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

William R. Laws

University of Montana, Missoula, bill.laws@umontana.edu

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Instructor

William R. Laws, Chem304, 243-4107, 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", 3rd ed., Coghill and Garson, eds., American Chemical Society, 2006.

Course Materials

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

The Writing Center

Tutors can assist you, free of charge, with your assignments. Make an appointment and access resources at www.umt.edu/writingcenter. Drop-in tutoring is available during library hours. Details will be provided by Dr. McCaffrey in class on September 3.

Attendance

1. The class schedule is in Appendix D.
2. Make every effort to attend each class. As stated below, your final grade will be determined in part by your participation during class.
3. Missing classes can lose points (see below) and will affect your ability to:
 - a. include ethics in writing assignments
 - b. improve your writing and editing skills
4. Each student will meet by appointment with Dr. Laws during the week of October 19 to discuss their progress in the course.
5. Contact Dr. Laws prior to missing a class or immediately after an illness.

Course Content

A. Reading: You are expected to read assigned portions of the two textbooks and other material **before** 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 discussed and compared. The insights gained will be applied to the role of ethics in science.
2. Aspects to help with the out-of-class assignments (see below), including:
 - a. Composition, word use, formatting, etc.
 - b. Improved editing abilities by doing peer reviews of the out-of-class assignments
 - c. Use of library and databases
 - d. One writing assignment on ethics and another on chemistry; topic announced at the beginning of each class
 - e. Quiz on writing skills and editing
3. Invited experts will provide:
 - a. Guidelines for out-of-class writing assignments
 - b. Overviews of patents and research grant proposals, and publishing research articles

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

- Format specifications and other criteria are in Appendix A.
- Excellent scientific articles require writing a series of edited drafts; the procedure in Appendix B will be used.

A1 Edit a poorly-written text, and then write the next draft.

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 Write an article (1) containing an impartial summary of a well-known case of ethics violation in science and (2) your assessment of the ethics issues.

A5 Research a current public issue involving chemistry and write two articles: (1) detailing the chemistry and issues, persuade your peers about your views; and (2) rewrite the first article for the general public.

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
- the quiz and in-class writing assignments
- a rubric containing an evaluation of the course with respect to your enhanced understanding of ethics, improved writing abilities, and acquired knowledge in obtaining scientific information

Evaluation

1. Your grade will be based on in-class and out-of-class factors.
2. The in-class evaluation will relate to your:
 - a. participation in the ethics discussions
 - b. effort and ability as a peer reviewer
 - c. participation in the writing and library workshops
 - d. performance on the quiz and two writing assignments (B1 and B2)
 - e. interactions with the invited experts
3. The out-of-class work will be judged by your:
 - a. ability to improve each draft
 - b. improvement in all writing skills over the entire semester
 - c. incorporation of appropriate ethics discussion in A4 and quality science in A4 and A5
 - d. presentation of the portfolio and its rubric
4. Your performance during the semester can be assessed based on the point system given in Appendix C. This system will be a major factor used by Dr. Laws to determine your final grade.

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://www.umt.edu/vpsa/policies/student_conduct.php.

Appendix A: Out-of-Class Assignment Writing Criteria

1. Drafts are printed using these format specifications:
 - a. pages one-sided, double-spaced, and with one inch margins
 - b. pages numbered bottom center
 - c. font of Times New Roman 12-pt or Arial 11-pt
 - d. header at the top, right-side **of only the first page** containing your name and the assignment and draft number (e.g., John Doe, A2.d2)
2. Format specifications differ for the A3 assignment and will be provided.
3. Details such as audience and minimum length are given with each assignment.
4. Draft pages are attached with paperclips - do not staple, punch binder holes, etc.
5. Drafts handed in late will not receive full credit; see Appendix C.

Appendix B: Out-of-Class Assignment Draft Writing and Editing Procedure

1. The first draft (d1) of all assignments (except A1) is peer reviewed in class.
 - a. The reviewer also fills out an Evaluating Scientific Writing (ESW) form to help specify points that need to be considered.
 - b. The ESW form is given to the author with the edited d1.
2. The author writes a second draft (d2) using:
 - a. The edited d1 and its ESW form
 - b. The general points stated in the Improving Science Documents (ISD) handout (on Moodle)
3. The second draft is submitted to Dr. Laws with the peer-reviewed d1 and its ESW form.
 - a. Dr. Laws reviews d2.
 - b. The inclusion of the edited d1 and its ESW form enables Dr. Laws to:
 - i. Comment on the improvements in your first drafts (e.g., is the preciseness, organization, word use, grammar, etc., in A4.d1 better than that in A2.d1?)
 - ii. Grade and comment to the peer reviewer on their editing and ESW form
 - c. The reviewed d2 with an ESW form and the peer-reviewed d1 and its ESW form are returned.
4. The assessments of previous assignments should be used to improve (1) your editing capabilities and (2) the quality of your next d1.
5. The A4 and A5 assignments require a third draft.
 - a. The evaluation of d2 and the ISD should be used.
 - b. The third draft is included in the portfolio for review by Dr. Laws.
6. The overall enhancements in your writing and editing abilities during the semester are considered in final grade determination.

Appendix C: Point System - to help evaluate your performance during the semester

Topic	Points ¹⁻³	Considerations - includes meeting the specifics given for each topic and assignment
Ethics	40	See table below for point distribution
A1 ⁴⁻⁶	5	Editing text (considered as A1.d1), rewriting to d2
A2 ^{5,6}	8	Complexity of instrument, draft improvements
A3 ^{5,6}	6	Resume (content, organization), letter (necessary information, format), correlation of job description and your credentials, draft improvements
A4 ⁵⁻⁷	16	Impartial summary, ethics section, references, improved d1, draft improvements
A5 ⁵⁻⁷	25	Public issue, peer article (sufficient details in science and views of others, persuasiveness, references), public article (reduction in complexity), improved d1, draft improvements
B1 ⁵	5	Appropriate to problem given, use of references
B2 ⁵	6	Appropriate to problem, use of references, improvement compared to B1
Quiz	6	Grammar section (3 points), editing section (3 points)
Databases	9	Participation in demonstrations; 3 points for each class
Peer Review ^{4,8}	14	Editing and your improvement: 2 points for A2 and A3, 4 points for A4, and 6 points for A5
Portfolio ⁵	10	Presentation, rubric

¹ Total points: 150.

² Bonus points for invited experts: 2 points when present; 3 or 4 points based on your interaction with the speaker.

³ **Late drafts: All drafts of A1-A5 assignments handed in late receive a 1 point deduction per class.**

⁴ Editing: based on the four main tasks given in the Improving Science Documents (ISD) handout.

⁵ Writing: assignment content, preciseness, organization, word use, grammar, length, etc.

⁶ Draft improvements: based on rewriting concepts given in ISD.

⁷ Improved d1: enhanced quality and completeness of this d1 compared to previous d1s; requires less editing.

⁸ **Peer review absence: -1 for that peer review.**

Distribution of Points for the Four Ethics Areas: Utilitarianism, Deontology, Virtue, and Science

- There are two classes for each of the four areas.
- There is a maximum of 10 points for each area. *Example:* four points in 1st class and three points in 2nd class yield seven points for that area of ethics.
- Participation reflects on your level of contribution to the discussions.
- There are many ways you can contribute; some are:
 1. Presenting logical thoughts
 2. Listening to and commenting on the ideas of others
 3. Introducing reasonable hypothetical or real situations
 4. Asking and answering questions
 5. Getting other students involved

Participation	Points per class per ethics area
Very good	5
OK	4
Fair	3
Some	2
None	1
Absent	-1

- Your participation (points) will be a relative evaluation of your overall contributions to the discussions.
- None: you attended class but did not participate; very good: you made many significant contributions.
- All students must have an equal opportunity to participate. Dominating discussions will have a negative effect on your evaluation. Dominating and leading are different concepts.

Appendix D: CHMY302E - Au15 Schedule

Week	Date	Topic	Preparation	Assignments	
				Given	Due
1	T 9/1	1. introduction to class 2. review of grammar, etc.			
	R 9/3	1. G. McCaffrey : Writing Center 2. technical writing and wording	ACS ¹ : pp. vii-viii, 27-58, 105-128, 135-162 bring ACS ¹	A1	
2	T 9/8	editing workshop	ACS ¹ : pp. 233-249, 255-283, 287-327 bring ACS ¹ , ISD ² , editing handouts		
	R 9/10	introduction to ethics	see A and B below; Sandel chap.1	A2	
3	T 9/15	Career Services : resumes and cover letters for job applications		A3	A1
	R 9/17	utilitarianism	Sandel, chap. 2		
4	T 9/22	consequentialism	Sandel, chap. 2		
	R 9/24	peer review A2.d1 and A3.d1	bring ACS ¹ , ISD ² , editing handouts	A4	A2.d1 A3.d1
5	T 9/29	deontology	Sandel, chap. 5		
	R 10/1	deontology	Sandel, chap. 5		A2.d2
6	T 10/6	virtue ethics	Sandel, chap. 8		A3.d2
	R 10/8	virtue ethics	Sandel, chap. 8		
7	T 10/13	ethics in science	See C, D, and E below		
	R 10/15	peer review A4.d1	bring ACS ¹ , ISD ² , editing handouts		A4.d1
8	T 10/20	ethics in science	see C, D, and E below		
	R 10/22	in-class writing assignment B1: ethics topic TBA	class in Chem107 ; bring Sandel, ACS ¹ , ISD ² , editing handouts	B1 A5	B1
9	T 10/27	B. Brown : using science databases	class meets in MLSLC ³		A4.d2
	R 10/29	B. Brown : using science databases	class meets in MLSLC ³		A5.p ⁴
10	T 11/3	K. Sequin : using SciFinder	class meets in MLSLC ³		
	R 11/5	public writing			
11	T 11/10	QUIZ on writing and editing	bring ACS ¹ , ISD ² , editing handouts		
	R 11/12	peer review of A5	bring ACS ¹ , ISD ² , editing handouts		A5.d1
12	T 11/17	basics of writing a peer-reviewed science journal article	read journal article		
	R 11/19	S. Ross : publishing in a scientific journal	ACS ¹ : pp. 3-26, 71-76		

13	T 11/24	B. Bowler: grant writing			A5.d2
	R 11/26	Thanksgiving - no class			
14	T 12/1	J. Kyle: patents	ACS ¹ : pp. 77-86		
	R 12/3	TBA			
15	T 12/8	in-class writing assignment: chemistry topic TBA	class in Chem107 ; bring ACS ¹ , ISD ² , editing handouts	B2	B2
	R 12/10	TBA			
final	F 12/18	portfolio due by 1:00 pm			

¹ The ACS Style Guide. Effective Communication of Scientific Information

² ISD: Improving Science Documents

³ Mansfield Library Student Learning Center, ML283

⁴ preliminary ideas for instructor approval

- 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 the 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
- Kevin Seguin, Chemical Abstracts Service (CAS), a division of ACS
Account Consultant - West Region, SciFinder trainer