall size and column layout. The smaller poster is usually enough for most presentations—better too little than too much. We will exchange these in class and provide editorial feedback on one of the posters. Feedback for the second will be brought to the next class meeting. The instructor will also return editorial comments to you at the next class meeting. You will turn in an edited and complete version at the last class meeting.
30	More discussion of posters. Wording practice in class

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Dec 5	<p>Barzun, Chapters 5 & 6.</p> <p>By Dec 3 email the instructor two introductions for grant proposals (undergrads need only write one on a topic of your choosing); be sure to put your name in the file name. One should be for a three year project in your own area and the other should be for a project as far outside your area as you can manage, preferably outside psychology (this one will be easier). Include up to one page that explains why this is the most exciting and important research of the decade; as many as two additional pages should succinctly describe the nature of the studies you will undertake to answer the questions you have already demonstrated to be important (three pages total max! 12 point Times font, double spaced). You can make these up but they should be plausible. It is the presentation that is relevant for this exercise.</p> <p>Also email a copy of your introduction to the two people in the class whose names follow yours in the alphabet; if you are at the end of the alphabet just cycle back up to the beginning of the alphabet. Everyone should receive two introductions and a few lucky people will get three.</p> <p>Before class, read and annotate each others proposals and be prepared to discuss them in class. Think about the story line, clarity, and the organization. There are some helpful writing ideas on word usage and maintaining interest posted in Blackboard. Read these because the penalty for incorrect word usage is worse than you can imagine.</p>
7	Continue discussing proposal introductions
Dec 12 Final 2:45-4:45 Discussion for grant Intros	<p>Bring in your finished poster that you have revised based on comments. This one should include figures with their captions comprising the results and a succinct conclusion. You can make this up—again, it is presentation that is important here.</p> <p>Post <i>one</i> of the grant introductions (your choice) that you revised and be prepared to tell the group about your revisions.</p>