

PHIL 224: INTRODUCTION TO THE PHILOSOPHY OF SCIENCE

Professor Carlos A. Mariscal **Office Hours** Set at calendly.com/profos
E-mail carlos@unr.edu **Class Time** Mon. & Wed. 13:00-14:15
Office Jones 103D **Class Location** 4050 Wm. J. Raggio Bldg.

Course Description



The aim of this course is to familiarize students with some major issues in the philosophy of science as well as the reasoning skills to discuss science and other topics competently. We will discuss philosophical problems and implications of scientific inquiry, including the demarcation of science, scientific revolutions, scientific values, and the relation of science and society.

There are no prerequisites for this course

Late Work/Makeup Exams



Students have one (1) no-questions-asked four-day extension to use on a single argument reconstruction or exam. Subsequent extensions will require a note from a mortician. Non-medical extensions not covered by this extension will face a 10 percent grade penalty per day.

Course Learning Outcomes



- 1) Students will be able to state a thesis about a problem in the philosophy of science, as well as provide evidence and philosophical argument (including replies to counter-arguments) in its defense.
- 2) Students will be able to interpret at an introductory level the ideas associated with major philosophers and theories in the philosophy of science.
- 3) Students will be able to distinguish better and worse reasoning, and recognize relevant logical relationships and patterns of inference.
- 4) Students will be able to show what is at stake in an abstract philosophical debate in the philosophy of science, and indicate how different philosophical positions have different practical and theoretical implications.

Required Reading & Materials



The required text for this course is Kent Staley's *An Introduction to the Philosophy of Science*. Any further readings, podcasts, or videos will be available on the class website or shown in class.

Class Etiquette



Don't be a jerk.

Signs of jerkitude include: speaking more than twice as much (and often) as the next student, fiddling with the 'hidden' phone near your groin, and staring at your laptop while your YouTube video of a whimsical cat loads.

Research shows polite exchange improves attention, paper notetaking produces better recall than digital notetaking, and just having your phone within view interferes with your concentration. Research also shows that students who exhibit jerk-like behavior forfeit their participation grade.

Communication



Please stop by my office to discuss course content or structure.

I also respond to email each Friday at midnight. Be sure the subject line of your email specifies the issue, its importance, its urgency, and a quick way I can respond.

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Academic Dishonesty



Every **single** semester, I catch about five percent of my students engaging in academic dishonesty. If you cheat, plagiarize, or otherwise obtain grades under false pretenses, I *will* catch you and burden you with the greatest possible academic penalty. This may include failing the course, referral to the Associate Provost of Academic Planning and Standards, and expulsion. **Ignorance is not an excuse for plagiarism.** Please feel free to contact me or refer to University of Nevada, Reno General Catalog if you are concerned about what constitutes plagiarism.

Tutoring & Writing Center



Your student fees cover usage of the Tutoring Center (784-6801 or www.unr.edu/tutoring-center) and University Writing Center (784-6030 or <http://www.unr.edu/writing-center>). Evidence of using one or both of these centers for class assignments will count as extra credit in this class.

Grading standards



A 92.5-100 percent
A- 89.5-92.4 percent
B+ 87-89.4 percent
B 82.5-86.9 percent
B- 79.5-82.4 percent
C+ 77-79.4 percent
C 72.5-76.9 percent
C- 69.5-72.4 percent
D+ 67-69.4 percent
D 62.5-66.9 percent
D- 59-62.4 percent
F 0-58.9 percent

Extra Credit Opportunities



Throughout the semester, public or University events will occur. Should you discover one that is relevant to this class, please ask whether I will consider it for extra credit.

In such cases, writing an accurate 250-word reconstruction of the speaker's argument is worth 1 percent to your final grade. Additionally, evidence of using one or both of the tutoring & writing centers for class assignments will count as extra credit in this class.

Statement on a Safe and Equitable Campus



Counseling and advocacy services are available through Counseling Services (775-784-4648) and the Equal Opportunity & Title IX office.

If you believe you have experienced discrimination, sexual harassment, sexual assault, domestic/dating violence, or stalking, whether on or off campus, or need information related to immigration concerns, please contact the University's Equal Opportunity & Title IX office at 775-784-1547. Resources and interim measures are available to assist you. For more information, please visit the Equal Opportunity and Title IX page.

Academic Disabilities



If you believe you have a disability and would benefit from any accommodations, you may wish to contact the Disability Resource Center (Pennington Student Achievement Center 230) as soon as possible to better ensure that such accommodations can be implemented in a timely fashion.

Audio/Video Recording



Everything you say in this class (and probably in most other areas of your life) is likely recorded by one or more other students. Behave accordingly.

EVALUATION

Peer Review

Your paper drafts will be anonymized and given to another student. You will then provide critical feedback on subject matter, style, content, and argument. You will be graded on the thoroughness and care with which you assess your colleague's paper.

Argument Reconstruction

At any point throughout the semester, you should choose an assigned article, read it, and reconstruct a major argument of the article in *no more than 250 words*. Use your own words and try to make the logical structure clear as much as possible. These **must be turned in before the class** discussion.

An argument reconstruction is *not* a summary, so you should only describe the elements of the article that support the author's position. You must give their conclusion and the reasons they give for that conclusion. It helps to put it in Standard form (e.g. 1. **Premise**, 2. If **Premise 1**, then **Conclusion**. 3. Therefore, **Conclusion**). If there are multiple arguments or positions in an article or book chapter, choose a strong one to reconstruct.

Argument reconstructions will be graded in a **three-point** system. A ✓+ will be given for an accurate, clear, cogent/valid reconstruction of the strongest argument in the article. A ✓ will be given to adequate attempts that miss minor aspects of the argument. Four or more ✓+s constitute an A for this portion of the class.

Please **plan ahead**: many A students have left my class with a C because of lack of foresight. Many C students have failed.

Short Exams

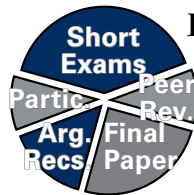
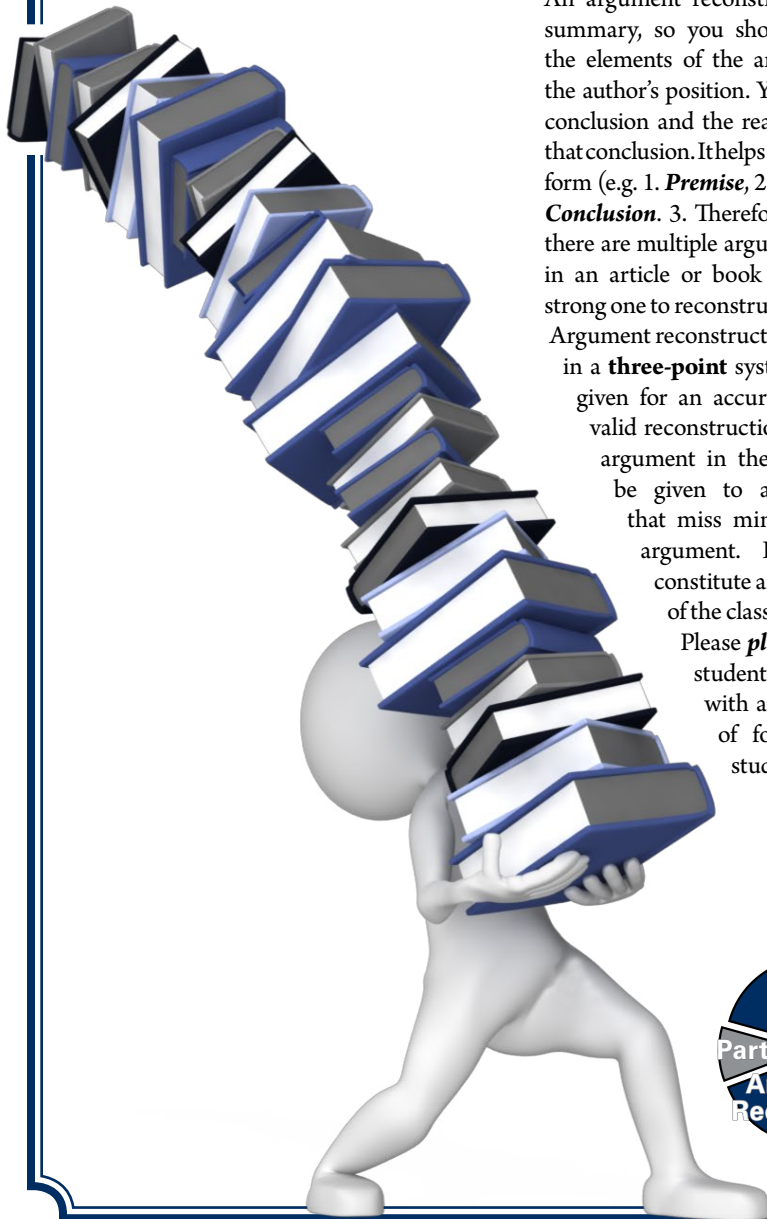
There will be two exams in this course: One in late September and the other in early November. You will be tested on logic, vocabulary, and course material in a mixture of true/false, multiple choice, matching, and short essay questions. Possible essay questions will be given one week ahead of time. Each essay question must be answered in 300-500 words with careful reference to lectures or readings.

Final Paper

Each student will write a 2000-4000 word paper on a topic in the philosophy of science. The paper is expected to make contact with at least one reading from the semester and at least one outside source. Only MLA, APA, Chicago, Harvard, or Vancouver citation styles are acceptable. Google Scholar and many other sources do this for you.

Informed Class Participation

Class is more enjoyable and informative if everyone participates. Attendance is a pre-requisite for participation, but is not sufficient. Students should speak up in class, discuss the material with me outside of class, or post comments on the class discussion board in order to earn their grade. Points will be permanently lost for students who use their phones in class or stare at their laptops. If you must be absent for any reason, email me ahead of time. Two absences are fine. Subsequent absences will cost points.



Evaluation

- 10% Peer Review
- 15% Six (6) Argument Reconstructions
- 40% Two (2) Short Exams
- 25% Final Paper
- 10% Informed Class Participation

SCHEDULE

PHIL 224: INTRODUCTION TO THE PHILOSOPHY OF SCIENCE

	TOPIC	DATE	READING	TIME
What is Science?	Overview	Aug. 26	Syllabus	1m
	Baby Logic Science	Aug. 28	Crash Course, “ Philosophical Reasoning ” & “ Induction & Abduction ”	20m
	Veteran’s Day	Sept. 2	<i>No Class</i>	
	Baby Logic Induction	Sept. 4	Staley, Ch. 2, “Falsificationism: Science without Induction?” p. 15-25 minutephysics, “ Simpson’s Paradox video ”	30m +4m
	Baby Logic Deduction	Sept. 9	Popper, “Science: Conjectures & Refutations”*	18m
Theory Change	Logical Positivism	Sept. 11	Staley, Ch. 4, “Logical Empiricism and Scientific Theories” p. 39-44	45m
	Riddles of Deduction	Sept. 16	Staley, Ch. 3, “Underdetermination” p. 26-38	
	The Structure of Science	Sept. 18	Staley, Ch. 5, “Kuhn: scientific revolutions as paradigm changes” p. 45-70 OR High-Phi Nation, “ The Ashes of Truth ”*	75m
	Writing Normal Science	Sept. 23	Siven, “Why the Scientific Revolution Did Not Take Place in China — or Did It?”* p. 1-6 & 8-12	43m
	Research Programs	Sept. 25	Staley, Ch. 6, “Lakatos: scientific research programs” p. 71-84	39m
	Anything Goes	Sept. 30	Staley, Ch. 7, “Feyerabend” p. 85-102	51m
Realism	Realism	Oct. 2	First Exam	
	Science as Social Knowledge	Oct. 7	Staley, Ch. 10, “Realism and Anti-Realism” p. 167-198	96m
	The Sokal Hoax	Oct. 9	Sokal Packet* (skim, but do not read)	??m
Explain	Scientific Explanation	Oct. 14	Staley, ch. 11, “Explanation” p. 199-228	87m
	Reductionism	Oct. 16	Ney, “ Reductionism ”* §1c-§3	29m
	Laws and Models	Oct. 21	Demarest, “Fundamental Properties and the Laws of Nature”*	28m
Special Science	The Exact Sciences	Oct. 23	Staley, Ch. 8, “Bayesianism” p. 105-134	87m
	The Physical Sciences	Oct. 28	Massimi & Peacock, “The Origins of Our Universe”* p. 14-19 & 25-29	26m
	Life & Historical Sciences	Oct. 30	Cleland, “Historical Science, Experimental Science, and the Scientific Method”*	22m
	The Mind & Social Sciences	Nov. 4	Paul, “What You Can’t Expect When You’re Expecting”* §1-3, §5 & §7	34m
Values	Values in Science	Nov. 6	Second Exam	
	Veteran’s Day	Nov. 11	<i>No Class</i>	
	Inductive Risk	Nov. 13	Douglas, “The Moral Responsibilities of Scientists”*	24m
	What Gets Published?	Nov. 18	Ionnadis, “Why Most Published Research Findings are False”*	24m
	Scientific Hoaxes & Stings	Nov. 20	Hoax Packet* (skim, but do not read)	??m
Other Problems		Nov. 22	<i>Paper Draft Due</i>	
	Problems for Science	Nov. 25	Belluz, Plumer, & Resnick, “ The 7 Biggest Problems Facing Science, According to 270 Scientists ”* Introduction, §1, §4, §6, & §7	33m
	The War to Free Science	Nov. 27	Resnick & Belluz, “ The war to free science ”*	20m
	The Replicability Crisis	Dec. 2	Hi-Phi Nation, “ Hackademics II: The Hackers ”*	44m
		Dec. 3	<i>Peer Review Due</i>	
	Academic Misconduct	Dec. 4	Roy & Edwards, “ Science is Broken ”*	19m
	Wrap Up	Dec. 9		

RUBRICS

ARGUMENT RECONSTRUCTIONS

1 = Poor | 3 = Satisfactory | 5 = Excellent

Accurate representation of the article	_____
Argument reconstruction is valid	_____
250 words ± 25 .	_____
Turned in in a timely fashion	_____
Spelling/Grammar/Usage	_____
TOTAL SCORE (15 possible)	_____

PEER REVIEWS

1 = Poor | 10 = Satisfactory | 20 = Excellent

Evidenced having read & understood the paper	_____
Posed a positive, thoughtful, original comments	_____
Gives actionable feedback and suggestions	_____
Turned in in a timely fashion	_____
Grammar/Usage/Spelling/Punctuation	_____
TOTAL SCORE (/100)	_____

FINAL PAPERS

Writing Quality

1 = Poor | 5 = Excellent

Originality (novel idea, subject, or approach)	_____
Topic Selection (clear thesis, motivated, appropriate size topic, cogent position)	_____
Usage (Simple language, clear, fluent)	_____
Grammar, Spelling, Punctuation (free from errors, +5 for use of writing center)	_____
SCORE FOR THIS CATEGORY (20 possible)	_____

Paper Content

1 = Poor | 20 = Excellent

Organization (logical presentation, progression of ideas, each paragraph has purpose, sign posting, clearly organized toward a goal)	_____
Understanding (skillful jargon use, understand topic, breadth and depth)	_____
SCORE FOR THIS CATEGORY (40 possible)	_____

Argument Structure

1 = Poor | 10 = Excellent

Integration (synthesize topics within course or in topic/with background knowledge)	_____
Consideration of Counterarguments (strong counterargument presented and addressed)	_____
Correct use of sources (use reliable sources, adequately referenced, interpreted, evaluated, synthesized, questioned)	_____
Conclusion (tied back to objectives)	_____
SCORE FOR THIS CATEGORY (40 possible)	_____

TOTAL SCORE (/100)	_____
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