

REQUIRED TEXTS:

- Beveridge, W.I.B.** (1957) *The art of scientific investigation*. Reprint of the 1957 Revised Edition, by W.W. Norton and Company, Inc. Caldwell, NJ, The Blackburn Press.
- Booth, W.C., Colomb, G.G. and Williams, J.M.** (2008) *The craft of research (3rd edition)*. Chicago, University of Chicago Press.
- Brinkley, A., Dessants, B., Flamm, M., Fleming, C., Forcey, C. and Rothschild, E.** (1999) *The Chicago handbook for teachers: A Practical Guide to the college classroom*. Chicago, University of Chicago Press.
- Sindermann, C.J.** (2001) *Winning the games scientists play: Strategies for enhancing your career in science (2nd edition)* Perseus Books.

ADDITIONAL REFERENCES OF POSSIBLE INTEREST:

- Bain, K.** (2004) *What the best college teachers do*. Cambridge, Harvard University Press. [a classic!]
- Barker, K.** (2005) *At the bench: A laboratory navigator (2nd Edition)* NY, Cold Spring Harbor Laboratory Press. (Probably the best lab and bench science orientation for graduate students currently on the planet. Everyone should read this once a year)
- Barker, K.** (2002) *At the helm: a laboratory navigator*. NY, Cold Spring Harbor Laboratory Press. (Probably the best lab and bench science orientation for new recipients of the Ph.D. currently on the planet. Everyone should read this a year before receiving their degree)
- Chandler, C.R., Wolfe, L.M. and Promislow, D.E.L.** (2007) *The Chicago guide to landing a job in academic biology*. Chicago, University of Chicago Press. (Essential reading the moment you pass your generals!)
- Council of Biology Editors** (1999) *Scientific style and format. The CBE manual for authors, editors, and publishers* (6th Edition) Cambridge, Cambridge University Press. (If you are serious about science writing, this is a Must-have@)
- Davis, B.G.** (2009) *Tools for teaching (2nd Edition)* San Francisco, Jossey-Bass. [practical how-to guide to running a college class]
- Day, R. A. and Gastel, B.** (2006) *How to write and publish a scientific paper (6th Edition)*. Westport, Greenwood Press.
- Feibelman, P.J.** (1993) *A Ph.D. is not enough*. New York, Basic Books.
- Hailman, J.P. and Strier, K.B.** (1997) *Planning, proposing, and presenting science effectively: A guide for graduate students and researchers in the behavioral sciences and biology*. Cambridge, Cambridge University Press.
- Matthews, J.R., Bowen, J.M. and Matthews, R.W.** (2000) *Successful scientific writing: A step-by-step guide for the biological and medical sciences*. Cambridge, Cambridge University Press.
- Medawar, P. B.** (1979) *Advice to a young scientist*. New York, Harper and Row. (good but a bit dated)
- Smith, R.V.** (1998) *Graduate research: A guide for students in the sciences (3rd Edition)* Seattle, University of Washington Press.
- Williams, J.M.** (2007) *Style. Lessons in clarity and grace. (9th Edition)* New York, Pearson/Longman (in which Dr. Williams actually explains, with copious examples, writing well!!)

SYLLABUS

STATEMENT OF PURPOSE

You are in graduate school. Congratulations! If you learn what you are supposed to here, you have a **chance** to become an excellent scientist. **However, obtaining your degree does not make you even a good scientist; it simply certifies that you have passed the minimum requirements.** Your ultimate success depends upon your ability to understand the forces of the universe that govern your subject area. This is an evolving process and means that your scientific education is a life-long endeavor. You will always be a student; get used to it.

While most of your research work involves performing experiments and collecting data, doing excellent research and being an excellent scientist are much more than that. You must understand the scientific process. This goes far beyond the scientific method. Here are some skills you will need: How to formulate a good question; how to find background information related to your research; how to stay current with the literature; how to formulate a logical series of experiments; how to construct a manuscript describing your results; how to evaluate what you read; how to edit and/or review a manuscript; how to integrate your findings into the flow of science.

I cannot teach you to be a scientist. I have no magic wand. What I can share with you are strategies that I have absorbed from my own graduate school experience as well as over the years as a working professional. Traditionally, these strategies have been passed on from generation to generation either as an oral tradition from one's major professor (Master to Apprentice) or via osmosis from the university environment. Unfortunately, the system of graduate training has become more mechanized than when I was in school, and competition is fiercer for positions after graduation. Therefore, I feel that scientific survival skill sets should be passed on more formally and (hopefully) efficiently than in past generations. Learning how to be a scientist is vital to learning how to do science.

HENCE, YOU ARE IN THIS COURSE.

You will be exposed to strategies of finding, prioritizing, and organizing information; how to compose, organize and evaluate your work for publication; how to evaluate the work of others for both your own use and as a reviewer. My rants will cover methods, philosophy, etiquette and ethics. Hopefully, you will be entertained and enlightened. In addition, there will be reading assignments, exercises, and discussions. Show me that you are a professional and come to class prepared. What do you have to do to pass this course? If you have to ask, you'll never know (to paraphrase Louis Armstrong).

I cannot guarantee that all of these strategies will work. The content of this course is a set of possibilities that work for me and may work for you. Yes, this is very serious business, but try to enjoy it. I plan to have a great deal of fun passing these tools on to you.

Lecture and Discussion Schedule: Professional Development for Plant Scientists
M.A. Cohn (493 Life Sciences; 8-1464; mcohn@lsu.edu)

Spring 2013

2013 dates	Session Topic	Reading
1/16/13	Introduction	
1/23/13	From Observations to Experiments	Intro (CJS); Chap 1(Bev)
1/30/13	Thinking Like a Scientist	Chaps 1,2 (BCW)
2/06/13	Real Life Stories, featuring Dr. Nicole Ward, University of Kentucky (and PPCP alumnus)	
2/13/13	From Data to Manuscript	Chap 3 (BCW) Chap 2 (Bev)
2/20/13	Preparing and Submitting Your Paper	Chap 4 (BCW)
2/27/13	What Editors and Reviewers Do	Chap 5 (BCW) Chap 3(Bev);Chap 1 (CJS)
3/06/13	Care & Feeding of Your Major Professor	Chap 6 (BCW); Chap 4 (Bev)
3/13/13	Surviving Oral Exams	Chap 7 (BCW); Chap 5 (Bev)
3/20/13	Analyzing and Critiquing Papers	Chap 8, 9 (BCW); Chap 6 (Bev)
3/27/13	Surviving Oral/Poster Presentations	Chap 10, 11 (BCW); Chap 7 (Bev)
4/03/13	SPRING BREAK 2013 – NO CLASS	
4/10/13	The Literature Detective: Information Management & You	Chap 12, 13 (BCW); Chap 8 (Bev)
4/17/13	Grantsmanship	Chap 14 (BCW); Chap 9 (Bev); Chap 2, 3, 4 (CJS)
4/24/13	Teaching Philosophies and Mechanics; Mentoring Graduate Students	Chap 15, 16 (BCW); Chap 13 (CJS); Chap 10 (Bev)
5/01/13	Are You On The Right Track? Getting a ‘Job’	Chap 17 (BCW); Chap 7, 8, 9 (CJS); Chap 11 (Bev)

Grading in the Professional Development Class:

There are no exams! Isn't that wonderful? If you need the force of examinations for you to start mastering the subject matter of this course, are you sure that you are in the right place?

However, there are requirements that will allow you to receive a C grade in this course. **Each unexcused absence from class will result in subtraction of 5 points (100 points total).** If you must miss class due to scientific meeting attendance out-of-town, or illness, you should send me an email.

For each assigned chapter, you must submit one question that occurred to you as you did the reading. So, if 4 chapters are assigned reading for the week, you turn in 4 questions. As a reward for your efforts, I will 'grade' (answer) each question and return the answers to you. Failure to turn in these assignments in a timely manner will result in a point loss. Each missed assignment will reduce your grade by 5 points.

Be aware that there is no way that you can make up lost points. I really shouldn't have to do this, but w/o a prospect of pain, past students tended to do the reading after the semester was over, which misses the point entirely!

This is not rocket science; everyone should get an A. However, if you do insist, **you will** fail.

Now that this unpleasantness has been vented, let's have some fun, which is really what science is all about (if you know what you are doing)!