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# Philosophy of Natural Sciences (PHIL 225) Syllabus

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# Philosophy of the Natural Sciences [PHIL 225]

Spring 2025

## Course info

Course Number: 42650; **cross list: Ensci 383-3 course number 45898
Meeting time/location: 10:45am – 12pm in Kiely Hall 317
Instructor: Professor Ryan O'Loughlin (email: Ryan.Oloughlin@qc.cuny.edu)
Office Hours & Location: Monday 12pm – 1pm in Powdermaker Hall 350V

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## Overview

This course explores the philosophy of science via a consideration of Indigenous ways of knowing. We begin by covering some major topics in philosophy of science—e.g., how to distinguish between science and pseudoscience, whether social and ethical values play a role in science, and others—and then we turn to the rich, place-based epistemologies of various Indigenous communities, examining how their worldviews, practices, and values offer unique perspectives on environmental stewardship, sustainability, and resilience.

By the end of this course, you will be able to:

- Synthesize information offered in a philosophical text, determine the author's perspective & conclusion(s), and evaluate the support offered for the conclusion
- Explain the concepts of scientific pluralism, incommensurability, objectivity, the demarcation problem, and standpoint epistemology
- Describe some indigenous ways of knowing—e.g., from Inuit and Māori traditions—and be able characterize the differences between local-knowledge and Western scientific knowledge
- Entertain positions you do not hold and treat them seriously and charitably

Syllabus for Philosophy of Natural Sciences (special topic on Indigenous ways of knowing) © 2025 by Ryan O'Loughlin is licensed under CC BY 4.0

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## Materials for Course:

All readings and links will be made available on Brightspace. You do not need to buy any texts, licenses, or technology for this course.

A notebook and pen/pencil (yep, very old school). Research has shown that students learn better and retain more information when they take notes using a pen rather than by typing (or not taking notes at all). If you have strong evidence to the contrary, please let me know.

*General open-access resources:*

1. The Stanford Encyclopedia of Philosophy (SEP) gives useful overviews of most key topics in philosophy
2. This Philosophy of Science textbook might also be helpful
3. Closer to Truth: An easy-to-digest video series on philosophy, science, and the cosmos

## Basis for Grading[1]:

*Breakdown*

Reading Quizzes……..……..……..……...100 points
In-class assignments…….…...…….100 points
In-class debate……..……100 points
Final Exam……..……..……...100 points

Total: 400 points

*Reading Quizzes*

At the beginning of class there will often be a 10-pt reading quiz (see schedule below). You will earn 6 points just for turning it in; the remaining 4 points can be earned by answering the questions correctly.

*In-class assignments*

Writing, thinking, and discussing are core components of doing philosophy. To hone these skills and to practice using and thinking about new concepts in class, you will be asked to complete a variety of in-class assignments. These range from group problem solving to evaluating a case study to writing a short reflection or argument.

Note on participation and attendance:

Participation is strongly encouraged – the best learning takes place when you have skin in the game, when you risk failure, and when you acknowledge what you don't know by asking questions. Moreover, we all will benefit from each of you offering your ideas and perspectives! While I do not formally take attendance*, you will need to attend if you want to complete the reading quizzes and in-class assignments. Moreover, in my past teaching I have observed a strong positive correlation between student attendance and performance. It's simple: if you want a good grade, you need to show up.

*If you have to miss class for a family or medical reason, please let me know and we will work together to make sure you don't fall behind.

*Debate*

We will hold team-based debates at the end of the semester. Each team will argue either FOR or AGAINST a position, such as "Indigenous ways of knowing should count as legitimate science." Other topics will be discussed in class. Each team will meet with me ahead of time to discuss strategy, clarify relevant facts, ask questions, etc. These debates will be judged by your peers (the "judges"). We will discuss the debate in detail in class on March 19th.

*Final Exam*

At the end of the semester, we will have an exam. It will have 8 multiple choice questions, 12 short-answer questions, and 1 essay question. The exam will test your knowledge on all material covered in class. We will review together in class on May 14th.

[1] Queens College grading scale.

**Schedule**

| **Week/Topic/Date** | **Readings/podcasts/videos** | **Assignments/Notes/other** |
|---|---|---|
| *Week1. Intro to course* | | |
| Mon 1/27 | | |
| Wed 1/29 | NO CLASS | |
| *Week2. Demarcation between science and pseudo-science* | | |
| Mon 2/3 | Popper's "Conjectures and Refutations" | Reading Quiz 1 at beginning of class |
| Wed 2/5 | | In-class assignment #1 |
| *Week3. What scientific methods?* | | |
| Mon 2/10 | Selection from Feyerabend's *Against Method* | Reading Quiz 2 at beginning of class |
| Wed 2/12 | No CLASS | |
| *Week4. Science and Culture* | | |
| Mon 2/17 | NO CLASS | |
| Tues 2/18 [Classes follow a Monday schedule] | Allchin's "Points East and West: Acupuncture and Comparative Philosophy of Science" | Reading Quiz 3 at beginning of class |
| Wed 2/19 | | In-class assignment #2 |
| *Week5. Incommensurability* | | |
| Mon 2/24 | Kuhn's "Commensurability, Comparability, and Communicability" | Reading Quiz 4 at beginning of class |
| Wed 2/26 | | In-class assignment #3 |
| *Week6. Feminist Phil Sci* | | |
| Mon 3/3 | Excerpt from Longino's *The Fate of Knowledge* | Reading Quiz 5 at beginning of class |
| Wed 3/5 | | In-class assignment #4 |
| Thurs 3/6 [Classes follow a Wednesday schedule] | READING CANCELLED | Reading Quiz 6 |
| *Week7. Epistemological Violence?* | | |
| Mon 3/10 | Vandana Shiva's "Reductionist science as epistemological violence" | Reading Quiz 7 at beginning of class |
| TH 3/12 | **Professor is away – our class does not meet** | |
| *Week8. Indigenous Knolwedge as Science I* | | |
| Mon 3/17 | Gorelick's "A Case for Indigenous Sciences" | Reading Quiz 8 |
| Wed 3/19 | Pigliucci's "Is Indigenous science pseudoscience? A response to Gorelick" | -In-class assignment #5<br>-Introduce debate assignment |
| *Week8. Indigenous Knowledge as Science II* | | |
| Mon 3/24 | Gorelick's "Indigenous Sciences are Not Pseudoscience" | Reading Quiz 9 |
| Wed 3/26 | Pigliucci's "…A further response to Gorelick" | Read Ludwig et al. 2024 together in class |

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|---|---|---|
| *Week10. Indigenous Knowledge as Science III* | | |
| Mon 3/31 | NO CLASS | |
| Wed 4/2 | (1) Parke and Hikuroa (2024): "Against Defending Science: Asking Better Questions About Indigenous Knowledge and Science"<br><br>(2) Jessica Hernandez on Saving Nature with Indigenous Science (Vox Article) | In-class assignment #6 |
| *Week10. Local Knowledge in Climate Science Research I* | | In-class assignment #7 |
| Mon 4/7 | Excerpts from McCoy (2024) | Reading quiz 10 |
| Wed 4/9 | | In-class assignment #8 |
| **Sat 4/12 – Sun 4/20 SPRING BREAK** | **SPRING BREAK** | **SPRING BREAK** |
| *Week11. Local Knowledge in Climate Science Research II* | | |
| Mon 4/21 | Codjoe et al. 2014. "Perception, experience, and indigenous knowledge of climate change…" | In-class assignment #9 |
| Wed 4/23 | | |
| *Week12. Inuit Knowledge and Science in the Arctic* | | |
| Mon 4/28 | Bielawski's Inuit Indigenous Knowledge and Science in the Arctic | In-class assignment #10<br>Indigenous lessons in reconnecting with nature |
| Wed 4/30 | Debate prep | |
| *Week13. Debate Prep & Debates* | | |
| Mon 5/5 | Debate prep | |
| Wed 5/7 | In-class debates | |
| *Week14. Debates and Review* | | |
| Mon 5/12 | In-class debates | |
| Wed 5/14 | Review for final exam | |
| ***Mon 5/19 Final Exam*** | **Final Exam 11:00AM - 1:00PM (Kiely Hall 317)** | |

**How to do well in this course:**
Read the assigned readings, take notes on the readings, participate in discussion, *and ask questions*. Visit office hours or email me if you have any questions about the material in the course. Participate in class discussions (yes, I've listed this twice) and take notes. Most importantly: show up to each class well-rested and willing/ready to learn.

Please reach out to me if you need assistance so I can help you make the most of this course!

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