

WESTERN UNIVERSITY
DEPARTMENT OF PHILOSOPHY
Undergraduate Course Outline 2019-20

Philosophy 1030B: Understanding Science

Winter term
MW 2:30–3:30
UC 3110

Instructor: Wayne C. Myrvold
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Office Hours: MW 12:30–1:30, or by appointment
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DESCRIPTION

This non-essay course is aimed both 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 also 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 role and value of science in a democratic society?

TEXTS

Assigned readings, available on 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; written assignments; midterm & final tests.

Tutorial participation:	5%
Written Assignments:	
# 1 Internet research exercise (due Jan. 22)	10%
# 2 Evaluation of media article (due Feb. 12)	10%
# 3 a) Experimental proposal (due Mar. 4)	5%
b) Experimental report (due Mar. 25)	15%
Tests:	
Midterm (Feb. 26)	25%
Final (TBA, exam period)	30%

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, outside Stevenson Hall room 2150. *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, April 3, 2020.

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.

ACCOMMODATION

Students seeking academic accommodation on medical grounds for any missed tests, exams, participation components and/or assignments worth 10% or more of their final grade must apply to the Academic Counselling office of their home Faculty and provide documentation. Academic accommodation cannot be granted by the instructor or department. Documentation shall be submitted, as soon as possible, to the Office of the Dean of the student's Faculty of registration, together with a request for relief specifying the nature of the accommodation being requested.

The UWO Policy on Accommodation for Medical Illness and further information regarding this policy can be found at

http://uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

SELF- REPORTED ABSENCE FORM

Students who experience an unexpected illness or injury or an extenuating circumstance (48 hours or less) that is sufficiently severe to temporarily render them unable to meet academic requirements (e.g., attending lectures or labs, writing tests or midterm exams, completing and submitting assignments, participating in presentations) should self-declare using the online Self-Reported Absence portal. This option should be used in situations where the student expects to resume academic responsibilities within 48 hours or less.

The following conditions are in place for self-reporting of medical or extenuating circumstances: http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#SubHeading_322

EVALUATION OF ACADEMIC PERFORMANCE

At least three days prior to the deadline for withdrawal from a course without academic penalty, students will receive assessment of work accounting for at least 15% of their final grade. For 3000- or 4000-level courses in which such a graded assessment is impracticable, the instructor(s) must obtain an exemption from this policy from the Dean and this exemption must be noted on the corresponding course syllabus. In rare instances and at the Dean's discretion, other courses could receive a similar exemption, which also must be noted in the course syllabus.

COURSE ASSIGNMENT

The last day of scheduled classes in any course will be the last day on which course assignments will be accepted for credit in a course. Instructors will be required to return assignments to students as promptly as possible with reasonable explanations of the instructor's assessment of the assignment.

ACADEMIC OFFENCES

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

PLAGIARISM CHECKING

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com <http://www.turnitin.com>.

SUPPORT SERVICES

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

Student Support Services <https://student.uwo.ca/psp/heprdwweb/?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) *Science, media, and PR.* This module is aimed at developing media literacy. Students will learn about the process of scientific publication, and develop skills in evaluating media reports about scientific results. We will also take 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. This module includes exercises aimed at developing skills in finding reliable information in the internet age.

Module II. (4 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 IV. Scientific Controversies.

We will look at three areas in which conflicting views are being aired, with an eye to applying what was learned in the previous modules to decide what we should believe.

- A. (2 weeks) *Climate change.*
- B. (1 week) *The vaccination controversy*
- C. (2 weeks) *Genetically modified organism*