

Philosophy of science - syllabus

PHIL 3380/5580, Spring 2009, Tuesdays and Thursdays 11.00-12.15, Clark 217

Instructor: Robert Northcott

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Office hour: Thu 1.30-2.30 or by appointment, Room 561 Lucas Building

Course textbook (required, available from the bookstore)

What is thing called Science? by Alan Chalmers (McGraw-Hill, 1999, 3rd edn)

Course introduction, objectives

Many of you are science majors, and even those who are not still make use of science all the time: we leave our milk in the fridge; we take our children to medical doctors rather than faith healers; we pay NASA, rather than astrologers, to send rockets to the moon. And no one's volunteering for a return to medieval dentistry.

But exactly what is it that makes science special? Answering this question turns out to be surprisingly tricky. In seeing why, we'll look at scientific method, paradigm shifts, whether we should really believe in invisible entities like genes and electrons, and critiques of science from, e.g., feminists. We'll pick our way through various heavy-duty 'isms' like falsificationism and logical positivism. And we'll be looking at other topics too: evolution versus creationism; whether you should ever believe in miracles; and why modern science only came into being recently and in the West. Along the way, finally, we'll also cover a fair amount of history of science and indeed science itself.

By the end of the course, you should have: (1) a good basic knowledge of philosophy of science and its main debates; (2) a solid foundation from which to pursue, should you wish, further study in the area in the future.

Course topics

- 1) Introduction: what makes science special?
- 2) An end to BS: hardcore logical positivism
- 3) 'Just the facts'? The need for auxiliary assumptions [Chalmers chps 1-2]
 - 3a) Creationism versus evolution
- 4) A core problem: induction and confirmation [chp 4]
 - 4a) Should we ever believe in miracles?
- 5) A magic formula? Popper and falsificationism [chps 5, 7]
- 6) Paradigms and revolutions: Kuhn [chp 8]
- 7) A special kind of community? The social structure of science [online reading]
 - 7a) Why was modern science a Western thing? [online reading]
- 8) Is science just a big PR machine? Feminism, science studies [online reading]
- 9) Does science give us the truth? The debate over scientific realism [chp 15]
- 10) What makes an explanation scientific?
 - 10a) Apportioning explanatory responsibility

Exam dates:

Mid-term exam – March 12; Final exam – May 12.

(Tue 24, Thu 26 March – Spring break, no classes)

This is subject to modification. In particular, it might be that we won't have time to do everything listed. We'll go along at approximately one or two weeks per topic.

It is possible that the dates quoted for the two exams will be altered slightly. Of course, if so I'll certainly let you know that in good time. Obviously, you will only ever get quizzed or examined on things that we have by that time already covered in class.

Grading

There will be two in-class exams, a mid-term and a final. The mid-term will be worth 25% of the total grade, the final 50%. In addition to that, there will also be various take-home quizzes throughout the course, announced at short notice. In total, these quizzes will be worth 25% of the total grade. The total grade will thus be determined entirely by performance in these quizzes and exams – although see the note about class participation in a moment. I will be using incremental (plus/minus) grading.

The take-home quizzes will take the form of multiple-choice questions. The final exam will take the form of short questions with written answers. The mid-term exam will be a mixture of the two. Whenever you are asked to write a few sentences in an exam, in your own interest you should make sure you write full grammatical sentences. I will let you know more details of the exact exam format nearer the time, and also of exactly what material each test will be testing.

Important note: the material tested in quizzes and exams may include things covered only in class, i.e. not from the readings. It is therefore in your own interest to attend class regularly. You are responsible for obtaining information from any missed classes. I do not lend out my own notes under any circumstances.

Regarding class participation: given the size of the group, if you do not participate much in class, e.g. you do not ask any questions, this will *not* damage your total grade. On the other hand, if you *do* participate well this may have a positive impact on your grade, e.g. when deciding borderline cases or occasionally even more than that.

Attendance on the relevant day for the in-class exams is obviously essential. Generally, you'll need to give me a pretty good reason for missing one of them, or for missing the deadline for any of the take-home quizzes. *Warning: for the exams in particular, a 'pretty good reason' is likely to require both documentation and, wherever possible, advance notice.* The burden of proof here is on you. Just not showing up – without any prior communication why – is certainly *not* likely to make me view your case favorably afterwards. Of course, unfortunate circumstances do arise occasionally. The golden rule in those cases is, if possible, to contact me about it in advance. It's much easier sorting things out ahead of time.

Academic Honesty

Official philosophy department statement:

In all cases of academic dishonesty, for example cheating, plagiarism, or sabotage, the instructor shall make an academic judgment about the student's grade on the work involved. Since this judgment is often a grade of zero, its assignment may result in a failing grade for the course. The complete campus policy on academic dishonesty may be found under "Student Conduct Code" in the Student Planner or at

http://www.umsl.edu/studentlife/dsa/student_planner/policies/conductcode.html

Unacceptable conduct includes getting someone else to do your exams or take-home quizzes, or doing them *for* someone else.