

# Chapter 0

## Syllabus

### 0.1 Course Information

**Course Information:** PHIL110.001, Spring 2016, MWF 12:20 PM - 1:10 PM  
**Course Location:** 370 Willard Bldg  
**Instructor:** David W. Agler, PhD  
**Email:** dwa132 A T psu D O T edu  
**Website:** [www.davidagler.com](http://www.davidagler.com)  
**Office Hours:** W 2:30-3:45PM or by appointment  
**Office Location:** 243 Sparks  
**Office Mailbox:** 232 Sparks

### 0.2 Course Description

The goal of this course is to introduce you to the philosophy of science. We will do this by exploring a variety of key ideas, issues, and thinkers in the philosophy of science. A brief sampling of the questions we will consider are as follows:

1. what is the philosophy of science?
2. what is the method employed by science?
3. does science progress? if so, how does this occur?
4. how should we understand scientific success?
5. have choices between different scientific theories been rational?
6. how should we understand a successful scientific theory that refers to *unobservable* entities,
7. what is the nature of scientific explanation?
8. are there values in science?

In addition to these central issues, we will explore, in some more detail, the relation of science and the philosophy of science to *pseudoscience*. In particular, we will investigate what science can say about the paranormal, supernatural, and theological. A brief sampling of the questions we will consider are as follows:

1. what is pseudoscience and how does it differ from science?
2. are science and the claims investigated by pseudoscience completely at odds?
3. why do so many people have beliefs in things that cannot be scientifically proven?
4. should we only believe what science tells us?
5. can science provide any insight into the paranormal?

## 0.3 Course Overview

### 0.3.1 Required Texts

1. Chalmers, A. F. 2013. *What is this thing called science?* 4th ed. Indianapolis/-Cambridge: Hackett Publishing Company, Inc.
2. Okasha, Samir. 2002. *Philosophy of Science: A Very Short Introduction*. Oxford: Oxford University Press.
3. Pigliucci, Massimo and Maarten Boudry (eds.). 2013. *Philosophy of Pseudoscience: Reconsidering the Demarcation Problem*. Chicago and London: The University of Chicago Press.
4. Agler, David W. 2016. *Philosophy of Science: Handouts*. ProCopy.

### 0.3.2 Helpful Books, but not required

1. Godfrey-Smith, Peter. 2003. *Theory and Reality: An introduction to the philosophy of science*. Chicago and London: University Of Chicago Press.
2. Barker, Gillian and Philip Kitcher. 2014. *Philosophy of Science: A New Introduction*. Oxford University Press.

### 0.3.3 Course Objectives

**Philosophy of Science:** Students will learn several key ideas in the philosophy of science (see above questions)

**Critical Reading and Reasoning Skills:** Students will read texts in the philosophy of science critically by assessing the quality of arguments in terms of their validity, strength, cogency, soundness, etc.

**Dialogue and Oral Expression:** Students will develop their ability to engage in respectful conversation with others. Students will thus be encouraged to formulate their views on philosophy of science issues by providing reasons for their position and criticizing alternatives by objecting to the arguments supporting these positions.

**Articulation and Writing Skills:** Students will develop the capacity to respond to various arguments concerning the philosophy of science in a rigorous and articulate way. They will learn how to summarize issues in the philosophy of science in a succinct, charitable, and illustrative way and learn how to critical respond to arguments by raising objections and supporting their views with reasons.

## 0.4 Course Policies

### 0.4.1 Academic Misconduct

The general principles and policy relating to cheating and plagiarism, which are enforced in this class, can be found in the Penn State policy on academic misconduct. Academic Integrity: Academic dishonesty encompasses a wide range of activities, whether intentional or unintentional, that includes, but is not limited to: all forms of fraud, plagiarism, and any failure to cite explicitly all materials and sources used in one's work. Sanctions for these activities include, but are not limited to, failure in a course, removal from the degree program, failure in a course with an explanation in the permanent transcript of the cause for failure, suspension, and expulsion. If you are unclear about whether you or someone you know is engaging in academic misconduct, read the following: University

Statement on Academic Integrity. For more information, see [PSU Academic Integrity Policy](#), [PSU Plagiarism Quiz](#), and [PSU Plagiarism Links](#).

Let's take a more light-hearted look at plagiarism. See **Video:** [Cheating in College](#)

### 0.4.2 Grading Scale

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>F</b>
A: 91–100	B+: 89.0–89.9	C+: 79.0–79.9	D: 60.0–69.9	F: 0–59.9
A–: 90.0–90.9	B: 81.0–88.9	C: 70.0–78.9		
	B–: 80–80.9			

Grades will be rounded up from the second decimal point, e.g. 90.95 rounds up to 91.0 while 90.94 rounds down to 90.90. In the event that eLION does not allow for a particular grade (e.g. D+), you will simply be given the letter grade (e.g. if you have a D+ then you will receive a D, and if you have a C–, you will receive a C).

### 0.4.3 Late Work

No late work is accepted with the exception of exams. If you are planning on taking an exam late, you will need to clear this with the instructor before the day (24hrs) before the exam is due. If the instructor is not informed that you will be taking the test late, a grade reduction of one letter grade is incurred for every day the exam is late. So if the due date is Tuesday at 3PM and you email me on Tuesday at 3.01PM you will lose a letter grade. You will not lose an additional letter grade until 3.01PM the next day (i.e. Wednesday).

### 0.4.4 Accessibility and Additional Guidance

Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the [Office for Disability Services Website](#).

In order to receive consideration for course accommodations, you must contact ODS and provide documentation (see the documentation guidelines at [PSU Documentation Guidelines](#)). If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact ODS and request academic adjustment letters at the beginning of each semester.

If you are in need of psychological counselling, please do not hesitate to contact Penn State's Counselling & Psychological Services (phone: 814-863-0395). For any problem related to your studies, university policies and procedures, do not hesitate to seek the help of the Student Affairs Services, your Academic Advisor, or arrange a meeting with your instructor who will help you obtain assistance through one of the above, or another, agency.

### 0.4.5 ANGEL and Email Communication

Please check the webpage on the ANGEL website regularly. An online version of the syllabus is available there, and you will be notified of any cancellation of a course meeting

there. If you need to contact me, send a well-constructed email to my email address with an appropriate subject line (e.g. P120 Question) and with an appropriate address (e.g. “Dear David”). Failure to do either, or emailing me with multiple links attached (“check this youtube link”) will result in your instructor deleting your email. Students are responsible for activity on their computer accounts so only send emails pertinent to the course.

#### 0.4.6 Drop Procedures & Incompletes

Students who simply stop attending class, for whatever reason, without officially withdrawing from the course, will receive the grade of F. If you expect a refund, be aware that the date the withdrawal form is processed by Penn State registrar’s office determines the amount of refund. Consult the Register site for [drop procedures](#). Consult the Handbook for taking an [Incomplete \(D/F\)](#)

#### 0.4.7 Classroom Environment

A number of factors figure into creating a healthy classroom environment. In order to facilitate such an environment, I ask you to obey the following:

1. the use of cell phones in any capacity is prohibited (please turn ringers and buzzers off, no text-messaging during class),
2. please do not begin to “pack up” your belongings before your instructor has explicitly dismissed you,
3. please come to class rested, sleeping in class is strictly prohibited,
4. please do not do other work in class. If you have an important exam in the next class, go somewhere where you can study for it.

If you are incapable of performing (1)–(4) or are disruptive in class, you will kindly be asked to leave the classroom.

### 0.5 Course Work

ASSIGNMENT	#	PTS	%	NOTES
Attendance & Participation	0	100	5	plays a role in rounding
L <sup>A</sup> T <sub>E</sub> X Assignment	1	100	5	
Semi-weekly Assignments	11	100	54	
Exams	3	100	36	
<b>TOTAL</b>			100	

**Table 1.** Grade Weight Per Assignment

#### 0.5.1 Attendance & Participation

The attendance and participation portion of your grade is determined through a combination of subjective and quantitative components.

**Attendance:** is documented through the use of “Attendance Sheets”, which are periodically distributed throughout the semester.

**Classroom participation:** is assessed by using a variety of factors, including (but not limited to): the quality of your questions and answers, respectful dialogue with your classmates and instructor, your willingness to participate in class exercises, in groups, etc.

In the case of **borderline grades** (A-/B+, B+/B etc.) there can be fine tuning based on your participation. Only excellent participation (both in the classroom) and attendance throughout the semester can raise your grade. Your grade can be raised (at most) one percentage point (e.g. 79 to 80 not 78 to 80).

### 0.5.2 L<sup>A</sup>T<sub>E</sub>X Assignment

This course is designed around one super document that will be updated continuously throughout the course. That document contains the syllabus, course handouts, student-submitted writing assignments and pictures, and study guides. That document is written in plain text but prepared with a typesetting system called L<sup>A</sup>T<sub>E</sub>X. You will be required to submit your writing assignments using L<sup>A</sup>T<sub>E</sub>X and that work may be added to the super document.<sup>1</sup>

The L<sup>A</sup>T<sub>E</sub>X assignment aims to prepare you to learn the technical skills needed to submit the three writing assignments for the course.

**Step 1:** Get L<sup>A</sup>T<sub>E</sub>X. There are two ways to get L<sup>A</sup>T<sub>E</sub>X. First, you can use a text editor and download a L<sup>A</sup>T<sub>E</sub>X or T<sub>E</sub>X typesetting software (the former is on every computer (e.g. you can use Notepad) and the latter you will have to download, for free)

Another way (and this is the way I strongly recommend) is to use a cloud-based application. I recommend [ShareLatex](#).<sup>2</sup>

**Step 2:** Create a document using L<sup>A</sup>T<sub>E</sub>X that includes your name, the date, a short message to me (e.g. what's your major, what are your career goals, or anything that you think would be interesting), and a picture with a caption. For details on how to do this, see ?? and tutorials at [ShareLaTeX Tutorials](#).

**Step 3:** Compile the document and save the PDF.

**Step 4:** Click the **MENU** button (upper right) and download the **SOURCE** by clicking the **SOURCE** button. It will download as a .zip file.

**Step 5:** Upload both the PDF and the source (.zip) file to the L<sup>A</sup>T<sub>E</sub>X assignment DropBox in ANGEL.

### 0.5.3 11 Weekly Assignments

These 11 assignments assumes that you have already completed the L<sup>A</sup>T<sub>E</sub>X assignment ([subsection 0.5.2](#)) as it requires you to submit some of your work using L<sup>A</sup>T<sub>E</sub>X. You can use that assignment as a partial template for completing this one. Submit your work via to ANGEL as a **single .zip** file (your entire project (source code and files)) and **PDF** (the compiled assignment).

Each week, you will be asked to submit a short assignment. This assignment will vary weekly. Some examples of assignments include:

<sup>1</sup>For why I am having you use L<sup>A</sup>T<sub>E</sub>X in this course, see section ??.

<sup>2</sup>See <https://www.sharelatex.com>. ShareLaTeX is a cloud-based L<sup>A</sup>T<sub>E</sub>X preparation application and is completely free (WriteLaTeX is an equally good alternative). It also contains a number of wonderful tutorials to help you learn L<sup>A</sup>T<sub>E</sub>X

1. written group activity (completed and submitted in class)
2. A **Key Ideas Assignment** where you are asked to identify **five** key ideas from a reading
3. an argument activity where you are asked to take a side on some issue in the philosophy of science

Some notes on these assignments:

1. Your lowest grade will be dropped and so only your **ten** best scores will be recorded.
2. your submission will be graded out of 3 points as follow: 0 (did not complete or submission is not relevant to assignment), 1 (satisfactory completion), 2 (good work), 3 (exceptional work)

#### 0.5.4 Exams

Each exam is divided into two sections: (1) multiple-choice / true-false questions and (2) short-answer questions. To help you prepare, I will post a (non-exhaustive) list of possible exam questions one week before the exam. The exams are *not cumulative*. The exams will cover:

1. basic content found in the readings
2. any content found in handouts
3. content discussed in class

Here are a few tips for preparing for exams:

1. Take good notes. While I distribute a lot of written material, these materials are **not** exhaustive and so you should take good notes about the lecture and the reading.
2. Frequently review this document as it is updated regularly.
3. Attend the review session.

## 0.6 Course Schedule

**PPS:** *Philosophy of Pseudoscience*

**QS:** *Questions about the philosophy of science?* (course packet)

**WiS:** *What is this thing called Science?*

**PoSVS:** *Philosophy of Science: A Very Short Introduction*

**Table 2.** UNIT 1, Questions about Science

DATE	TOPIC	READINGS	ASSIGNMENT
1/11	Syllabus & Getting to Know You Exercise		
1/13	L <sup>A</sup> T <sub>E</sub> X Assignment		
1/15	Does Science Need Philosophy?	PoSVS 1-13	L <sup>A</sup> T <sub>E</sub> X Due
1/18	<b>No Class – MLK</b>		
1/20	Does Science Need Philosophy?	“Physicists are Philosophers Too”	
1/22	Science and observation	WiS 1-17	
1/25	Does science have a specific method: Inductivism	PoSVS 18-22, 24-29	
1/27	Does science have a specific method: Inductivism	WiS 38-45	
1/29	Does science have a specific method: Inductivism	WiS 45-54	
2/1	Does science have a specific method: Falsification	PoSVS 23	
2/3	Does science have a specific method: Falsification	WiS 55-68	
2/5	Does science have a specific method: Falsification	WiS 69-73, 78-80	
2/8	Does science have a specific method: Falsification	WiS 81-96,	
2/10	Does science have a specific method: Explanation	PoSVS 40-57	
2/12	Does science have a specific method: Bayesianism	WiS 202-217	
2/15	Does science have a specific method: Bayesianism	WiS 202-217	
2/17	Review	Review	
2/19	Exam 1		

**Table 3.** UNIT 2, Science, Progress, and Reality

DATE	TOPIC	READINGS	ASSIGNMENT
2/22	Does science progress: Logical Empiricism	PoSVS 77-80	
2/24	Does science progress: Kuhn	WiS 97-115	
2/26	no class	no class	
2/29	Does science progress: Kuhn	PoSVS 81-94	
3/2	Does science progress: Lakatos	WiS 121-137	
3/4	Does science progress: Feyerabend	WiS 138-147	
3/7	spring break		
3/9	spring break		
3/11	spring break		
3/14	What does science describe: realism and anti-realism	PoSVS 58-76	
3/16	What does science describe: realism and anti-realism	WiS 209-226	
3/18	Review Day	Review Day	Review Day
3/21	Exam 2	Exam 2	Exam 2

**Table 4.** UNIT 3, Questions about pseudoscience, ghosts, cryptids, and science

DATE	TOPIC	READINGS	ASSIGNMENT
3/23	Video (Ep.1 of Paranormal Home Inspectors)	None	
3/25	Pseudoscientific beliefs: examples		
3/28	Pseudoscientific beliefs: examples		
3/30	Should pseudoscience be taught in schools?	ANGEL	
4/1	Should pseudoscience be taught in schools?	ANGEL	
4/4	What is the demarcation problem?	PPS 29-41	
4/6	What is the demarcation problem?	PPS 29-41	
4/8	Paranormalism and pseudoscience as deviance	PPS 145-164	
4/11	Paranormalism and pseudoscience as deviance	PPS 145-164	
4/13	Science and pseudoscience	PPS 203-224	
4/15	Science and pseudoscience	PPS 203-224	
4/18	Evolved to be irrational	PPS361-379	
4/20	Evolved to be irrational	PPS361-379	
4/22	Catch-up		
4/25	Review Day	Review Day	Review Day
4/27	Review Day	Review Day	Review Day
4/29	Exam 3	Exam 3	Exam 3