

Chem 197: Understanding Science
MWF from 12:30 – 1:30 in Julian 368

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Course Description and Goals. The consideration of science within the public sphere often fails to distinguish science as means for understanding the world from science as a means for informing public policy. Consider, for example, climate change. The science of climate change is clear: we know the earth is warming and we know human activity is a significant factor in this warming. Whether climate change is a societal problem demanding our attention, however, is a question of public policy. Although science can inform the public's discussion of policies addressing climate change, so, too, must considerations of economics, international politics, and social justice, to name a few.

During the semester we will explore science as a process for understanding the world. Among the topics we will explore are the scientific method, including observing natural phenomena, proposing explanations for these observations, and testing these explanations. We will discuss the need for the careful design of experiments and the limits of science. We will explore the scientist as citizen, considering, for example, ethics and science, and science as community. Our goal is to understand better how science helps us to answer questions about the physical world in which we live, to appreciate the limits of science, and to make sense of the boundary between science as means for understanding our world and as a means for shaping our world.

Our first-year seminar course also serves as your introduction to college writing. We will spend a significant portion of the course developing your skills as a writer. You will gain experience in drafting, revising, and polishing your writing through a variety of assignments, ranging from response papers to research papers and from lab reports to personal essays. Writing is hard, but rewarding work, and it arguably is one of the most important skills you will develop during your four years at DePauw. We will work together to ensure that you continue to develop as a writer.

Texts. The following books, available at the campus bookstore, will aid us in developing our understanding of science:

- Stephen S. Carey, *A Beginner's Guide to the Scientific Method*, 4th Edition.
- David Lindley, *Uncertainty: Einstein, Heisenberg, Bohr, and the Struggle for the Soul of Science*
- Max Brockman, Ed., *Future Science: Essays From the Cutting Edge*

The text by Carey provides a useful framework for considering how science works. From Lindley's book, which focuses on the development of quantum mechanics, we will gain insight into the nature of scientific debate and to the limits of science. Finally, in the volume edited by Brockman we will hear directly from early-career scientists writing about their work. We will supplement these texts with case studies from the scientific literature, news articles from the popular press, including science magazines and newspapers, and on-line blogs and journals covering science.

The following books, the first two of which are available at the campus bookstore, will aid us in working on writing.

- Diane Hacker and Nancy Somers, *A Pocket Style Manual*, 6th Edition
- Gerald Graff and Cathy Birkenstein, *They Say/I Say*, 2nd Edition
- Charles Lipson, *Doing Honest Work in College*

Every writer should keep a style manual as a handy reference; you will find the manual by Hacker and Somers useful in addressing questions of grammar, punctuation, and mechanics. The text by Graff and Birkenstein provides strategies for engaging in the more nuanced world of academic writing you will encounter in college; we will draw on their advice for both informal and formal writing assignments. Finally, Lipson's book provides us with a common resource on avoiding plagiarism.

Class Assignments. A daily schedule of topics and assignments (updated each weekend) is available at the course website:

http://dpwadweb.depauw.edu/harvey_web/Chem197/index.html

Evaluation. Your final grade is based on work in three areas:

- class participation, consisting of informal in-class and out-of-class writing assignments and exercises, oral projects, peer-reviews, and participation in class discussions and other activities (20%)
- four writing projects, consisting of short to medium length papers (60%)
- a mid-term and a final exam (20%)

Final grades are assigned using the following scale:

	A (>92)	A ⁻ (92–90)
B ⁺ (89–87)	B (86–83)	B ⁻ (82–80)
C ⁺ (79–77)	C (76–73)	C ⁻ (72–70)
D ⁺ (69–67)	D (66–63)	D ⁻ (62–60)
	F (<60)	

Final averages are not rounded; to earn a grade of B instead of a B⁻, for example, you need a final average ≥ 83 .

Due Dates for Formal Writing Projects. Each formal writing project has a date when the assignment is due. Because I value thoughtful, well-written work more than absolute deadlines, I am willing to provide limited flexibility with respect to these due dates. Unless otherwise specified, there is no penalty for turning an assignment in late if I am still in the process of grading the assignment; however, once I finish evaluating a set of assignments, any missing work receives a grade of 0 (zero) — no exceptions. To take advantage of this policy you must consult with me before the assignment's due date and you must show evidence of having made significant progress.

Office Hours. Regularly scheduled office hours for this semester are as follows:

Monday 2-3, Tuesday 9-11, Thursday 12:30-1:30, Friday 9-10

If you cannot take advantage of these office hours, you may schedule an appointment or simply drop by and see if I am available.

Attendance. Regular attendance is required and unexcused absences will affect my evaluation of your class participation.

Academic Resource Center. The Academic Resource Center (ARC), which is located in 115 Asbury Hall, provides peer-to-peer tutoring in the areas of writing (W-Center), speaking and listening (S-Center), and quantitative reasoning (Q-Center). Take advantage of this resource as you work on writing assignments for this course. Tutors can offer assistance with clarify your thesis, organizing and developing your argument, and finding your voice; they also can provide help with surface-level issues, such as punctuation, spelling, and grammar. To schedule a tutor appointment, contact the ARC at extension 4039.

Academic Integrity. Please review the university's academic integrity policy, which is available in the on-line Student Handbook. In addition to Lipson's book, referenced above, we will discuss academic integrity during class, with a particular emphasis on understanding and avoiding plagiarism. The penalties for violating the university's academic integrity policy are serious; please consult with me if you have any questions regarding the policy or your work.

Disability Services. DePauw University is committed to providing equal access to academic programs and University administered activities with reasonable accommodations to students with disabilities, in compliance with the Americans with Disabilities Act and Amendments (ADAAA). Any student who feels she or he may need an accommodation based on the impact of a disability or learning challenge is strongly encouraged to contact Pamela Roberts, Coordinator of Student Disability Services for further information on how to receive accommodations and support. Student Disability Services is located at 101 E. Seminary St., 765-658-6267.