

CRITICAL DEBATES IN THE PHILOSOPHY OF SCIENCE:

REALISM AND ANTIREALISM ABOUT SPACE FROM PLATO TO EINSTEIN

PHIL 3170*01
Winter 2014
T TH 1:00 – 2:20
MACK 119

Instructor: Professor A. Wayne
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Office hours: Thursdays 11:00 – 12:00
and by appointment
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Course outline

This course provides a detailed case study in the realism/antirealism debate. It examines the development of our philosophical and scientific understanding of space, time and motion from ancient times to the present day. These are among the most important theoretical entities in science. Are they real? We begin with Plato and Euclid. We then focus on the metaphysics and epistemology of classical space in the work of Newton, Leibniz, Berkeley and Mach. Finally, we study more recent work of Poincaré and Einstein. The approach of the course is interdisciplinary, combining historical and philosophical perspectives with the scientists' own reflections. The course will investigate ways in which science and philosophy are, or should be, interdependent.

Texts and course materials

- Huggett, Nick, ed., *Space from Zeno to Einstein: Classic Readings with a Contemporary Commentary* (MIT Press, 1999).
- Handouts and online materials at <http://courselink.uoguelph.ca>. You are responsible for accessing CourseLink regularly. Some course materials and grading comments may only be available on CourseLink.

Course requirements

- 10% Weekly reading response papers
- 20% In-class presentation
- 15% Midterm test #1, Feb. 6
- 20% Midterm test #2, Mar. 20
- 35% Essay, 6-8 pages, in-class presentation (10%), full essay due Apr. 11 (25%)

Reading responses are due at the beginning of each Tuesday class (except due on Thursday the first week). They should be 1-2 pages in length, and should synthesize and present one to three main points of the reading. Each reading response should end with a good question about the reading. Each satisfactory reading response adds 1 percentage point to your final grade, up to a maximum of 10 points (late responses not accepted). Additional in-class exercises may also be a part of this component of your grade.

Electronic devices

In order to create a positive learning environment for all participants, this class is conducted in “airplane mode,” which means that certain electronic devices are permitted on board, but with restricted use. Phones and other wireless handheld devices may not be used and must be turned off. Laptop computers and tablets may be used solely for purposes directly related to the course, such as note taking.

Additional support

Students with special needs or requiring additional support are encouraged to speak with me as early in the term as possible to ensure that appropriate arrangements are made.

Tentative schedule

<u>Week</u>	<u>Topic</u>	<u>Required reading</u>	<u>Presentation</u>
1. Ancient views of space			
Jan. 7	Realism and antirealism	Hacking (handout)	
Jan. 14	Plato and Euclid	Huggett, Chs. 1 and 2	
2. Substantialist and relationalist metaphysics			
Jan. 21	Newton	Huggett, Ch. 7	
Jan. 28	Leibniz and Clarke on substantialism	Huggett, Ch. 8	
Feb. 4	Leibniz' relationalism	Sklar, pp. 167-181 <i>Midterm test #1 on Feb. 6</i>	
Feb. 11	Berkeley's and Mach's relationalism	Huggett, Ch. 9	
3. The epistemology of geometry			
Feb. 25	Kant	Huggett, Ch. 12	
Mar. 4	Poincaré	Huggett, Ch. 13;	
Mar. 11	Reichenbach	Sklar, pp. 94-101	
4. The metaphysics of spacetime			
Mar. 18	From space and time to spacetime	Huggett, Ch. 10 <i>Midterm test #2 on Mar. 20</i>	
Mar. 25	Einstein's metaphysics	Huggett, Ch. 14	
Apr. 1	Science and metaphysics	Sklar, pp. 415-417	
		<i>Term paper due Apr. 11</i>	

E-mail Communication

As per University regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the university and its students.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Drop Date

The last date to drop one-semester Winter 2014 courses, without academic penalty, is Friday, March 7, 2014. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Student Rights and Responsibilities

Each student at the University of Guelph has rights which carry commensurate responsibilities that involve, broadly, being a civil and respectful member of the University community. The Rights and Responsibilities are detailed in the Undergraduate Calendar: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c14/c14-strightsrespon.shtml>

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and enjoins all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. The Academic Misconduct Policy is detailed in the Undergraduate Calendar: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded in any electronic media without the permission of the presenter, whether the instructor, a classmate or guest lecturer.

Resources

The Undergraduate Calendar is the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate programs. It can be found at: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/>

If you find yourself in difficulty, contact the undergraduate advisor in your program, or the BA Counselling Office: <http://www.uoguelph.ca/baco/contact.shtml>