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

Course Materials
1. Assignment details and in-class materials will be handed out in class and 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 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
   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 writing assignments
   b. overviews of writing 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 resumes and cover letters for two different job descriptions

A4 study a well-known case of an ethics violation in science; write a summary of the case and existing critiques, and include your concerns with respect to the ethics

A5 this has two parts: a) write a persuasion article, detailing the science and applying ethics to your arguments, concerning a current public issue involving chemistry; and b) write this 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:

- First, you will submit a draft (e.g., A2.d1) for peer review; you will edit the draft of a classmate.
- Second, based on the edited first draft, you will submit a second draft (e.g., A2.d2) for review by Dr. Laws.
- For A4 and A5, you will include a third draft (e.g., A4.d3) in the portfolio using the edited second draft.

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. Unless stated otherwise, submit drafts for all out-of-class assignments printed:

   a. double-spaced and one inch margins in Times New Roman 12-pt or Arial 11-pt fonts
   b. pages numbered bottom center
   c. with the first page having a top, right-side header consisting of your name and the assignment and draft number (e.g., John Doe, A3.d2)

3. Use paperclips - do not staple, punch binder holes, etc.

4. Drafts handed in late will not receive full credit.

5. Remember that all drafts for all assignments will be required for your portfolio. It is advised to keep a complete electronic record of all drafts of each assignment.

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.
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 two writing assignments
   b. improve your writing 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. Each student will meet with Dr. Laws to discuss their progress in the course. The meeting will be by appointment during the week of October 14.
3. The in-class evaluation will relate to:
   a. your participation in the discussions on ethics
   b. your effort and ability as a peer reviewer
   c. your participation in the writing and library workshops
   d. your interactions with the invited experts
4. The portfolio will be judged by:
   a. your ability to improve each draft of each assignment
   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

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.
### Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Preparation</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T Aug. 26</td>
<td>1. introduction to class&lt;br&gt;2. grammar, punctuation, etc.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>R Sept. 4</td>
<td>introduction to ethics: utilitarianism, deontology, and virtue ethics</td>
<td>1. see A and B below&lt;br&gt;2. Sandel, chap. 1</td>
<td>A2</td>
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<tr>
<td>3</td>
<td>T Sept. 9</td>
<td>utilitarianism</td>
<td>Sandel, chap. 2</td>
<td>A1.d2</td>
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<tr>
<td></td>
<td>R Sept. 11</td>
<td>utilitarianism</td>
<td>Sandel, chap. 2</td>
<td></td>
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<tr>
<td>4</td>
<td>T Sept. 16</td>
<td>J. Burham of Career Services: resumes, cover letters</td>
<td></td>
<td>A3</td>
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<tr>
<td></td>
<td>R Sept. 18</td>
<td>deontology</td>
<td>Sandel, chap. 5</td>
<td></td>
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<tr>
<td>5</td>
<td>T Sept. 23</td>
<td>deontology</td>
<td>Sandel, chap. 5</td>
<td>A2.d1</td>
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<tr>
<td></td>
<td>R Sept. 25</td>
<td>peer reviews of A2 and A3</td>
<td>bring ACS</td>
<td>A3.d1</td>
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<tr>
<td>6</td>
<td>T Sept. 30</td>
<td>virtue ethics</td>
<td>Sandel, chap. 8</td>
<td>A4</td>
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<tr>
<td></td>
<td>R Oct. 2</td>
<td>virtue ethics</td>
<td>Sandel, chap. 8</td>
<td>A2.d2</td>
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<tr>
<td>7</td>
<td>T Oct. 7</td>
<td>comparing the traditional ethics concerns</td>
<td>see C below</td>
<td>A3.d2</td>
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<tr>
<td></td>
<td>R Oct. 9</td>
<td>ethics in science</td>
<td>see D and E below</td>
<td></td>
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<tr>
<td>8</td>
<td>T Oct. 14</td>
<td>1. ethics summary&lt;br&gt;2. in-class writing assignment B1: topic on ethics TBA</td>
<td>1. class meets in Chem107&lt;br&gt;2. review ethics reading and class discussions&lt;br&gt;3. bring Sandel and notes</td>
<td>B1 B1</td>
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<tr>
<td></td>
<td>R Oct. 16</td>
<td>N. White: presenting science for the public reader</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td>T Oct. 21</td>
<td>peer review of A4</td>
<td>bring ACS</td>
<td>A5 A4.d1</td>
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<td></td>
<td>R Oct. 23</td>
<td>basics of a peer-reviewed scientific journal article</td>
<td>read journal article</td>
<td></td>
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<tr>
<td>10</td>
<td>T Oct. 28</td>
<td>B. Brown: searching science databases and processing results</td>
<td>class meets in MLSLC</td>
<td>A4.d2</td>
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<tr>
<td></td>
<td>R Oct. 30</td>
<td>B. Brown: searching science databases and processing results</td>
<td>class meets in MLSLC</td>
<td></td>
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<td>11</td>
<td>T Nov. 4</td>
<td>Election Day - no class</td>
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<td>R Nov. 6</td>
<td>SciFinder</td>
<td>class meets in MLSLC</td>
<td></td>
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</table>
Veteran’s Day - no class
S. Ross: publishing in a scientific journal
ACS: pp. 3-26, 71-76
A5.d1
peer review of A5
bring ACS
B2
B2

Grant writing: stylistic, substantive, and ethics in the preparation and review of grant proposals

Reference management, citation indexes, and comprehensive science literature searches

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

Scientific publishing, authors, journals, readership, submission, reviewers, editors, future of scientific journals, and ethics in publishing

Presentation of scientific ideas, accomplishments, and goals to the public reader, and ethical practice in scientific journalism