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1-2015

### CHMY 302E.01: Ethics, Science Writing, and Chemistry Literature

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#### Recommended Citation

Laws, William R., "CHMY 302E.01: Ethics, Science Writing, and Chemistry Literature" (2015). *Syllabi*. 2649.  
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**Instructor**

William R. Laws, Chem304, 243-4107, [bill.laws@umontana.edu](mailto:bill.laws@umontana.edu)

Office hours: open door MWF or schedule a specific time

**Course Goals**

This course provides instruction and experience in effective communication and ethical practice in science. Topics to be covered include:

- the three main western ethics theories
- the role of ethics in science
- the presentation of scientific information in different formats to different audiences
- the effective use of library and internet databases

**Course Textbooks**

1. Michael J. Sandel, "Justice: What's the Right Thing To Do?", Farrar, Straus, and Giroux, New York, 2010.
2. "The ACS Style Guide. Effective Communication of Scientific Information", 3<sup>rd</sup> ed., Coghill and Garson, eds., American Chemical Society, 2006.

**Course Materials**

1. Assignments and other material will be handed out in class; most will be posted on Moodle.
2. Online lectures at [www.justiceharvard.org](http://www.justiceharvard.org) by Michael J. Sandel, Dept. of Government, Harvard University, viewed out of class may help you participate in the discussions on ethics.

**Course Content**

**A. Reading:** You will be expected to read assigned portions of the two textbooks and other material **before** the class. This information will complement the lecture topics, discussions, and writing assignments.

**B. In class:** Class time will be split into three basic categories:

1. The three standard western traditions in ethics will be presented, discussed, and compared. The insights gained will be applied to the role of ethics in science.
2. To help with the out-of-class assignments (see below), time will be spent on:
  - a. Composition, word use, formatting, etc.
  - b. Peer reviews of the out-of-class writing assignments to improve editing abilities
  - c. Library and database use
  - d. Two writing assignments: one on ethics and another on chemistry; topics to be announced in class
3. Invited experts will provide:
  - a. Information, ideas, and guidelines for two out-of-class writing assignments
  - b. Overviews of writing patents and research grants and publishing scientific articles

**C. Out of class:** There are five writing assignments.

- A1** Text editing
- A2** Write a guide for a first-year general chemistry student on how to use a laboratory instrument
- A3** Write a resume and cover letter to apply for a job
- A4** Study a well-known case of an ethics violation in science; write an article containing an impartial summary of the case and existing critiques followed by your assessment of the ethics issues
- A5** Research a current public issue involving chemistry; write two persuasion articles: first, detail the science and ethics for your peers; and second, rewrite the first article for the general public

An excellent scientific article requires writing a series of drafts. Therefore, the following procedure will be used for each assignment:

- Except for A1, write a first draft for peer review; you will review the first draft of a classmate and fill out an evaluation form.
- Second, based on the edited first draft and a handout detailing how to edit a scientific document, rewrite the first draft to generate a second draft, which be submitted for review by Dr. Laws.
- For A4 and A5, rewrite the edited second draft; this third draft will be reviewed by Dr. Laws.

**D. Portfolio:** The portfolio (specifications to be given early in the semester) will consist of:

- all drafts of all out-of-class assignments
- all editing evaluation forms
- both in-class writing assignments
- an evaluation of the course with respect to your enhanced understanding of ethics, improved writing abilities, and acquired knowledge in obtaining scientific information

### ***Writing Criteria***

1. Details such as audience and minimum length will be given with each assignment.
2. Document format specifications; except for the A1 and A3 assignments, submit all drafts printed:
  - a. one-sided with pages numbered bottom center
  - b. double-spaced with one inch margins in Times New Roman 12-pt or Arial 11-pt fonts
  - c. only the first page with a top, right-side header consisting of your name and the assignment and draft number (e.g., John Doe, A2.d2)
3. Use paperclips - do not staple, punch binder holes, etc.
4. Drafts handed in late will not receive full credit.
5. All drafts for all assignments will be required for your portfolio.

### ***The Writing Center***

Tutors can assist you, free of charge, with your assignments. Make an appointment and access resources at [www.umt.edu/writingcenter](http://www.umt.edu/writingcenter). Drop-in tutoring is available during library hours.

### **Attendance**

1. Make every effort to attend all classes. As stated below, your final grade will be determined in part by your participation in:
  - a. the discussions of the ethics concepts
  - b. the writing and library workshops
  - c. the peer reviews
  - d. the in-class writing assignments
2. Missing classes will affect your ability to:
  - a. include ethics in the two major out-of-class writing assignments
  - b. improve your writing and editing skills
3. Contact Dr. Laws prior to missing a class or immediately after an illness.

### **Evaluation**

1. Your grade will be based on your in-class work (50%) and the final portfolio (50%).
2. The in-class evaluation will relate to:
  - a. your participation in the discussions on ethics
  - b. your effort and ability to improve as a peer reviewer
  - c. your participation in the writing and library workshops
  - d. your interactions with the invited experts
3. The portfolio will be judged by:
  - a. your ability to improve each draft of assignments A2-A5
  - b. your improvement in all scientific writing skills over the entire semester
  - c. the quality of the science and incorporation of ethics in A4.d3 and A5.d3
4. Each student will meet by appointment with Dr. Laws during the week of March 23 to discuss their progress in the course.

### **Disability**

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students](#). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. Dr. Laws will work with you and Disability Services to provide an appropriate modification.

### **Legal Notice**

This syllabus is not a contract; it is an initial outline of course policies, requirements, and schedule. Changes may be made during the semester at the discretion of Dr. Laws.

### **Academic Misconduct**

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and a disciplinary sanction by the University. All students must be familiar with the Student Conduct Code at <http://life.umt.edu/vpsa/studentconduct.php>.

**CHMY302E - Sp15 Schedule**

Week	Date	Topic	Preparation	Assignments	
				Given	Due
1	T Jan. 27	1. introduction 2. grammar, punctuation, etc.			
	R Jan. 29	1. <b>G. McCaffrey</b> : Writing Center 2. technical writing and wording	ACS: pp. vii-viii, 27-58, 105-128, 135-162 bring ACS		
2	T Feb. 3	editing workshop	ACS: pp. 233-249, 255-283, 287-327 bring ACS, ESD*, editing handouts	<b>A1</b>	
	R Feb. 5	1. <b>QUIZ</b> on editing 2. introduction to ethics	bring ACS, ESD*, editing handouts see A and B below; Sandel chap.1		
3	T Feb. 10	utilitarianism	Sandel, chap. 2	<b>A2</b>	<b>A1</b>
	R Feb. 12	consequentialism	Sandel, chap. 2	<b>A3</b>	
4	T Feb. 17	<b>Career Services</b> : job application			
	R Feb. 19	peer review A2.d1 and A3.d1	bring ACS, ESD*, editing handouts	<b>A4</b>	<b>A2.d1</b> <b>A3.d1</b>
5	T Feb. 24	deontology	Sandel, chap. 5		
	R Feb. 26	deontology	Sandel, chap. 5		<b>A2.d2</b>
6	T Mar. 3	virtue ethics	Sandel, chap. 8		
	R Mar. 5	virtue ethics	Sandel, chap. 8		<b>A3.d2</b>
7	T Mar. 10	1. review traditional ethics 2. ethics in science	See C, D, and E below		
	R Mar.12	peer review A4.d1	bring ACS, ESD*, editing handouts		<b>A4.d1</b>
8	T Mar. 17	in-class writing assignment B1: ethics topic TBA	<b>class in Chem107</b> ; bring Sandel, ACS, ESD*, editing handouts	<b>B1</b> <b>A5</b>	
	R Mar. 19	ethics in science	See D and E below		
9	T Mar. 24	<b>N. White</b> : public writing			<b>A4.d2</b>
	R Mar. 26	SciFinder	<b>class in MLSLC</b>		<b>A5.p</b>
10	T Mar. 31	<b>Spring Break</b>			
	R Apr. 2				
11	T Apr. 7	<b>B. Brown</b> : science databases	<b>class in MLSLC</b>		
	R Apr. 9	<b>B. Brown</b> : science databases	<b>class in MLSLC</b>		
12	T Apr. 14	numbers, units, figures, tables	ACS: pp. 203-249, 343-374		
	R Apr.16	basics of a peer-reviewed scientific journal article	read journal article handed out		

13	T Apr. 21	peer review A5a.d1, A5b.d1	bring ACS, ESD*, editing handouts		<b>A5a.d1 A5b.d1</b>
	R Apr. 23	<b>S. Ross:</b> publishing in a scientific journal	ACS: pp. 3-26, 71-76		
14	T Apr. 28	<b>B. Bowler:</b> grant writing			
	R Apr. 30	<b>J. Kyle:</b> patents	ACS: pp. 77-86		<b>A5a.d2 A5b.d2</b>
15	T May 5	in-class writing assignment: chemistry topic TBA	<b>class in Chem107;</b> bring ACS, ESD*, editing handouts	<b>B2</b>	
	R May 7	TBA			
<b>final</b>	<b>F May 14</b>	<b>portfolio due by 1:00 pm</b>			

\* ESD: Editing a Science Document

- A. Read "Overcoming Philoso-phobia: A Short Introduction to Ethics for the Science Debates" at:  
<http://www.umt.edu/ethics/Debating%20Science%20Program/Short%20courses/Philosophobia/default.php>
- B. Read sections 1 and 2, including case study and questions, from "Free Research Ethics Online Course" at:  
<http://www.umt.edu/ethics/courses/researchethics/default.php>
- C. The three ethics traditions that have been covered will be discussed and contrasted with respect to each other. Therefore, prepare notes on the positive and negative points of each theory.
- D. Read "What is Ethics in Research & Why is it Important?" at:  
<http://www.niehs.nih.gov/research/resources/bioethics/whatis/>
- E. Go to the site below and be prepared to discuss the following cases in terms of the three ethics traditions covered and the provided options: Category 1, conflicting criteria; Category 2, prevaricating postdoc; Category 3, dangerous doc; and Category 4, between bribery and gratuity.  
<http://www.acs.org/content/acs/en/about/governance/committees/ethics/ethics-case-studies.html>

### ***Invited Experts***

- Dr. Bruce E. Bowler, Dept. of Chemistry and Biochemistry  
 Grant writing: stylistic, substantive, and ethics in the preparation and review of grant proposals
- Dr. Barry N. Brown, Mansfield Library  
 Reference management, citation indexes, and comprehensive science literature searches
- Jean Kyle, Esq., School of Law  
 Protection of intellectual property, rights conveyed by a patent, the criteria of patentability, the process of obtaining a patent, and the ethics of intellectual property protection and use
- Dr. Gretchen McCaffrey, Associate Director, The Writing Center  
 Function and capabilities of the Writing Center, tutor availability and scheduling
- Dr. J.B. Alexander (Sandy) Ross, Dept. of Chemistry and Biochemistry, Dean of the Graduate School, and Executive Editor for Analytical Biochemistry  
 Scientific publishing, authors, journals, readership, submission, reviewers, editors, future of scientific journals, and ethics in publishing
- Dr. Nadia White, School of Journalism  
 Presentation of scientific ideas, accomplishments, and goals to the public reader; practice of ethics in scientific journalism