

## Introduction to Philosophy of Science

Lecture Time: TBA

Lecture Location: TBA

Lecturer: Chris Dragos

Office Hours: TBA

Office Location: TBA

### Course Description:

In this course, we will explore central historical and contemporary topics in the epistemology and metaphysics of science. In Unit 1, we will start with Aristotelian-Medieval “science” (i.e. “natural philosophy”). This was the dominant worldview for two millennia. We will then track how the Aristotelian-Medieval worldview gave way to the New Science. Here it will be useful to compare Descartes’ more successful replacement of the Aristotelian-Medieval worldview with Copernicus’ unsuccessful attempt. We will then consider influential criticisms of Descartes’ proposed foundation for the New Science. This should bring us sufficiently up to speed for exploring recent and contemporary philosophy of science.

In Unit 2, we will study logical positivism, the dominant early-20th-century view about meaning and the distinction between science and pseudoscience. We will consider Thomas Kuhn’s work, which put the last nail in positivism’s coffin, and which had profound effects in the philosophy, history, sociology, and other approaches to science.

In Unit 3, we will explore a central and overarching topic in the philosophy of science, the debate between realists and anti-realists. Very roughly put, realists contend that our theories ‘get at’ how reality really is or that they approximate reality more and more closely over time. Very roughly put, anti-realists contend that we cannot know, or justifiedly believe, that this is so. We will also consider Hacking’s pragmatic realism.

We will conclude the course with two ‘bonus’ topics in Unit 4: (1) feminist critiques of certain aspects of scientific thought and activity, and (2) divergent views about what constitutes a law of nature.

### Required Texts:

(1) Course Pack

### Evaluation

1. Short Paper	<b>20%</b>	Due Date <b>TBA</b>
2. Term Paper	<b>35%</b>	Due Date <b>TBA</b>
3. Final Exam	<b>35%</b>	Date <b>TBA</b>
4. Participation	<b>10%</b>	

**Blackboard:** Materials for the course will be available on Blackboard, and all announcements will take place through Blackboard. It is your responsibility to check Blackboard on a regular basis and to keep up-to-date with the course. It is also your responsibility to ensure that you are receiving email that is sent out through Blackboard.

**Email Policy:** Emails will be answered within 48 hours. Emails might not be answered if (1) the relevant information is available on the course webpage or syllabus, or (2) if the question is best addressed during class or office hours (e.g. a philosophical question).

**Turnitin.com:** Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com website.

**Extensions and Late Assignments:** Late submissions will be penalized 5% per day, unless prior arrangements have been made with your TA for an extension or there is a medical or family emergency (in which case documentation may be required). **Plan ahead:** you may request extensions up until 48 hours before assignments are due; after that, extensions will be granted only for illness or family emergencies.

**Accessibility:** Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or Accessibility Services Office as soon as possible. I will work with you and Accessibility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential.

**Academic Dishonesty:** Academic integrity is essential to the pursuit of learning and scholarship, and to ensuring that a degree from a university is a strong signal of each student's individual academic achievement. The university treats cases of cheating and plagiarism very seriously. The university outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or other institutional resources.

**Copyright in Instructional Settings:** If a student wishes to reproduce lecture presentations, course notes or other course materials, the student must obtain the instructor's written consent beforehand. Otherwise all such reproduction is an infringement of copyright and is absolutely prohibited. In the case of private use by students with disabilities, the instructor's consent will not be unreasonably withheld.

### **Schedule of Lectures and Readings:**

#### **NOTES:**

- (1) **This schedule may change.** Any changes will be announced on Blackboard.
- (2) You are expected to have the readings completed **prior** to the lecture.

### **Week 1: Housekeeping, Overview, & a Critical Reasoning Primer**

*Readings:* None

### **Unit 1: Classical & Early Modern Natural Philosophy**

### **Week 2: Aristotelian-Medieval Philosophy of Science**

*Readings:* DeWitt, "Part II: The Transition from the Aristotelian Worldview to the Newtonian Worldview" (excerpts)

### **Week 3: Descartes' Foundation for the New Science**

*Readings:* Descartes, *Meditations on First Philosophy*, Meditations 1-7

### **Week 4: Classical Empiricism & the Problem of Induction**

*Readings:* Locke, *Essay Concerning Human Understanding* (excerpt)  
& Hume, *An Enquiry Concerning Human Understanding* (excerpt)

### **Unit 2: Logical Positivism & Pseudoscience**

#### **Week 5: Verificationism & Falsificationism**

*Readings:* Ayer, *Language, Truth, & Logic*, ch.1  
& Popper, *Conjectures & Refutations*, pp.33-39

#### **Week 6: Kuhn's View & Social Conditions**

*Readings:* Kuhn, "Logic of Discovery or Psychology of Research"  
& Thagard, "Why Astrology is a Pseudoscience"

### **[Short Paper Due]**

### **Unit 3: Realism & Empiricism**

#### **Week 7: The No-Miracles Argument**

*Readings:* Carrier, "What is Right with the Miracle Argument: Establishing a  
Taxonomy of Natural Kinds  
& Fine, "The Natural Ontological Attitude"

#### **Week 8: Empiricism**

*Readings:* van Fraassen "Arguments Concerning Scientific Realism"  
& Musgrave, "Realism versus Constructive Empiricism"

#### **Week 9: Pragmatic Realism**

*Readings:* Hacking, "Experimentation & Scientific Realism"  
& Resnick, "Hacking's Experimental Realism"

### **Unit 4: Bonus Topics**

#### **Week 10: Feminist Critiques**

*Readings:* Kourany, "Feminist Critiques: Harding & Longino"

#### **Week 11: Laws of Nature**

*Readings:* Ayer, "What is a Law of Nature?"  
& Dretske, "Laws of Nature"  
& Cartwright, "Do Laws of Nature State the Facts?"

### **[Term Paper Due]**

#### **Week 12: Final Exam Review**

**[Final Exam Date, Time, & Location TBA]**