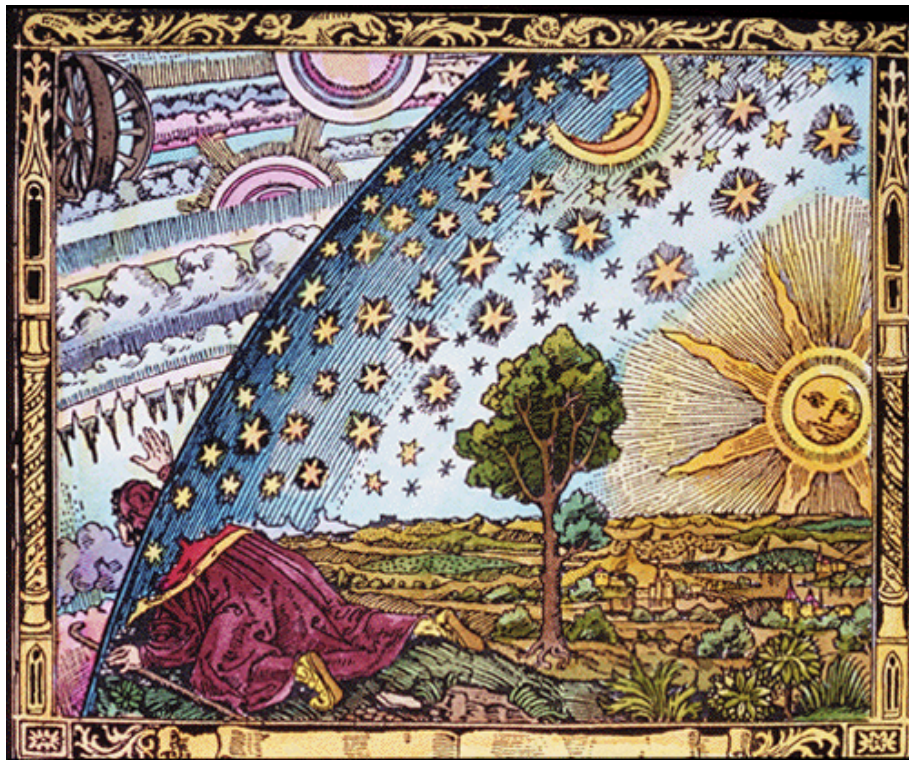


PHIL 145

PHILOSOPHY OF SCIENCE



Fall 2018

Instructor: Kerry McKenzie

kmckenzie@ucsd.edu

Classes: WLH 2212, TuTh 2-3.20pm.

Office: HSS 8088 **Office Hours:** Monday 1-2pm.

Syllabus.

1. **Sept 27th. Welcome and Overview.**
 - No reading.
2. **Oct 2nd. Themes from the Scientific Revolution**
 - Ladyman, *Understanding Philosophy of Science* Chapter 1
 - Optional: Shapere, *Galileo: A Philosophical Study* Chapter 2 (in library).
3. **Oct 4th. Deduction, Induction, and Inductivism**
 - Ladyman, *Understanding Philosophy of Science* Chapter 1
4. **Oct 9th. The Problem of Induction**
 - Earman and Salmon, *Introduction to the Philosophy of Science* Chapter 2, Part 2.
 - Optional: Lipton, 'Induction'.
5. **Oct 11th. Introducing Unobservables.**
 - Earman and Salmon, *Introduction to the Philosophy of Science* Chapter 2, Part 1.
6. **Oct 16th. Problems of confirmation: underdetermination of theory by data**
 - Stanford, 'Refusing the Devil's Bargain: What Kind of Underdetermination Should We Take Seriously?'
7. **Oct 18. Problems of falsification: the Duhem-Quine Problem**
 - Duhem, 'Physical Theory, Mathematics, and Experiment': excerpts from Shapere.
 - Creationism literature, to be distributed.
8. **Oct 23rd. Review**
 - No extra reading.
9. **Oct 25th. Science and Values I**
 - Okruhlik, 'Gender and the Biological Sciences'
 - Optional: Longhino, 'Research on Sex Differences', pp. 103-120.
10. **Oct 30th. Science and Values II**
 - No extra reading
11. **Nov 1. No lecture / peer review**

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- 12. **Nov 6th. Bayesianism 1: The paradox of the ravens**
- 13. **Midtem paper due.**
 - Handout
 - Howson and Urbach, *Scientific Reasoning: A Bayesian Approach*, chapter 4.
- 14. **Nov 8th. Bayesianism 2: Induction, consilience, and objectivity**
 - No extra reading
- 15. **Nov 13th. Bayesianism 3: Underdetermination**
 - No extra reading
- 16. **Nov 15th. Laws of Nature 1: Introduction**
 - Bird, *Philosophy of Science* Chapter 1.
- 17. **Nov 20th. Laws of Nature 2: Humean analyses**
 - Beebee, 'The Non-Governing Conception of Laws of Nature'.
- 18. **Nov 22nd. Thanksgiving: No class.**
 - No extra reading.
- 19. **Nov 25th. Laws of Nature 3: Anti-Humean Accounts**
 - Bird, *Laws and Essences* Section 1 (the remainder is optional).
 - Optional: Vetter, 'Review of Bird, *Nature's Metaphysics*'.
- 20. **Nov 27th. Laws of Nature 4: Review**
 - No extra reading.
- 21. **Nov 29th. Laws of Social Science**
 - Roberts, 'There are no laws of the social sciences'.
- 22. **Dec 4th. The Science of Social Science**
 - Hacking, 'Making Up People'
 - Cooper, 'Why Hacking Is Wrong About Looping Kinds'.
- 23. **Dec 6th. Envoi**
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1 What this course is about

This course concerns a topic of great social, philosophical, and personal significance: the nature and justification of scientific knowledge. Our path will begin with some reflections about the nature of scientific justification, and hence a range of issues in the *epistemology of science*. How, for example, do we acquire knowledge of *unobservable* entities, such as quarks and electrons, or of what will happen in the distant past or future? Can we have such knowledge? Can we at least know which scientific claims are false? And how, if at all, do social and cultural factors pervert or assist in the general of knowledge? From there, we will move on to consider some issues in the metaphysics of science – in particular, the question of how to conceptualize the *law of nature*. Do such ‘laws’ represent prohibitions on how the world could be, or are they simply convenient summaries of how it happens to be? We will close by pondering some themes on the purported disanalogies between social and natural science.

It is hoped that this course will be of interest both to science majors and those whose intellectual interests focus more on culture than nature, for one of the themes will be that the two cannot be strictly quarantined. And while some of the material will be rather formal, no prior acquaintance with formal logic, modal logic or probability theory is assumed, and you will not have to engage in too much detail with formal notions to do well in your essays (though you are welcome, and encouraged, to try). Thus when you encounter symbols in the primary texts that you are unfamiliar with, you should never be afraid to flag them up to me in class or over email. Since you will, with probability 1, not be the only person in the class flummoxed by said symbol you will be doing us all a favor.

2 Assessment.

There are four parts to your assessment.

- Short take-home test due October 23rd (drop date is Oct 26th): pass / fail, with feedback from me if I have concerns.
- Five short in-class quizzes, each worth 2%.
- Tuesday Nov 6th: paper of about 1,500 words (40%).
- Thursday Dec 13th: two papers, one around 1,500, one around 1,000 words (50%).

Quizzes. These will be easy tests on previously assigned reading and will not be announced ahead of time.

Midterm. Your paper should be about 1,500 words long: so about 1,500 +/- 10% excluding references. (I will not accept anything above 1,750.) It should

be submitted in class on Nov 6th as well as on Turnitin. See below for guidance on the paper.

Final papers. You will write two essays, one of which will be chosen from a list compiled by me, one of which will be on a topic crafted by you in consultation with me. I will say more about this in class. These should also be submitted on Turnitin as well as being handed in in class in our scheduled exam room (TBD).

Guidance on essays. In class we will discuss in more detail the sort of thing I'm looking for you in your term paper and mini exam essays. But in grading your essay I will be looking for four (not entirely independent) things:

Comprehension: a demonstrated understanding of the ideas and concepts discussed in the essay.

Clarity: your presentation of the ideas and concepts in a clear and concise manner.

Argumentation: your use of a sound argumentative strategy (ie an essay with a well-supported conclusion).

Engagement: independent thinking about the items under discussion.

Generally at least some successful independent thought must be demonstrated in order to receive an A-range grade. Covering only material presented in the lectures will result in a low-B range grade at best.

You must submit both a hard copy of your paper to me in class as well as submit it through Turnitin, via a link on TED. As noted above, I reserve the right to ask you a few questions in person about your essay before administering a grade.

Grading scale. Your TAs will be assigning letter grades for your exam and term paper corresponding to these marks:

97 – 100 = A ⁺	87 – 89 = B ⁺	77 – 79 = C ⁺	67 – 69 = D ⁺
93 – 96 = A	83 – 86 = B	73 – 76 = C	60 – 66 = D
90 – 92 = A ⁻	80 – 82 = B ⁻	70 – 72 = C ⁻	< 60 = F

The final letter grade you receive however will be 'graded to the curve', so that the top 20-30% of students will get a grade in the A range, the next 25-35% a grade in the B range, the next 25-30% a grade in the C range, and the remaining 5-25% a D or an F. This is the minimum I guarantee; if the class has worked well and no-one deserves a D or an F, the curve will be adjusted accordingly.

Academic Integrity.

UCSD is committed to academic integrity. According to their *Policy on Integrity of Scholarship*,¹

“Integrity of scholarship is essential for an academic community. The University expects that both faculty and students will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned, without unauthorized aid of any kind.”

If you have any questions or concerns about what academic integrity requires of you, **do not hesitate to get in touch with me.**

3 Disability accommodations.

Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD) which is located in University Center 202 behind Center Hall. Students are required to present their AFA letters to Faculty (please make arrangements to contact me privately) and to the OSD Liaison in the department in advance so that accommodations may be arranged.

4 My pact to you.

I will be available during office hours each week, and will announce any cancellations in advance to the best of my ability. I will generally also be available to speak to you for several minutes after class each week, and I'll offer extra contact time in the week before the essay due date. If my office hours genuinely do not work for your schedule I will try to find another slot that does. I generally will not answer substantive philosophical questions over email, but please feel free to at least email them to me so that I can better prepare to discuss them with you in office hour, after class or on Skype (which is a much more effective medium than email). Please however **do** email to remind me to do something I promised to do, such as post bonus readings, but that I have neglected, or to flag up symbolic terminology in the readings that you cannot understand. (Note however that if I have already discussed it in class I might not reply!) Please allow me 24 hours to respond to an email, and do not expect me to reply to emails over the weekend. Please also do not take for granted that I will reply to any email sent within 24 hours of a due date. I

will return your essays to you, with comments, within two weeks of the due date. If you do not want comments on your essay (and there are always some

¹For the full statement, go to <https://students.ucsd.edu/academics/academic-integrity/policy.html>

people who prefer this), please state this clearly at the top of your essay as this will save me a considerable chunk of time.

5 What I want from you.

The intention is that you at least skim the readings corresponding to a lecture before coming in to class. However, your reading quizzes will draw from material covered up to the previous lecture only. Please do not be put off by the fact that many of the readings are dense and will refer to philosophical and scientific concepts that you haven't encountered before. The feeling of being out of your depth and not knowing enough is simply the predicament of HPS (the 'history and philosophy of science'). However, you do feel completely at sea in this course and are worried that you cannot complete your assignments, please let me know. You have some freedom in your choice of essay topics and I'm sure that we will be able to find a topic that both plays to your strengths and engages with the themes of the course.

Please write your essays double-spaced and cite judiciously.

I reserve the right to ask you to come in to the office to discuss your essay before assigning it a mark. This need not be anything to be afraid of. Please

refrain from using your cellphone or browsing the web during class. Repeated failures to adhere to this rule may result in me asking you not to come to class, as doing so disturbs everyone around you.