

PHIL 258/SCI 267 Introduction to Philosophy of Science
Winter 2012

Syllabus

Instructor: Prof. Doreen Fraser

E-mail (for quick questions): dlfraser@uwaterloo.ca

Office Hours (for substantive questions): Mondays 1-2p.m. and Wednesdays
10-11a.m.

Office: HH 330

Course Meeting Time and Location: Mondays, Wednesdays, and Fridays
11:30a.m.-12:20p.m. in RCH204

Course Description

The sciences are widely considered to be one of our best sources of knowledge about the world. In this course we will investigate the nature and status of scientific knowledge. We will study several different accounts of the methods used by scientists, including accounts proposed by Carnap, Popper, and Kuhn. We will also ask whether science describes reality. Does the real world actually contain electrons or genes, for example, or is a literal interpretation of our scientific theories unwarranted?

Readings

Peter Godfrey-Smith. *Theory and Reality*. Chicago: University of Chicago Press, 2003.

Readings available electronically through the course web site

Both the textbook and the readings available electronically are **required**. The textbook is available from the UW Bookstore and is on reserve at the Dana Porter Library. The course web site contains links to all of the online readings (see below). There is a schedule of readings and topics for the course on pp.5-6 below.

LEARN Course Web Site

There is a LEARN course web site for this course. This site will contain links to the online readings, instructions for the assignments, the Power Point slides that are shown in class, and your grades. The Analysis of an Example and Paper assignments are to be submitted electronically using the LEARN web site. To access the log in page, type the following address into your web browser:

<http://learn.uwaterloo.ca>

The username and password should be the same as your UW Quest/WATIam userid and password.

PHIL 258/SCI 267 Introduction to Philosophy of Science
Winter 2012

UW Library e-Reserve Course Web Site

Some of the readings are available electronically through UW Library e-Reserves. These readings may be accessed through the LEARN course web site. You will need to enter your WatIAM username and password to enter the site. For copyright reasons, only students registered in the class may access these materials. Alternatively, you can log in to the library e-reserves site directly at

<https://www.reserves.uwaterloo.ca/ares/>

Expectations

In addition to fulfilling the coursework requirements outlined below, it is expected that students will complete the assigned readings. Students are also expected to attend class regularly and to participate in class discussions. Laptops and other electronic devices may only be used in class to access course materials.

Coursework

The grade for the course will be broken down as follows

45% - Best 3 out of 4 quizzes (each worth 15%)

20% - Analysis of an Example

35% - Paper

Quizzes

Each quiz will consist of several short answer questions (i.e., requiring an answer of at most a few sentences) and one paragraph-length answer. Quizzes will cover material from class and from the assigned readings. They will be written **at the beginning of class on January 23, February 8, March 7, and April 2**. Your best three quizzes (out of four) will count towards your final grade. THERE WILL BE NO MAKE UP QUIZZES.

Analysis of an Example

Choose an example of a scientific discovery described in a contemporary source (e.g., *Globe and Mail*, *Science*). Explain how one of the accounts of science discussed in the course applies to your example. Maximum length 500 words (i.e., 2 pages doublespaced). A handout with a detailed description of the requirements will be posted on the course web site later in the term. Due **before 5p.m. on February 29**. Your assignment must be submitted electronically to the online Dropbox on the LEARN web site for this course. Late assignments will be penalized 10% per 24 hours unless there are extenuating circumstances (e.g., a grade of 72% would be reduced to 62% if the assignment is handed in 24 hours past the deadline). Extensions may be granted in extenuating circumstances (e.g., serious illness, death in the family) if appropriate documentation is provided (e.g., note from doctor). If there are extenuating circumstances, contact me prior to the deadline (unless, of course, your extenuating circumstance prevents you from doing so).

PHIL 258/SCI 267 Introduction to Philosophy of Science
Winter 2012

Paper

A short paper on a topic covered in the course. Maximum length 1,200 words (i.e., 4 pages doublespaced). A handout with paper topics and a detailed description of the requirements will be posted on the course web site later in the term. Due **before 5p.m. on April 10**. Your assignment must be submitted electronically to the online Dropbox on the LEARN web site for this course. Late papers will be penalized 10% per 24 hours unless there are extenuating circumstances (e.g., a grade of 72% would be reduced to 62% if the paper is handed in 24 hours past the deadline). Extensions may be granted in extenuating circumstances (e.g., serious illness, death in the family) if appropriate documentation is provided (e.g., note from doctor). If there are extenuating circumstances, contact me prior to the deadline (unless, of course, your extenuating circumstance prevents you from doing so).

The Writing Centre

There is a Writing Centre on campus that offers help to students who want to improve their writing skills: <http://elpp.uwaterloo.ca/writingcentre.html>.

Cross-listed Course

Please note that a cross-listed course will count in all respective averages no matter under which rubric it has been taken. For example, a PHIL/PSCI cross-list will count in a Philosophy major average, even if the course was taken under the Political Science rubric.

Note for Students with Disabilities

The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.

Academic Offenses

Note that I consider plagiarism to be a very serious offence. If you have any questions about appropriate documentation of sources or what counts as plagiarism, please come talk to me. As per University policy,

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility. [Check <http://www.uwaterloo.ca/academicintegrity/> for more information.]

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences

PHIL 258/SCI 267 Introduction to Philosophy of Science
Winter 2012

(e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline, <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>. For typical penalties check Guidelines for the Assessment of Penalties, <http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm>.

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4,

<http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>. When in doubt please be certain to contact the department’s administrative assistant who will provide further assistance.

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>.

Academic Integrity website (Arts):

http://arts.uwaterloo.ca/arts/ugrad/academic_responsibility.html

Academic Integrity Office (UW): <http://uwaterloo.ca/academicintegrity/>

PHIL 258/SCI 267 Introduction to Philosophy of Science
Winter 2012

Course Schedule

* All chapter references are to Godfrey-Smith, *Theory and Reality*; the other readings can be accessed online from the course web site

| Date | Topic | Reading |
|---------------------|--|--|
| Jan. 4, 6, 9 | Introduction and Overview | Ch. 1: Introduction Galileo, Excerpt from <i>Dialogue Concerning the Two Chief World Systems</i> |
| Jan. 11, 13, 16 | Logical Empiricism | Ch. 2: Logic Plus Empiricism Additional reading TBA |
| Jan. 18, 20 | Induction and Confirmation | Ch. 3: Induction and Confirmation |
| Jan. 20 | Popper | Ch. 4: Popper Popper, excerpt from <i>The Logic of Scientific Discovery</i> |
| Jan. 23 | QUIZ #1 Popper (cont.) | Ch. 4: Popper Popper, excerpt from <i>The Logic of Scientific Discovery</i> |
| Jan. 25 | Popper | Ch. 4: Popper Popper, excerpt from <i>The Logic of Scientific Discovery</i> |
| Jan. 27, 30 | Kuhn | Ch. 5: Kuhn and Normal Science Kuhn, Chapters II, III, IV from <i>The Structure of Scientific Revolutions</i> |
| Feb. 1, 3, 6 | Kuhn (cont.) | Ch. 6: Kuhn and Revolutions Kuhn, Chapters VI, IX from <i>The Structure of Scientific Revolutions</i> |
| Feb. 8 | QUIZ #2 Lakatos et. al. | Ch. 7: Lakatos, Laudan, Feyerabend, and Frameworks Feyerabend, excerpt from <i>Against Method</i> |
| Feb. 10 | Lakatos et. al. (cont.) | Ch. 7: Lakatos, Laudan, Feyerabend, and Frameworks Feyerabend, excerpt from <i>Against Method</i> |
| Feb. 13, 15 | Sociology of Science | Ch. 8: The Challenge from Sociology of Science |
| Feb. 15, 17 | Feminism, Science Studies | Ch. 9: Feminism and Science Studies Additional Reading TBA |
| READING WEEK | | |
| Feb. 27 | Scientific Realism | Ch. 12: Scientific Realism Hacking, Ch. 1 of <i>Representing and Intervening</i> |
| Feb. 29 | ANALYSIS DUE before 5p.m. Scientific Realism (cont.) | Ch. 12: Scientific Realism Hacking, Ch. 1 of <i>Representing and Intervening</i> |
| Mar. 2, 5 | Scientific Realism (cont.) | Ch. 12: Scientific Realism Hacking, Ch. 1 of <i>Representing and Intervening</i> |

PHIL 258/SCI 267 Introduction to Philosophy of Science
Winter 2012

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| Mar. 7 | QUIZ #3 Scientific Realism (cont.) | Ch. 12: Scientific Realism van Fraassen, excerpt from <i>The Scientific Image</i> |
| Mar. 9, 12 | Scientific Realism (cont.) | Ch. 12: Scientific Realism van Fraassen, excerpt from <i>The Scientific Image</i> |
| Mar. 14, 16, 19 | Explanation | Ch. 13: Explanation Hempel, excerpts from <i>Philosophy of Natural Science</i> |
| Mar. 21, 23, 26, 28 | Bayesianism | Ch. 14: Bayesianism and Modern Theories of Evidence |
| Mar. 30 | Wrap up | Ch. 15: Empiricism, Naturalism, and Scientific Realism? |
| Apr. 2 | QUIZ #4 Wrap up | |
| Apr. 10 | PAPER DUE before 5p.m. | |