

WESTERN UNIVERSITY
DEPARTMENT OF PHILOSOPHY
Undergraduate Course Outline 2020-21

Philosophy 1030a
Understanding Science

Fall Term Course material asynchronous; tutorials synchronous	Professor Wayne Myrvold Office: Stevenson Hall 4143 Office Hours: MW 2:30–3:30 wmyrvold@uwo.ca
--	--

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.

This course is aimed at helping students understand how science works, and its role in society. It will include modules on science and the media, on scientific methodology, and on contemporary controversies.

FORMAT

Instead of lectures, instructor will be posting course materials weekly. These will consist of a combination of annotated powerpoint slides and brief videos. Tutorials will be held weekly via Zoom. Students are expected to review course materials prior to their weekly tutorial, and be prepared to discuss them.

Instructor will be available for consultation during office hours, and by appointment.

TEXTS

Course materials available on OWL.

OBJECTIVES

Students will learn to critically evaluate media reports regarding scientific developments. They will understand the basics of scientific methodology, including statistical hypothesis testing, and they will be able to distinguish between correct and incorrect applications of the concept of statistical significance. They will be able to explain what is meant by talk of a reproducibility crisis in science, and identify proposed remedies. They will become familiar with the issues connected with several contemporary scientific controversies, and will be able to identify their root causes.

REQUIREMENTS

Students are expected to review the weekly course materials and be prepared to discuss them in tutorials. Active participation in tutorials is required. Evaluation will be based on three written assignments, and midterm & final tests.

Tutorial participation:	6%
Written Assignments:	
# 1 Internet research exercise (due Sept. 23)	10%
# 2 Evaluation of media article (due Oct. 21)	10%
# 3 Desinging and carrying out a simple experiment	
a) Experimental proposal (due Nov. 9)	
b) Experimental report (due Dec. 2)	10%
Tests:	
Take- home midterm (Oct. 30)	32%
Take-home final (TBA, exam period)	32%

Assignments will be submitted online via OWL. 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. 9, 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/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) *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 III. (5 weeks) *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 organisms*