

M: Course Objectives / Learning Outcomes:

Successful students will be able to:

1. Explain a philosophical approach to scientific thought.
2. Reflect in a critical way about the philosophical issues that exist within scientific thought.
3. Employ effective methods for making up their own minds about philosophical issues pertaining to scientific thought.
4. Explain the philosophical theories and concepts covered in the course.
5. Explain the philosophical controversies covered in the course.
6. Apply philosophical and scientific theory to the resolution of the philosophical issues concerning scientific thought.
7. Explain the reasoning involved in viewpoints opposed to one another.
8. Develop their own reasoning about the philosophical controversies pertaining to scientific thought.

N: Course Content:

Instruction in the course will cover the following five areas, with some emphasis on the first three areas. There will be roughly equal consideration of the natural and the social sciences.

1. Science and Methodology - Including methods of scientific inquiry in the various natural and social sciences. The role of theory, reasoning (induction and deduction), prediction, explanation, and observation will be investigated. Consideration of the acceptance and justification of theories will involve covering some of the following types of topics: Rationalism and empiricism in science, logical positivism, Popper and falsification, Kuhn and paradigm theories, normal and revolutionary science, and issues pertaining to incommensurability and relativism.
2. Science and Explanation - Including models of scientific inquiry in the various natural and social sciences. The development and choice of different models of explanation will be considered. Inquiry will be made into several of the following types of explanatory models; hypothetical-deductive, corpuscular, mechanistic, inductive-regularity, statistical, teleological, functional, structural, rational choice theory, decision theory, collective action theory, interpretation theory, social action models, materialistic, formalistic, and substantivist.
3. Science and Objectivity - Including the nature of objectivity and the ways in which it might be possible to achieve objectivity in the various natural and social sciences. This will involve a consideration of the nature of truth and of the realist/anti-realist debate in the natural sciences, as well as an investigation into the way in which and the extent to which the various social sciences can be said to be sciences. It may also involve post modern criticism of the enterprise of science.
4. Historical and Current Controversies in Science - Including how these controversies provide a context for understanding philosophical issues pertaining to science. These may involve two or three specific controversies in the practice and development of science, such as, Lavoisier and Phlogiston Theory; Pasteur and Microorganisms; Maxwell's electro-magnetic theory, Pauli and the Neutrino Hypothesis, Darwin and evolutionary theory, Marshall and the development of economics as a science, Einstein and the theory of relativity, Heisenberg and indeterminism in quantum physics. They may also involve more general disputes about how science proceeds, e.g., materialism in science, Feyerabend's epistemological anarchy, methodological individualism, rationality and relativism, naturalism and methodological pluralism.

Course Content Cont'd.

5. The Status of Science - Including the role of science in society. Discussion may focus on such topics as the difference between “real” science and pseudo-science (e.g., graphology, Velikovsky); the possibility of science being value neutral, the significance of the science/technology (pure science/applied science) distinction; Heidegger’s conception of the Technological Imperative; and the extent to which society should control scientific research and the development of science.

O: Methods of Instruction:

The course will employ a variety of instructional methods to accomplish its objectives, including some of the following:

A combination of lecture and discussion (possibly including student presentations). Some class sessions may involve formal lectures for the entire time (allowing time for questions), in which case a later session will allow discussion of the lecture and reading material. Other class sessions may involve a combination of informal lecture and structured discussion.

P: Textbooks and Materials to be Purchased by Students:

Texts will be updated periodically. Typical examples are:

Chalmers, A.F. (1995). What is this Thing Called Science? (2nd ed). Indianapolis, Indiana: Hackett.

Little, Daniel. (1991). Varieties of Social Explanation. Boulder, CO: Westview Press.

Q: Means of Assessment:

Evaluation will be based on course objectives and will be carried out in accordance with Douglas College policy. The instructor will provide a written course outline with specific evaluation criteria at the beginning of the semester.

Any possible combination of the following which equals 100%:
(No one evaluation component within each category may exceed 40%)

	<u>Percent Range</u>	<u>Example</u>	
Tests, Quizzes, Short Written Assignments	20 – 50%	Three 10% Tests	30%
Written Class Presentations, Essays, Essay Exams	30 – 60%	Two 30% Essays	60%
Instructor’s General Evaluation (may include attendance class participation, group work, homework, etc.)	0 – 20%	Attend/Participation	<u>10%</u>
			100%

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

No.

Course Designer(s): Brian Davies and Guangwei Ouyang

Education Council / Curriculum Committee Representative

Dean / Director

Registrar