Science and Pseudoscience (HPS 0630)
Syllabus and Reading Schedule

1. Instructor and course details

Time: Tuesday 6:00-8:30pm
Location: 119 Cathedral of Learning
Instructor: Aaron Novick (you can call me "Aaron")
Office Hours: Monday, 10am-12pm
Office Location: 901-P Cathedral of Learning
Email: amn61@pitt.edu

2. Course description. This course is a philosophical exploration of the nature of science. What is the difference between genuine science and merely pretend science, or pseudo-science? We will consider both classic philosophical work on the problem of demarcating science from pseudoscience, as well as a number of case studies of particular alleged pseudosciences. Cases may include, but are not limited to, paranormal phenomena, Lysenkoism, scientific creationism, Velikovskian catastrophism, and alchemy.

3. Prerequisites. There are no prerequisites for this course.

4. Course objectives. By the end of this course, students will:

- Be familiar with classic attempts to separate science from pseudoscience
- Be able to explain the basic issues with each of these attempts
- Be able to recognize and evaluate philosophical arguments
- Be able to apply philosophical analyses of the science/pseudoscience distinction to a particular case of an (alleged) pseudoscience
- Be able to recognize and explain what's wrong with the strategies of contemporary science denialists

5. Readings. There are no required texts for this course. All required readings will be posted to the courseweb page. Many of these readings can be found in the edited volume *Philosophy of Science: The Central Issues* (ed. Curd, Cover, and Pincock; 2nd edition), which will be available through the bookstore. I have also had the bookstore order several other optional texts, which relate to the final projects described below.

6. Lectures. Each week, with the exception of Weeks 1, 14, and 15, will involve two parts: a discussion of a philosophical paper relating to science and pseudoscience, and a lecture concerning a particular case study of an alleged pseudoscience (or related issue). Week 1 will be an introductory lecture, and Weeks 14 and 15 will involve a mix of discussion and student presentations (see below).

7. Grading. Each assignment for the class will be worth a certain number of points; the point total for all assignments will add up to 100. The grading breakdown is as follows:

- Attendance: 12 points
- Reading responses: 13 points
- Argument assessments: 27 points
- Weekly journaling: 18 points
- Class presentation: 5 points
- Final project: 25 points

Attendance (12 points). Philosophy is an inherently social activity: you learn by discussing ideas, allowing you to view them from multiple perspectives. You cannot succeed in this class without attending and participating in in-class discussion. Because class sessions will involve substantial discussion, you are expected to attend prepared to discuss the readings. You are allowed one absence for any reason; after that, every additional unexcused absence will count as one point off your attendance grade.

Reading responses (13 points). For each reading assigned in this course, you will be required to complete a short assignment that asks you to (a) summarize the central thesis and argument of the reading and (b) provide two discussion questions regarding an aspect of the reading you found either confusing or especially interesting. Each is worth one point; a good faith effort will receive full credit (i.e. they are not graded for content). Reading responses will be due on **MONDAYS**, so that I have time to incorporate issues raised by the discussion questions into my notes.

Argument assessments (27 points). At five points during the semester (see reading schedule), you will be asked to turn in an argument assessment (the first three are required, the last two are optional). This assignment will ask you to summarize and critique the argument in one of the readings we have discussed (you will have some choice of reading). Each will be worth nine points, and I will count your best three scores only.

Weekly journaling (18 points). At five points during the semester (see reading schedule), you will be asked to submit a short assignment related to your final project. More specific directions will be given when the assignments are posted to courseweb. Four grades are possible: 3 (for journals that show real depth of thought), 2.7 (for perfectly good journals—this will probably be the most common grade), 2.4 (for reasonable attempts that are lacking in an important way), and 0 (nothing turned in). You will also be required to meet with me one-on-one to discuss your project.

Class presentation (5 points). During the final two weeks of class, class time will be set aside for short presentations of your final projects. Expectations will be discussed later in the term.

[7. Grading cont'd]

Final project (25 points). Early in the semester (week 3; Jan 23), you will select a particular case of an alleged pseudoscience (or something that, while not a pseudoscience proper, raises issues about the science/pseudoscience boundary, e.g. the case of predatory journals). A list of possible cases will be distributed on the first day of class—if you would like to work on a topic not on the list, you can do so, but must check with me first. Over the course of the semester, you will become an expert in your case as it relates to science & pseudoscience issues. In lieu of a final exam, you will turn in something that reflects your accumulated expertise. The format of this is open, though there will be general requirements that must be met, regardless of format.

8. Laptop and phone policy. The use of laptops in class is permitted, but discouraged, as the use of laptops (a) distracts both those who use them and those around them and (b) leads students to take worse notes (see: https://www.scientificamerican.com/article/a-learning-secret-don-t-take-notes-with-a-laptop/). As for phones, the use of phones in class is both disrespectful and incredibly distracting. I reserve the right to deduct attendance credit for those I see using their phones in class. Each class period will have a 10 minute break in the middle. Wait to use your phones until then.

9. Plagiarism. Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, from the February 1974 Senate Committee on Tenure and Academic Freedom reported to the Senate Council, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the assignment will be imposed. View the complete policy at www.cfo.pitt.edu/policies/policy/02/02-03-02.html.

10. Disability services and accommodation. If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services (DRS), 140 William Pitt Union, (412) 648-7890, http://drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Date	**Topic & Reading** (Due on date listed)	**Assignments** [**required**; *optional*] (Due on date listed)
Week 1 Jan 9	Introductory lecture *No reading*	*None* *NOTE: ALL READING RESPONSES ARE DUE ON THE MONDAY BEFORE CLASS, BY 11:59PM*
Week 2 Jan 16	The positivist theory of meaning Case study: Alchemy Ayer, *Language, Truth, and Logic*	**Ayer reading response**
Week 3 Jan 23	Popper on falsifiability Case study: Psychoanalysis Popper, *Science: Conjectures and Refutations*	**Popper reading response** **Journal #1**
Week 4 Jan 30	The Kuhnian Challenge Case study: Velikovsky Kuhn, *Logic of Discovery or…*	**Kuhn reading response** **Argument assessment #1**
Week 5 Feb 6	Lakatos on research programs Case study: Parapsychology [guest] Lakatos, *Science and Pseudoscience*	**Lakatos reading response**
Week 6 Feb 13	Thagard's demarcation criteria Case study: Astrology Thagard, *Why Astrology is a Pseudoscience*	**Thagard reading response** **Journal #2**
Week 7 Feb 20	Ruse's testimony and Laudan's complaint Case study: Creation Science Ruse, *Creation Science is Not Science* Laudan, *Science at the Bar*	**Ruse/Laudan reading response** **Argument assessment #2**
Week 8 Feb 27	Feyerabend against the experts Case study: The Lysenko Affair Feyerabend, *How to Defend Society Against…*	**Feyerabend reading response** **Journal #3**

Date	**Topic & Reading** (Due on date listed)	**Assignments** (Due on date listed)
Week 9 Mar 6	SPRING BREAK; NO CLASS	
Week 10 Mar 13	The value-free ideal (I: pro) Case study: Chambers Bright, *Du Bois and the Value-Free Ideal*	**Bright reading response** **Argument assessment #3**
Week 11 Mar 20	The value-free ideal (II: con) Case study: Predatory journals Longino, *Values and Objectivity*	**Longino reading response**
Week 12 Mar 27	Science and bias Case study: Genital evolution [guest] Okruhlik, *Gender and the Biological Sciences*	**Okruhlik reading response** **Journal #4**
Week 13 Apr 3	The nature of experiments Case study: fMRI and the BOLD signal [guest] Chang, *Inventing Temperature*	**Chang reading response** *Argument assessment #4*
Week 14 Apr 10	Science denialism CLASS PRESENTATIONS Oreskes and Conway, *Merchants of Doubt*	**Oreskes & Conway reading response** **Journal #5**
Week 15 Apr 17	Demarcation revisited CLASS PRESENTATIONS Gordin, *The Pseudoscience Wars*	**Gordin reading response** *Argument assessment #5*
Week 16 Apr 24	CLASS PRESENTATIONS **FINAL PROJECTS DUE APRIL 24, 11:59PM**	