

INTEG 375: Special Topics
SCIENCE, SOCIETY, & VALUES
WINTER 2012; T, TH 1:00-2:20PM; EV1-2069

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Office hours: Tues. 2:30-3:30pm & Wed. 1:30-2:30pm

Course Description

In this course, we will consider the interplay between moral, social, and political values on the one hand, and the production and dissemination of scientific knowledge on the other. Through careful reading and in-class discussion, we will address the following questions:

- What is the proper role of values in scientific research?
- What values are or should be driving the distribution of research efforts, the translation of findings in popular media, or the application of scientific knowledge in creating policy?
- Are there certain kinds of scientific research that should not be pursued, such as that which has the potential to harm marginalized groups of people?
- What responsibilities do various stakeholders have (e.g., scientists, journalists, policy makers) in obtaining, translating and applying new knowledge?

To address these questions, we'll look at recent work in philosophy of science, science studies, sociology, science journalism, and science policy. We'll take a broad view of science, but most of our examples will be drawn from the biological, biomedical, and behavioral sciences.

The course will be run in a seminar style with informal lectures and lots of discussion. In the last part of the course, you will have the opportunity to apply what you've learned to a real-world example of your choosing (from any area of science, related to any of the course topics).

Course Objectives

By the end of this course you should be able to do the following:

Comprehension	<ul style="list-style-type: none">• Explain different types of values and how they can influence the <u>production</u> and <u>dissemination/use</u> of scientific knowledge
Applying/analyzing:	<ul style="list-style-type: none">• Identify values embedded in popular and technical reports• Discuss responsibilities of various stakeholder groups• Apply your knowledge to real-world cases of scientific research
Evaluating/synthesizing:	<ul style="list-style-type: none">• Articulate and justify your views regarding course topics• Reflect on the role of your own values in the views you construct• Draw connections between values in science and in society
Transferrable skills:	<ul style="list-style-type: none">• Practice critical thinking and written/oral communication skills through participation, reflective writing, and formal presentation• Help to create a respectful and engaging learning community by collaborating with others and providing constructive feedback

Expectations for this Course

This course is intended to be reading-, writing-, and participation-intensive.

We are all expected to:

- Attend every class & be on time
- Be prepared for lecture & participate
- Listen attentively when others speak

You are also expected to:

- Submit assignments on time, using the appropriate drop-box on ACE and having removed any identifying marks
- Carefully consider instructor feedback on written and oral work
- Use scheduled office hours for consultation (or make an appointment), and email for less substantive questions

You can also expect me to:

- Provide directions for each assignment at least ten days in advance and allow time for students' questions in class
- Provide timely and helpful feedback on participation and course assignments
- Be available during office hours and via email; respond to emails by the end of the next business day

Required Reading Material and Submitting Assignments: Learn

There are no required textbooks for this course; instead, all readings will be posted on Learn. Please download, print, and bring the readings with you to class. *Note: changes may be made to the schedule of topics or readings based on student interest; any changes will be announced in class and on Learn.*

Grading/Evaluation

All graded work will be evaluated out of 100 points in 5-point increments (e.g., 75, 80, 85), though "in-between" grades (e.g., 75/80) will be assigned where appropriate. Each assignment carries a different weight in your course grade. *Note: there is no final exam for this course.*

Participation	15%	
<i>Attendance, discussion, in-class activities, peer feedback</i>		Throughout the course
Assignments	45%	
<i>Response paper #1</i>	10%	Due Tues, Jan 24
<i>Response paper #2</i>	12.5%	Due Thurs, Feb 9
<i>Creative assignment</i>	12.5%	Due Thurs, Feb 28
<i>Debate</i>	10%	On Tues, Mar 13
Final Project	40%	
<i>Proposal</i>		Due Thurs, Mar 8
<i>Presentation</i>	10%	On Mar 20, 22 or 27
<i>Final paper</i>	30%	Due Wed, Apr 11

Participation (15%)

Participation is based on the following components:

- *Attendance:* I will take attendance by passing around a sign-in sheet – *you are responsible for signing your name*. If you know in advance that you must miss a class, please email me. You are allowed **2 unexcused absences** – additional absences will each result in a 5-point deduction from your participation grade. Frequent late arrivals will also lower your grade. Students with perfect attendance records will receive bonus marks for participation.
- *Discussion:* You will be expected to participate in class, both by being an active listener when others are speaking, and by offering thoughtful, relevant and respectful contributions. You may also post comments, questions or replies on the course website; this can improve your participation grade but cannot completely make up for a lack of in-class discussion.
- *In-class assignments/activities:* Throughout the course, there may be a few small activities or assignments (e.g., discussion questions for readings). Some of these will be assessed on a check/check-plus/check-minus basis and will contribute to your participation grade.
- *Peer feedback:* You will be asked to provide feedback on other students' presentations, and to assess your own presentation, noting what worked well and what could be improved.

Assignments (45%)

Below are brief descriptions of each of the assignments (detailed instructions will be provided at least one week in advance of the due date). Unless noted otherwise, written assignments are due by the start of class and must be submitted in the appropriate drop-box on Learn.

- *Response papers (22.5% total):* Write two response papers – the first (10%) should be approximately 1000 words, the second (12.5%) up to 1500 words – on any of the topics covered in class up to that point (see assignment instructions for details)
- *Creative assignment (12.5%):* Create your own assignment that identifies and compares the values in the production and dissemination of scientific knowledge. For example, you might find a popular report of a scientific finding, along with one of the original journal articles in which the findings were reported, and compare them in terms of the values involved. Your assignment should be equivalent to about 1000 words.
- *In-class debate (10%):* During the second half of the course, we'll read and discuss papers on scientific responsibility. I will then divide the class into two for an in-class debate. Each group will receive one grade based on how well they prepare for and engage in the debate; individual grades may be given for either outstanding or unsatisfactory contributions.

Final Project (40%)

Identify, research, and analyze a real-world issue, demonstrating how it relates to course topics.

1. *Project proposal:* Write a one- to two-page proposal for your project, including a brief description, some of the questions you intend to address, and some of your external sources. Your proposal will be graded on a check-minus/check/check-plus basis.
2. *Presentation of research project (10%):* Give an in-class presentation of your project (about 15 min.), and lead a short discussion about it. Provide an abstract at least 2 days in advance.
3. *Final paper (30%):* Write a final paper of 3000 to 3500 words (about 12 pages, double-spaced) on your topic. Specific directions will be handed out before Reading Week.

Late Policy

Assignments are due at by the start of class on the date specified, unless otherwise noted. There will be a 5-point penalty for each day or part of a day an assignment is late, including weekends. *You will be given a total of **one grace day** to use for a written assignment of your choosing.*

Claiming Assignments

Most assignments will be handed back via the dropbox on Learn; any paper assignments will be handed back in class. Unclaimed paper assignments will be retained for one month after grades are official in Quest, after which they will be destroyed in compliance with UW's confidential shredding procedures.

◆ **Note for students with disabilities:** The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term. **[Note: if you even think this **might** apply to you, I strongly encourage you to speak with someone in OPD in Needles Hall 1132 as soon as possible.]**

◆ **Religious Observances:** Please inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

◆ **Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. www.uwaterloo.ca/academicintegrity/

◆ Students who are unsure what constitutes an academic offence are requested to visit the on-line tutorial at <http://www.lib.uwaterloo.ca/ait/>

◆ **Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact your Undergraduate Advisor for details.

◆ **Discipline:** A student is expected to know what constitutes academic integrity, to avoid committing academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties, check Guidelines for Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm

◆ **Appeals:** A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 - (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm

Tentative Course Schedule: Topics, Readings, and Assignments

Day	Date	Topics/Activities	Readings (#pages)	Assignments
Tues	Jan 3	Course overview		
Thurs	Jan 5	Ethics Primer	Fieser (~5)	
Tues	Jan 10	Value-Free Science?	Dupré, Kincaid & Wylie (20)	
Thurs	Jan 12	Types & Roles of Values	Longino, ch. 1 & 3 (37)	
Tues	Jan 17	Rejecting the Value-Free Ideal	Douglas (17)	
Thurs	Jan 19	Democratic science	Kitcher (6)	
Tues	Jan 24	Democratic science	Kitcher (19)	Response paper #1
Thurs	Jan 26	Potentially harmful research	Buss, ch. 2 OR 3 (35)	
Tues	Jan 31	Potentially harmful research	Dupré, ch. 3 (26)	
Thurs	Feb 2	Potentially harmful research	Dupré, ch. 4 (12); Kaighobadi (4)	
Tues	Feb 7	Potentially harmful research	Summers controversy (26)	
Thurs	Feb 9	Science & the media: Public Understanding of Science	Hilgartner (16); Silverstone (5)	Response Paper #2
Tues	Feb 14	Science & the media: Journalism	Robbins (7)	
Thurs	Feb 16	Science & policy: Citizen-Scientist	Kitcher (5); Schneider (17)	
Tues	Feb 28	Synthesis/integration		Creative Assgn.
Thurs	Mar 1	Scientific responsibility	TBD	
Tues	Mar 6	Academic freedom & responsibility	Hunt (8); Gottfredson (9)	
Thurs	Mar 8	(Prepare for Debate)		Project proposal
Tues	Mar 13	In-class debate		In-class Debate
Thurs	Mar 15	Debate follow-up		
Tues	Mar 20	Student presentations	Student abstracts	<i>Presentations</i>
Thurs	Mar 22	Student presentations	Student abstracts	<i>Presentations</i>
Tues	Mar 27	Student presentations	Student abstracts	<i>Presentations</i>
Thurs	Mar 29	Course wrap-up		
Wed	Apr 11			Final paper due

Reading List (subject to change):

- Buss, David M. (1995), *The Evolution of Desire: Strategies of Human Mating*. New York: Basic Books.
- Douglas, Heather (2007), "Rejecting the Ideal of Value-Free Science", in John Dupré, Harold Kincaid, and Alison Wylie, eds., *Value-Free Science? Ideals and Illusions*. New York: Oxford University Press, pp. 120-139.
- Dupré, John (2001), *Human Nature and the Limits of Science*. New York: Oxford University Press.
- Dupré, John, Harold Kincaid, and Alison Wylie (2007), "Introduction", in John Dupré, Harold Kincaid, and Alison Wylie, eds., *Value-Free Science? Ideals and Illusions*. New York: Oxford University Press, pp. 3-26.
- Fieser, James (2009), "Ethics", *Internet Encyclopedia of Philosophy* (June 29, 2003; revised May 10, 2009), URL = <<http://www.iep.utm.edu/ethics/>>
- Gottfredson, Linda S. (2010), "Lessons in Academic Freedom as Lived Experience", *Personality and Individual Differences*, 49, pp. 272-280.
- Hilgartner, Stephen (1990), "The Dominant View of Popularization: Conceptual Problems, Political Uses", *Social Studies of Science*, 20(3), 519-539.
- Hunt, Earl (2010), "The Rights and Responsibilities Implied by Academic Freedom", *Personality and Individual Differences*, 49, pp. 264-271.
- Kaighobadi, Farnaz, Todd K. Shackelford, and David M. Buss (2010), "Spousal Mate Retention in the Newlywed Year and Three Years Later", *Personality and Individual Differences*, 48, pp. 414-418.
- Kitcher, Philip (2001), *Science, Truth, and Democracy*. New York: Oxford University Press.
- Kitcher, Philip (2004), "Responsible Biology", *Bioscience*, 54(4), pp. 331-336.
- Kitcher, Philip (2010), "Essay Review: The Climate Change Debates", *Science*, vol. 328, pp. 1230-1234.
- Longino, Helen E. (1990), *Science as Social Knowledge*. Princeton University Press, pp. 3-15.
- Pinker, Steven (2005), "The Science of Difference", *The New Republic Online*. URL = <http://pinker.wjh.harvard.edu/articles/media/2005_02_14_newrepublic.html>
- Schneider, Stephen H. (2000), "Is the Citizen-Scientist an Oxymoron?", in Daniel Lee Kleinman, ed. *Science, Technology, and Democracy*. Albany: State University of New York Press.
- Silverstone, Roger (1991), "Communicating Science to the Public", *Science, Technology, & Human Values*, 16(1), pp. 106-110.
- Spelke, Elizabeth S. (2005), "Sex Differences in Intrinsic Aptitude for Mathematics and Science?", *American Psychologist*, 60(9), pp. 950-958.
- Summers, Lawrence H. (2005), "Remarks at NBER Conference on Diversifying the Science & Engineering Workforce", Cambridge, MA.
URL = <http://www.harvard.edu/president/speeches/summers_2005/nber.php>