

## Science and Citizens

Philosophy 271  
Winter 2012

Dr. Carla Fehr

[carla.fehr@waterloo.ca](mailto:carla.fehr@waterloo.ca)  
HH 367

### Course Description

No one can be an expert on all the facets of the science and technology research that impact our everyday lives, and our political and policy decisions. As a result, we are required to trust. This class is an investigation of when, and to what degree, this trust is justified. The goal of the course is to empower citizens to make good decisions about, and use of, scientific and technological information. The class will be a blend of philosophical literature, and scientific, government and media representations of the controversy surrounding the link between childhood vaccination and autism.

### Course Outcomes

- 1) Apply philosophical theory to scientific and technological research and information.
- 2) Gather information and learn about new scientific and technological research and information.
- 3) Evaluate scientific and technological research and information.
- 4) Use and communicate scientific and technological research and information.

### Course work

Assignment	Product	%
Initial position paper	2 pages	4
Mid-semester reflection paper 1	3 pages	7
Mid-semester reflection paper 2	3 pages	7
Mid-semester reflection paper 3	3 pages	7
Final synthesis reflection paper	5 pages	15
Twice a month Out-of-class Group Meeting	Discuss and write short assignment during meeting	18
Mid-semester group presentation	Hand in PowerPoint and text, and deliver 30 minute presentation	21
Final group project	Hand in educational materials and do presentation activity	21
		100

### Important Dates

You will receive a list of due dates during the first week of class.

## Detailed descriptions of assignments

### *Initial Position Paper*

Goal: Create a record of your views about science and technology at the beginning of the class in order to help you assess what you have learned over the semester.

Activity: You will answer a series of questions applying the material covered in the first two lectures to a documentary that we will watch and discuss in class.

### *Mid-semester reflection papers*

Goals:

- 1) Document what you have learned in one section of the course.
- 2) Reflect on whether or not, and if so how, your positions regarding scientific and technological information have changed.
- 3) Reflect on whether or not, and if so how, this section of the course has helped you achieve the course objectives.

Activities:

- 1) You will have an opportunity to discuss this paper topic with your classmates during an Out-of-class Group Meeting.
- 2) You will individually write a maximum three page paper in which you will (1) address particular questions that I will pose about that section of the course, and (2) and raise additional points that you think are important.

### *Final synthesis paper*

Goals:

- 1) Reflect on how your positions regarding the course outcomes have changed over the semester
- 2) Explore how you could transfer what you have learned from the activities and material that we covered in the course to other socially relevant scientific and/or technological cases and contexts.

Activities:

- 1) Review your Initial Position Paper, and your Mid-semester Reflection Papers for evidence of how your thinking about science and technology have changed over the semester
- 2) Discuss your paper with your Out-of-class Group.
- 3) Individually write a maximum five page paper.

### *Mid-semester Group Presentation*

Goals:

- 1) use philosophical theory to explain and evaluate the relevant information about the controversy surrounding childhood vaccinations and autism.
- 2) teach what you have learned to your peers.

Activities:

- 1) You will be assigned to one of three groups and each group will:
  - a. research the relevant material (there will be significant time devoted to this in class)
  - b. develop a Powerpoint presentation
  - c. create a handout that explains that content of the presentation

- d. check the handout and Powerpoint
- e. deliver the presentation to the rest of the class.

### *Final Group Product*

Goal: Doing something with what we have learned

Activities:

- 1) Review the Mid-semester Presentations.
- 2) Create a product to teach what you have learned over the semester to a relevant group of people.
- 3) As groups and as a class we will discuss what this product will be and how it will be assessed.
- 4) Possible products include:
  - a. An online learning module that teaches your peers what you have learned
  - b. A presentation to your peers outside of class
  - c. A presentation, or educational material, for a group of which you are a member
  - d. Something else that we come up with in class.

### **Readings**

Will be available online

### **Flow of the semester**

#### *Introduction to philosophical material and Vaccine/Autism case study*

1. Discuss John Dupre reading on science and scientism
2. View The Enigma of Autism documentary
3. Turn in Initial Position Paper

#### *Section 1: Basic philosophy of science*

1. Bootcamp: Lectures on Popper, Kuhn, and Quine
2. Group work:
  - a. Analyze two scientific papers on the link between childhood vaccination and autism using the material that we covered in Bootcamp.
  - b. Construct and give presentation
3. Meet with Out-of-class Group
4. Write Mid-semester Reflection Paper One

#### *Section 2: Situated knowledge and science institutions*

1. Bootcamp: Lectures on Wynne, Haraway and Scheman
2. Group work:
  - a. Research and analyze internet resources from anti-vaccination groups, and educational strategies of medical institutions such as the AMA using the material we covered in Bootcamp
  - b. Construct and give presentation

3. Meet with Out-of-class Group
4. Write Mid-semester Reflection Paper Two

### *Section 3: Science in the media*

1. Bootcamp: Lectures on tba
2. Group work:
  - a. research and analyze celebrity activism regarding vaccinations and autism and the science journalism of Brian Deer and using the material we covered in Bootcamp
  - b. Construct and give presentation
3. Meet with Out-of-class Group
4. Write Mid-semester Reflection Paper Three

### *Conclusion: What do we do with what we know?*

1. As a class decide if there are other theoretical resources that would be useful in this case.
2. Review past Bootcamps and presentations
3. Construct and deliver final product
4. Meet with Out-of-class Group
5. Write Final Synthesis Paper

## **General course policies**

### *Late policies*

- Reflection papers: I will only grant an extension if you request one, in writing, 48 hours before the reflection paper is due. If you are granted this extension I will accept your paper and decrease your mark by one letter grade. If you do not turn in your paper and do not make this request, I will give you a failing grade on the assignment.
- Out-of-class Group Meeting: You must attend and complete the assignment for the Out-of-class Group Meeting in order to earn a passing grade on that assignment.
- Class presentations: You must attend your class presentation.
- I will only accept documented medical or family emergency reasons for not fulfilling the requirements of the course on time.

### *Attendance*

You are expected to attend class and to be an active participant. You will be an active audience member when other groups are presenting.

### *Academic Integrity:*

- Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.
- Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs

help in learning how to avoid offences (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. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline,

<http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>

- **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, <http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>
- **Appeals:** A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>
- **Academic Integrity website (Arts):** [http://arts.uwaterloo.ca/arts/ugrad/academic\\_responsibility.html](http://arts.uwaterloo.ca/arts/ugrad/academic_responsibility.html)
- **Academic Integrity Office (University):** <http://uwaterloo.ca/academicintegrity/>

#### *Accommodation 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.

#### *Contacting the professor*

The best way to contact me is by email. I answer emails within one business day. You need to write “PHIL271” in the subject line of your email in order to get a response from me.

#### *Office hours*

I will hold regular office hours in 367 HH on Tuesdays and Thursdays between 10 and 11:30 AM. If you cannot come to those office hours, send me an email and I will be happy to make an appointment to meet with you at another time.

### **Professor’s research activities**

This is a novel way to teach a philosophical course on science and technology literacy. I would like to use this class as a philosophical and pedagogical research project to assess the effectiveness of the class’s teaching and learning strategies, at improving science literacy and scientific citizenship.

If you choose to participate in this research project I will use the assignments that you hand in as data to assess the effectiveness of the course activities at realizing the course objectives.

If you choose to participate in this research project I will not use your name or any information that might identify you in any presentation or publication of these results.

If you choose to participate in this research study, you can also (but don't have to) give me permission to contact you one year after the end of the class. This contact could be by phone or email to gather information about what you think of the course outcomes at that time. I hope that this class will have a long-term impact. I would be very grateful if I had a chance to talk to you to see if this is the case.

Your participation in this research project is completely voluntary and whether or not you participate will have no bearing on your course grade. Dr. Shannon Dea will explain and distribute informed consent forms to you while I am not in the room. She will collect these forms and keep this information private for the entire semester. I will not know whether or not you decided to participate in this research project until after I have turned in the final grades for the class. Even if you consent to be part of the research project, you can change your mind and withdraw that consent at any time by contacting Dr. Dea at 519-888-4567 extension 32778 or through email at [sjdea@uwaterloo.ca](mailto:sjdea@uwaterloo.ca).

This project has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. If you have any questions or concerns resulting from your participation in this study, please contact Dr. Susan Sykes at this office at 519-888-4567 extension 36005 or [ssykes@uwaterloo.ca](mailto:ssykes@uwaterloo.ca).

You will receive more information about this research project and about the informed consent process near the beginning of the semester.