

THE UNIVERSITY OF WESTERN ONTARIO
DEPARTMENT OF PHILOSOPHY
Undergraduate Course Outline 2016-2017

Philosophy 1030A:
Understanding Science: How Science Relates to the Natural and Social World

Fall Term 2016

Mon, Wed 11:30–12:30

TH 3102

Instructor: Wayne C. Myrvold

wmyrvold@uwo.ca

Office: Stevenson Hall 4143

Office Hours: MW 1:30–2:30, or by appointment

DESCRIPTION

This non-essay course is aimed at non-science majors who want to gain an understanding of the place of science in our world and how it relates to other parts of our culture, and at science students who want to gain an appreciation of the place of their discipline in the wider culture.

Science plays a central role in our lives. It is the source of new technological developments, and of information about safety and risks that are relevant to our decisions as individuals and as a society. Yet many people find science disquieting. There is a feeling that science destroys the wonder of nature. Moreover, many people mistrust what scientists tell them.

In this course we will dive into an investigation of the nature of science and its place in modern culture. Among the questions to be addressed are: What distinguishes science from non-science? Are there limits to what science can or should explain? Should we place our trust in science? How can we, as non-scientists, tell whether we should rely on what news reports tell us about the results of scientific studies? What is the relationship between science and religion? What is the role and value of science in a democratic society?

TEXTS

Assigned readings available on the course OWL site.

OBJECTIVES

In this course, students will gain an understanding of how the modern scientific worldview came about. They will learn the basics of scientific methodology and experimental design. They will become familiar with major points of view on the relation between science and religion, and between science and value judgments, and gain an appreciation for the place of science within our culture. In addition, they will become familiar with the basics of some contemporary scientific controversies. Most importantly, students will develop skills needed to distinguish scientific claims that are well-supported by evidence from those that are not.

REQUIREMENTS

Attendance and active participation in class discussion; attendance and active participation in tutorials; two short (2–3 pp) written assignments; midterm & final tests.

Tutorial participation: 5%

Written Assignments:

1 (Due Oct. 26) 15%

2 (Due Nov. 23) 20%

Tests:

Midterm (Nov. 24) 25%

Final (TBA, exam period) 35%

Assignments are to be handed in by 3:45 PM on the due date. If you are unable to hand your assignment directly to the instructor, place it in the Philosophy Department drop-off box, which is on the first floor of Stevenson Hall. *Make sure that your student number and the instructor's name are on your assignment.* Late assignments will be penalized 5% per day late.

In conformity with departmental policy all written assignments must be submitted to turnitin.com for plagiarism checking by the due date. Assignments not submitted to turnitin by the due date will be counted as late, and students will not receive credit for written assignments not submitted to turnitin.com.

No assignments will be accepted after the last day of classes, Dec. 7, 2016.

AUDIT

Students wishing to audit the course should consult with the instructor prior to or during the first week of classes.

DEPARTMENT OF PHILOSOPHY POLICIES

The **Department of Philosophy Policies** which govern the conduct, standards, and expectations for student participation in Philosophy courses is available in the Undergraduate section of the Department of Philosophy website at <http://uwo.ca/philosophy/undergraduate/policies.html>.

It is your responsibility to understand the policies set out by the Senate and the Department of Philosophy, and thus ignorance of these policies cannot be used as grounds of appeal.

SUPPORT SERVICES

Registrarial Services <http://www.registrar.uwo.ca>

Student Support Services <https://student.uwo.ca/psp/heprdweb/?cmd=login>

Services provided by the USC <http://westernusc.ca/services/>

Student Development Centre <http://www.sdc.uwo.ca/>

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help. Immediate help in the event of a crisis can be had by phoning 519.661.3030 (during class hours) or 519.433.2023 after class hours and on weekends.

Topics

Module I. (3 weeks) *Development of the modern view of the cosmos.* In this module, we will trace the development of conceptions of the *cosmos* from ancient times to the present, with an emphasis on understanding how and why scientists came to see the world as they do now. This module will also explore the complex relations between scientific and religious worldviews.

Module II. (3 weeks) *Scientific inference and methodology.* This module concerns scientific reasoning and the bearing of evidence on scientific claims. The question to be asked is: When you hear conflicting claims (say, about the health benefits of something), how can you decide what you should believe? This module will help you develop some basic strategies for answering questions of that sort. We will also discuss the importance of replication in science, and why some people are saying that some branches of science are undergoing a “replicability crisis.” As an exercise, students (in groups) will design and carry out a simple experiment, and report the results.

Module III. (2 weeks) *Science, PR, and the media.* A peek behind the scenes of how results from the laboratory become stories in the media. This will include discussion of the role of PR agencies in shaping what gets reported. We will look at a particularly well-documented case: the role of the tobacco industry in shaping messages about the hazards of tobacco smoke, as well as some more recent campaigns. We will also consider the question of distinguishing reliable from unreliable sources of information on the internet. As an exercise, you will critically assess a news report about some scientific development.

Module IV. (2 weeks) *Climate change.* In this module, we will look at conflicting claims, in the media and on the internet, about climate change, with an eye to answering the question: what should I believe?

Module V. (2 weeks) *GMOs.* In this module, we will look at conflicting claims, in the media and on the internet, about the benefits and risks of Genetically Modified Organisms, again, with an eye to answering the question: what should I believe?