

WESTERN UNIVERSITY
DEPARTMENT OF PHILOSOPHY
Undergraduate Course Outline 2020-21

Philosophy 2320G
Philosophy for Integrated Science

Fall Term Synchronous: Thursdays, 6:30–9:30	Professor Wayne Myrvold Office: Stevenson Hall 4143 Office Hours: MW 2:30–3:30 wmyrvold@uwo.ca
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DESCRIPTION

This course is intended for students in the Western Interdisciplinary Science Curriculum. Its objective is for students to gain an appreciation for aspects of science not typically covered in science courses. Topics covered: scientific methodology and modes of scientific inference, science, public relations, and the media, science and the public sector, and research ethics.

FORMAT

Instead of lectures, instructor will be posting course materials weekly. These will consist of a combination of annotated powerpoint slides and brief videos. Students should review this material prior to the weekly course meetings.

Weekly course meetings will be by Zoom. These will consist of discussions of the material. This is an opportunity to ask clarificatory questions about material you're not sure you understand.

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

TEXTS

Course materials available on OWL.

OBJECTIVES

Students will be able to describe the hypothetico-deductive approach to scientific inference, and to identify its limitations. They will be able to outline the basics of statistical hypothesis testing, and to explain the differences between classical and Bayesian approaches. They will be able to explain the concept of statistical significance, and to distinguish between correct and incorrect uses of the concept. They will demonstrate media literacy, and will be able to identify the various factors that shape public messages concerning science. They will be able to identify the chief models of the relation between academia and the private sector, and to identify the ways in which scientific research is shaped by its interactions with the public sector. They will be able to identify and discuss ethical issues raised by scientific research, connected with potential impact on society, use of animal subjects, and use of human subjects.

REQUIREMENTS

Attendance and active participation in class discussions is required, though no participation grade

is assigned.

Assessment:

4 short assignments, throughout the term, details to be announced. 25%
(3 will count as 5% each, one as 10%)

Two essays.

Essay I (approx. 1000 words)

Draft: 5%

Full version: 15%

Term paper (approx. 1200 words)

Draft 5%

Full version 20%

Two take-home tests: midterm and final, 15% each 30%.

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, Apr. 5, 2021.

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.

Modules

The subject matter of this course will be divided into four modules, on which we will spend approximately 3 weeks each.

I. Scientific method and modes of scientific inference

In this module, we will examine the patterns of inference that lead from evidence to conclusions about the world. We will start with classic inferences from the history of science: reasons for believing the earth is a sphere, and reasons for believing that the earth and other planets orbit the sun.

With these examples in hand, we will examine attempts to characterize scientific inference. We will first outline the hypothetico-deductive method, and discuss its limitations. We will then discuss statistical hypothesis testing. Emphasis will be on understanding the rationale for statistical hypothesis

The hypothetico-deductive method and its limitations. Statistical hypothesis testing: Fisher and Neyman-Pearson approaches compared. Significance tests, p -values, and their meaning. The “reproducibility crisis” and proposed remedies for it.

II. Science, public relations, and the media

Most people don't get the bulk of their information about scientific topics from the scientific literature, but, rather, must rely on news media and other outlets. We will talk about the process by which news stories are generated, and about ways in which their reliability can be assessed. The role of the public relations industry in shaping the messages that reach the public will be discussed.

Many scientists actively engage in public outreach. We will discuss modes of public outreach, and strategies for effective public outreach.

III. Science and the private sector

In the past decades, the private sector has played an increasing role in science, as industry/academia partnerships become more common. We will discuss different models for the relation between the private sector and academia. We will also discuss concerns that have been raised about corporate influence on science, assess the seriousness of these concerns, and discuss potential remedies.

IV. Research ethics

The conduct of scientific research raises ethical issues. We will discuss three broad classes of such issues:

- A. Ethical issues concerning potential societal impact of research.

- B. Ethical issues concerning the use of animal subjects in experiments.
- C. Ethical issues concerning the use of human subjects in experiments.