

# PHIL 412 / 510 – (Topics in) Philosophy of Science 'Science and Values'

Winter Term 2023

Tue, Thu 12:30–1:50 pm, [Assiniboia Hall 2-02A](#)

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## A. Course overview

Different kinds of values clearly have an impact on science, however, proponents of the view that science ought to be value-free have maintained a distinction between epistemic values and social-political values, where only the former are a proper part of science. One can likewise claim that science fulfills its societal function best by scientists providing reliable knowledge without being guided by social or environmental considerations and by science being autonomous rather than politicized by external influences.

In this seminar on science and values, we will critically discuss different views on how values—including social and environmental values—can play a legitimate role in scientific practice (and without undermining scientific objectivity). The seminar will devote substantial space to feminist analyses of the biological and behavioral sciences, including the question as to whether the best response to sexist and empirically flawed views promoted by past and current science is to work towards an unbiased, value-free science or towards a science (and philosophy of science) that self-consciously endorses such social values as equity. In the context of socially responsible science and socially engaged philosophy of science, we will address how scientists and philosophers can interact with stakeholders and their value perspectives.

## B. Prerequisites

The class is organized such that background knowledge in philosophy of science is not required, though interests in the nature of science or the role of science in society are desirable.

Formal prerequisite: To enrol as an undergraduate in a 400 level PHIL course (e.g., PHIL 412), you must have previously completed two philosophy classes (incl. one class at the 200-level or higher), or obtain the instructor's permission. Feel free to contact me to get permission to enrol.

## C. Required texts

The required readings consist of journal articles and book chapters, and are listed below in Section K. A substantial part of the readings can be accessed online via our course website.

## D. Course requirements

- Oral presentation 15%
- Participation 10%
- Four brief responses 20%
- Shorter essay 20%
- Term paper outline 5%
- Term paper (final version) 30%

**Oral presentation (15%):** Every student has to give one oral presentation. Your task as a presenter is to briefly summarize this meeting's readings (highlighting points that you find particularly relevant) but primarily to start the discussion by having prepared some questions (e.g. about problematic issues in the readings). I ask you to prepare a short handout (including discussion questions) and email me a draft in advance so that I can provide comments. Contact me to sign up for a presentation on a particular class date (it is first come, first serve), where you find the schedule of presentations and still open slots on eClass.

**Participation (10%):** Attendance and active participation is important for this class. It is the responsibility of each student to come to class prepared to actively engage in discussion. Each of you will probably have picked up different points from the readings or have questions or objections, so please share them! You can also obtain participation credit by starting topics and replying to posts at the discussion forum on our eClass (including by briefly reporting on non-assigned literature from the folder with additional literature).

**Four brief critical responses (5% each):** You have to submit four brief critical responses, two by February 9, and two by March 30. A critical response is about 300 words in length, and should not just summarize the readings. Instead, it should identify an issue that was not fully clarified in the reading or raises further issues and/or your critical response to one point from the reading. A brief response has to be submitted by the beginning of the class where the reading is assigned, and if several readings are assigned for that date, the brief response can focus on one of them.

**Shorter essay (20%):** You have to write a shorter essay, which is due on Tuesday, March 14 at noon. Feel free to consult with me about the topic you want to discuss before starting with the writing of the essay, and to send me a draft of your essay to receive comments.

Approximate length of the shorter essay paper: 1200–1600 words if you are an undergraduate student (registered in PHIL 415); 2000–2400 words if you are a graduate student (registered in PHIL 510).

**Term paper (outline 5%, final version 30%):** You have to write a term paper, the final version of which is due on Friday, April 28 at noon. An outline that at least lists the issues and the literature to be discussed (but may also be a full-length term paper draft), is due on Tuesday, April 11 at noon. I will assign a grade to this draft and provide comments relevant for you to write the final version. The term paper should critically discuss an issue from our class, ideally using some of the assigned readings or some of the additional literature that I make available, where of course you are free to find and discuss further relevant literature. You are encouraged to discuss term paper topics and ideas with me before starting with the writing of the term paper outline.

Approximate length of the final version of the term paper: 1600–2400 words if you are an undergraduate student (registered in PHIL 415); 2800–4000 words if you are a graduate student (registered in PHIL 510).

## E. Course website

The course has a website at <https://eclass.srv.ualberta.ca>. A good deal of our assigned readings can be accessed from this site, and I use it to post presentation handouts and additional material. The site also contains a discussion board. Let me know if you audit the class (or upon login at <https://eclass.srv.ualberta.ca> do not see PHIL 412 / 510 under ‘My Courses’), so that I can add you to the list of online participants.

## F. Schedule of classes

<b>Jan 5</b>	<b>Background 1.</b> Pp. 3–8 of Reichenbach, <i>Experience and Prediction</i>
<b>Jan 10</b>	<b>Background 2.</b> Pp. 21–41 of Kourany, <i>Philosophy of Science after Feminism</i>
<b>Jan 12</b>	<b>Knowledge as social 1.</b> Pp. 91–95 of Chalmers, <i>Science and Its Fabrication</i> Pp. 4–6 of Bloor, <i>Knowledge and Social Imagery</i> Chapter 4 of Longino, <i>The Fate of Knowledge</i>
<b>Jan 17</b>	<b>Knowledge as social 2.</b> Pp. 128–140 of Longino, <i>The Fate of Knowledge</i> <i>Optional:</i> Section 5 of Brigandt, ‘Intelligent design and the nature of science: philosophical and pedagogical points’
<b>Jan 19</b>	<b>Enter values.</b> Chapters 6 and 7 of Kitcher, <i>Science, Truth, and Democracy</i>
<b>Jan 24</b>	<b>The inductive risk argument 1.</b> Rudner, ‘The scientist <i>qua</i> scientist makes value judgments’ Sections 1, 4 and 6 of Jeffrey, ‘Valuation and the acceptance of scientific hypotheses’ Sections I and II of Levi, ‘Must the scientist make value judgments?’
<b>Jan 26</b>	<b>Epistemic vs. non-epistemic values.</b> McMullin, ‘Values in science’
<b>Jan 31</b>	<b>The inductive risk argument 2.</b> Pp. 71–82 and 87–95 of Douglas, <i>Science, Policy, and the Value-Free Ideal</i>
<b>Feb 2</b>	<b>The inductive risk argument 3.</b> Pp. 95–114 of Douglas, <i>Science, Policy, and the Value-Free Ideal</i>
<b>Feb 7</b>	<b>The underdetermination argument 4.</b> Intemann, ‘Feminism, underdetermination, and values in science’
<b>Feb 9</b>	<b>Flawed and sexist theories 1.</b> Pp. 3–17 of Kourany, <i>Philosophy of Science after Feminism</i>  <b>Last opportunity to submit brief response #2</b>
<b>Feb 14</b>	<b>Flawed and sexist theories 2.</b> Lloyd, ‘Pre-theoretical assumptions in evolutionary explanations of female sexuality’ Pp. 127–136 of Schiebinger, <i>Has Feminism Changed Science?</i>
<b>Feb 16</b>	<b>Flawed and sexist theories 3.</b> Wylie and Hankinson Nelson, ‘Coming to terms with the values of science: insights from feminist science scholarship’

Winter term reading week

<b>Feb 28</b>	<b>Epistemic plus non-epistemic values.</b> Longino, ‘Cognitive and non-cognitive values in science: rethinking the dichotomy’
<b>Mar 2</b>	<b>A role for the non-epistemic aims of research 1.</b> Elliott and McKaughan, ‘Nonepistemic values and the multiple goals of science’
<b>Mar 7</b>	<b>A role for the non-epistemic aims of research 2.</b> Intemann, ‘Distinguishing between legitimate and illegitimate values in climate modeling’
<b>Mar 9</b>	<b>A role for the non-epistemic aims of research 3.</b> Brigandt, ‘Social values influence the adequacy conditions of scientific theories: beyond inductive risk’
<b>Mar 14</b>	<b>Whose values 1.</b> Schroeder, ‘Democratic values: a better foundation for public trust in science’ <b>Shorter essay due at noon</b>
<b>Mar 16</b>	<b>Whose values 2.</b> Chapter 7 of Elliott, <i>A Tapestry of Values</i>
<b>Mar 21</b>	<b>Socially responsible science 1.</b> Chapter 3 of Kourany, <i>Philosophy of Science after Feminism</i>
<b>Mar 23</b>	<b>Socially responsible science 2.</b> de Melo-Martín and Intemann, ‘Feminist resources for biomedical research: lessons from the HPV vaccines’
<b>Mar 28</b>	<b>Socially responsible science 3.</b> Chapter 8 of Kitcher, <i>Science, Truth, and Democracy</i>
<b>Mar 30</b>	<b>Objectivity.</b> Chapter 6 of Douglas, <i>Science, Policy, and the Value-Free Ideal</i> <b>Last opportunity to submit brief response #4</b>
<b>Apr 4</b>	<b>Socially relevant phil. of science 1.</b> Fehr and Plaisance, ‘Socially relevant philosophy of science: an introduction’
<b>Apr 6</b>	<b>Socially relevant phil. of science 2.</b> Tuana, ‘Leading with ethics, aiming for policy: new opportunities for philosophy of science’
<b>Apr 11</b>	<b>Socially relevant phil. of science 3.</b> Pp. 118–125 of Kourany, <i>Philosophy of Science after Feminism</i> <b>Term paper outline due at noon</b>

**Apr 28 Term paper due at noon**

## **G. Academic integrity and plagiarism**

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards and to uphold the policies of the university in this respect. Students are urged to familiarize themselves with the [Code of Student Behaviour](#) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the university.

The Code of Student Behaviour defines plagiarism as follows ([summary](#)):

No Student shall submit the words, ideas, images or data of another person as the Student's own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.

Students should consult the information provided by the [Office of the Dean of Students](#) regarding avoiding cheating and plagiarism in particular and academic dishonesty in general. If in doubt about what is permitted in this class, ask the instructor. An instructor or coordinator who is convinced that a student has handed in work that he or she could not possibly reproduce without outside assistance is obliged, out of consideration of fairness to other students, to report the case to the Associate Dean of the Faculty (see the [Academic Discipline Process](#)).

The library also has [information on avoiding plagiarism](#).

## **H. Sexual Violence Policy**

It is the policy of the University of Alberta that sexual violence committed by any member of the University community is prohibited and constitutes misconduct. Resources and more information can be found at <https://www.ualberta.ca/campus-life/sexual-violence>.

## **I. Student Services**

The university provides various services, including [Student Accessibility Resources](#) (exam and classroom accommodations for students with a disability, chronic health condition, or anxiety disorders), the [Academic Success Centre](#) (e.g., note-taking and writing skills), the [Centre for Writers](#) (writing support), [Health and Wellness Support](#) (including [Counselling & Clinical Services](#)), the [Sexual Assault Centre](#), and the [First Peoples' House](#), and the [Office of the Student Ombuds](#) (advice and support to students facing academic, discipline, interpersonal and financial difficulties).

## **J. Attendance, Absences, and Missed Grade Components**

Regular attendance is essential for optimal performance in any course. In cases of potentially excusable absences due to illness or domestic affliction, notify your instructor by e-mail within two days. Regarding absences that may be excusable and procedures for addressing course components missed as a result, consult the "[Attendance](#)" and "[Examinations](#)" sections of the Academic Regulations of the University Calendar. Be aware that unexcused absences will result in partial or total loss of the grade for the "attendance and participation" component(s) of a course, as well as for any assignments that are not handed in or completed as a result.

## **K. Recording of lectures**

Audio or video recording of lectures, labs, seminars, or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Recorded material is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the instructor.

## K. Bibliography of readings

- Bloor, David (1974) *Knowledge and Social Imagery*. London: Routledge.
- Brigandt, Ingo (2013) Intelligent design and the nature of science: philosophical and pedagogical points. In K. Kampourakis (Ed.), *The Philosophy of Biology: A Companion for Educators* (pp. 205-238). Dordrecht: Springer.
- Brigandt, Ingo (2013) Social values influence the adequacy conditions of scientific theories: beyond inductive risk. *Canadian Journal of Philosophy* 45: 326-356.
- Chalmers, Alan F. (1990) *Science and Its Fabrication*. Minneapolis: University of Minnesota Press.
- de Melo-Martín, Inmaculada & Intemann, Kristen (2011) Feminist resources for biomedical research: lessons from the HPV vaccines. *Hypatia* 26: 79-101.
- Douglas, Heather (2009) *Science, Policy, and the Value-Free Ideal*. Pittsburgh: University of Pittsburgh Press.
- Elliott, Kevin C. (2017) *A Tapestry of Values: An Introduction to Values in Science*. Oxford: Oxford University Press.
- Elliott, Kevin C. & McKaughan, Daniel J. (2014) Nonepistemic values and the multiple goals of science. *Philosophy of Science* 81: 1-21.
- Fehr, Carla & Plaisance, Kathryn (2010) Socially relevant philosophy of science: an introduction. *Synthese* 177: 301-316.
- Jeffrey, Richard C. (1956) Valuation and acceptance of scientific hypotheses. *Philosophy of Science* 23: 237-246.
- Intemann, Kristen (2005) Feminism, underdetermination, and values in science. *Philosophy of Science* 72: 1001-1012.
- Intemann, Kristen (2015) Distinguishing between legitimate and illegitimate values in climate modeling. *European Journal for Philosophy of Science* 5: 217-232.
- Kitcher, Philip (2001) *Science, Truth, and Democracy*. Oxford: Oxford University Press.
- Kourany, Janet (2010) *Philosophy of Science after Feminism*. Oxford: Oxford University Press.
- Levi, Isaac (1960) Must the scientist make value judgments? *The Journal of Philosophy* 57: 345-357.
- Lloyd, Elisabeth A. (1993) Pre-theoretical assumptions in evolutionary explanations of female sexuality. *Philosophical Studies* 69: 139-153.
- Longino, Helen E. (1996) Cognitive and non-cognitive values in science: rethinking the dichotomy. In L. Hankinson Nelson & J. Nelson (Eds.), *Feminism, Science and the Philosophy of Science* (pp. 39-58). Dordrecht: Kluwer.
- Longino, Helen E. (2002) *The Fate of Knowledge*. Princeton: Princeton University Press.
- McMullin, Ernan (1982) Values in science. *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association 1982* (Volume Two, Symposia and Invited Papers): 3-28.
- Reichenbach, Hans (1938) *Experience and Prediction: An Analysis of the Foundations and the Structure of Knowledge*. Chicago: University of Chicago Press.
- Rudner, Richard (1953) The scientist *qua* scientist makes value judgments. *Philosophy of Science* 20: 1-6.
- Schiebinger, Londa (1999) *Has Feminism Changed Science?* Cambridge, MA: Harvard University Press.

Schroeder, S. Andrew (2021) Democratic values: A better foundation for public trust in science. *British Journal for the Philosophy of Science* 72: 545-562.

Tuana, Nancy (2010) Leading with ethics, aiming for policy: new opportunities for philosophy of science. *Synthese* 177: 471-492.

Wylie, Alison & Hankinson Nelson, Lynn (2007) Coming to terms with the values of science: insights from feminist science scholarship. In H. Kincaid, J. Dupré & A. Wylie (Eds.), *Value-Free Science? Ideals and Illusions* (pp. 58-86). Oxford: Oxford University Press.

Policy about course outlines can be found in [Course Requirements, Evaluation Procedures and Grading](#) of the University Calendar.